An exploration of how students with Down syndrome experience basic psychological need satisfaction in Irish mainstream class settings

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Abstract

Background and Aim: Self-Determination Theory posits that all individuals have inherent tendencies toward growth and development as well as a vulnerability to maladaptive functioning. Within social contexts such as schools, certain psychological nutrients – namely, autonomy, competence, and relatedness – are needed to support this propensity toward adaptive functioning, and to promote students' well-being, engagement, and motivation. The aim of this study was to explore how students with Down syndrome experience basic psychological need satisfaction in mainstream primary schools.

Methodology: Underpinned by Basic Psychological Needs Theory, this study used an explanatory multiple case study design to explore students' experiences of autonomy, competence, and relatedness. Each case consisted of a student with Down syndrome in a mainstream class, their class teacher, Special Needs Assistant, and classmates. Alongside semi-structured interviews, techniques based upon Personal Construct Psychology were used to gather qualitative data. An adapted version of the *Basic Psychological Needs in the Classroom Scale* was utilised to explore the perceived classroom climate in relation to need satisfaction.

Results: Descriptive analysis, pattern-matching, and reflexive thematic analysis were used to analyse the data. Within-case patterns were first explored. Thereafter, a cross-case synthesis of findings was conducted. Across both cases, students' perceptions of need satisfaction were associated with feelings of enjoyment and engagement in school. Need frustration was associated with disengagement and negative affect. Themes relating to autonomy included the provision of choice and the need for structure. Themes pertaining to competence included providing support, adapting and accommodating, and the challenges of mainstream. Themes associated with relatedness included being part of the school community and developing relationships.

Conclusion: The study addresses an identified research gap by exploring the unique perceptions and experiences of students with Down syndrome in relation to basic psychological need satisfaction in mainstream schools. The implications of the findings for future practice, research, and policy in the field of educational psychology are discussed.

Declaration

I hereby declare that this thesis is entirely my own work and has not been submitted, in whole or in part, for any other awards at this or at any other academic establishment. Where use has been made of the work of other people, it has been fully acknowledged and referenced.

Name: Fiona Brennan

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Date: 19/08/2024

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Dedication

This thesis is dedicated to my wonderful father, Seamus Brennan, who sadly passed away in September 2023.

I will be forever grateful to you for nurturing my love of learning. Thank you for passing on your interest in academia and passion for teaching and psychology to me. I have many wonderful memories of the countless hours we spent talking about my doctoral thesis and looking forward to my final graduation ceremony in MIC.

Without your endless encouragement, guidance, and wise counsel throughout my education, I would never have completed this thesis.

Thank you for giving me the strength and courage to finish the journey we started together.

As you always reminded me,

It's not how you start,

It's how you finish.

Go mbuailimid le chéile arís,

Go gcoinnfí Dia i mbos A láimhe thú.

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Abbreviations

AEN	Additional Educational Needs
APA	American Psychiatric Association
BPNT	Basic Psychological Needs Theory
BPS	British Psychological Society
CAST	Center for Applied Special Technology
CT	Class Teacher
CYP	Children and Young People
DCEDIY	Department of Children, Equality, Disability, Integration and Youth
DCYA	Department of Children and Youth Affairs
DES	Department of Education and Skills
DS	Down Syndrome
DSi	Down Syndrome International
DSI	Down Syndrome Ireland
EP	Educational Psychologist
EPSEN	Education for Persons with Special Educational Needs
HSE	Health Service Executive
ID	Intellectual Difference
NCCA	National Council for Curriculum and Assessment
NCSE	National Council for Special Education
NEPS	National Educational Psychological Service
OECD	Organisation for Economic Co-Operation and Development
OIT	Organismic Integration Theory
PE	Physical Education
PCP	Personal Construct Psychology
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
PSI	Psychological Society of Ireland
RMT	Relationships Motivation Theory

RTA	Reflexive Thematic Analysis
SDT	Self-Determination Theory
SEN	Special Educational Needs
SERC	Special Education Review Committee
SNA	Special Needs Assistant
UDL	Universal Design for Learning
UN	United Nations
UNCRC	United Nations Convention on the Rights of the Child
UNESCO	United Nations Educational, Scientific, and Cultural Organisation
WoE	Weight of Evidence

1 Chapter 1: Introduction

1.1 Overview of Topic Area

As a meta-theory of human motivation, Self-Determination Theory (SDT) (Deci & Ryan, 1985; Ryan & Deci, 2017) proposes that individuals have inherent tendencies toward growth and integrity, and vulnerabilities for ill-being and maladaptive functioning. SDT comprises six mini-theories, one of which is Basic Psychological Needs Theory (BPNT) (Deci & Ryan, 2000; Ryan & Deci, 2002). The current study is underpinned by BPNT which posits that three basic psychological needs, namely, autonomy, competence, and relatedness are essential for well-being, adjustment, and psychological health (Deci & Ryan, 2017). BPNT utilises a dual-process model to illustrate how need satisfaction and need frustration explain both the 'bright' and 'dark' side of human functioning (Vansteenkiste & Ryan, 2013). That is, whereas psychological need satisfaction contributes to adaptive functioning and wellness, need frustration predicts ill-being, psychopathology, and problem behaviour (Bartholomew et al., 2011a; Vansteenkiste & Ryan, 2013).

Consistent with the distinction between need satisfaction and need frustration, SDT researchers differentiate between need-supportive and need-thwarting contexts (Ryan & Deci, 2017). Within educational settings, socialising agents (e.g., teachers) may adopt need-supportive, need-depriving, or need-thwarting practices (Vansteenkiste & Ryan, 2013). Need-supportive practices incorporate autonomy support, structure, and relatedness support, and nurture students' basic psychological needs (Aelterman & Vansteenkiste, 2023; Howard et al., 2024). There is a substantial body of empirical research demonstrating the benefits of need satisfaction for students which include engagement (Conesa et al., 2022), academic achievement (Zhou et al., 2021), and autonomous motivation (Vasconcellos et al., 2020). Contrastingly, need-thwarting practices encompass controlling, chaotic, and rejecting approaches, and actively obstruct students' basic psychological needs (Aelterman & Vansteenkiste, 2023; Howard et al., 2024). Previous research highlights the detriments of need frustration for students which include disengagement (Earl et al., 2017) and amotivation (Behzadnia et al., 2023).

Concerning individuals with intellectual difference (ID), research suggests that contexts which support need satisfaction promote well-being (Frielink et al., 2018) and positive affect (Behzadnia et al., 2022), whereas contexts that thwart individuals' needs contribute to mental

health problems such as anxiety, depression, and externalising behaviours (Westera et al., 2023). Despite the potential benefits associated with need satisfaction and self-determination, students with ID tend to report lower levels of self-determination than typically developing peers (Mumbardó-Adam et al., 2017) and students with other additional needs (Qian et al., 2022). Furthermore, although Down syndrome (DS) is among the most common genetic causes of ID, little is known about the experiences of students with DS in relation to need satisfaction in mainstream settings. The limited knowledge in this regard is of particular concern for Educational Psychologists given the negative, and even harmful, outcomes which may arise for students with ID, and DS in particular, in settings that thwart their psychological needs (e.g., Westera et al., 2023).

1.2 Policy and Context

In recent years, the concepts of self-determination, autonomy, competence, and relatedness have been considered within national and international policy. Different legislation and initiatives have been proposed to promote independence, decision-making, participation, achievement, and well-being for children and young people (CYP), including those with AEN. From a rights-based perspective, self-determination and autonomy have been promoted within legislative documents such as the *UN Convention on the Rights of the Child* (UNCRC) (United Nations, 1989) and the *UN Convention on the Rights of Persons with Disabilities* (UNCRPD) (United Nations, 2006). Concerning education, policy-makers state that students with AEN should be enabled to develop the skills needed to live independent and fulfilled lives (Oireachtas, 2004). Furthermore, attention has been given to the promotion of learner voice among students with AEN. Stemming from the UNCRC (United Nations, 1989), the importance of ensuring that CYP are enabled to express their perspectives through a variety of means, and have their views taken seriously is recognised within policy documents in Ireland (e.g., Department of Children, Equality, Disability, Integration and Youth [DCEDIY], 2023; DCEDIY, 2024).

In the Irish education system, the significance of self-determination and basic psychological need satisfaction is acknowledged within educational policy. The principles of autonomy, competence, and relatedness support are reflected within guidance on effective practice relating to areas such as teaching and learning and well-being promotion in Ireland (e.g., Department of Education, 2024; Department of Education and Skills [DES], 2019). Similarly,

basic psychological need satisfaction aligns with many of the principles and key competencies underpinning the recently developed *Primary Curriculum Framework* (National Council for Curriculum and Assessment [NCCA], 2023).

In addition to supporting students' independence, well-being, and decision-making, policy-makers have promoted the concept of inclusive education. It is argued that students with AEN should be afforded equal opportunities to access education and should be educated within mainstream settings (Oireachtas, 2004; United Nations Educational, Scientific, and Cultural Organisation [UNESCO], 1900; 1994). In Ireland, students with AEN are supported using a continuum of educational provision (Special Education Review Committee [SERC], 1993). These supports range from full-time enrolment in mainstream classes to full-time enrolment in special schools. For several decades, Irish government policy has advocated for the inclusion of students with AEN in mainstream schools. Similarly, the inclusion of students with DS in mainstream settings is promoted by advocacy groups and organisations including Down Syndrome Ireland (2018) and Down Syndrome International (Faragher et al., 2020).

1.3 Reflexivity Statement

As part of my doctoral training, I have had the opportunity to work with CYP with a range of additional needs and differences. Much of my work has involved identifying and supporting the needs of children, particularly in relation to their experiences in school. As a trainee educational psychologist, I have adopted a strength-based, neuro-affirmative approach within my work. That is, I strive to respect and affirm the young person's preferences and differences, acknowledge and embrace their strengths, and build capacity in their areas for development. This approach influences my choice of language when working with CYP and parents or teachers, and permeates all aspects of my practice including consultation, formulation, and intervention-planning. Therefore, throughout the thesis, neuro-affirmative language will be utilised. This will include use of terminology such as 'intellectual difference' instead of 'intellectual disability' and 'additional educational needs' as opposed to 'special educational needs'. However, given that terms such as 'special educational needs' and 'intellectual disability' are still prevalent within policy documents, they will be referenced in the thesis, where appropriate.

My interest in exploring the educational experiences of students with DS stems from my work as a primary school teacher. When working with students with DS, I often found myself

reflecting upon the opportunities that these students might have had to make decisions about their learning and to experience a sense of success within the mainstream setting. I was particularly curious about the students' perceptions of their educational experiences at the upper end of primary school. I often noticed myself wondering how these students might perceive the particular pedagogical approaches that were used to support their learning in the mainstream classroom. Furthermore, the importance of prioritising and privileging the student's voice in education and research aligns with my views as a researcher. Thus, I became particularly interested in exploring the unique perspectives of students with DS in relation to autonomy and competence satisfaction in mainstream classrooms.

1.4 The Current Study

Although previous studies highlight important findings about the contextual factors associated with self-determination and need satisfaction for individuals with ID, there remains a paucity of research exploring the unique experiences of students with DS in relation to same. Therefore, the current study sought to address an identified research gap by examining the following research question: *How do students with Down syndrome experience basic psychological need satisfaction in mainstream class settings?*

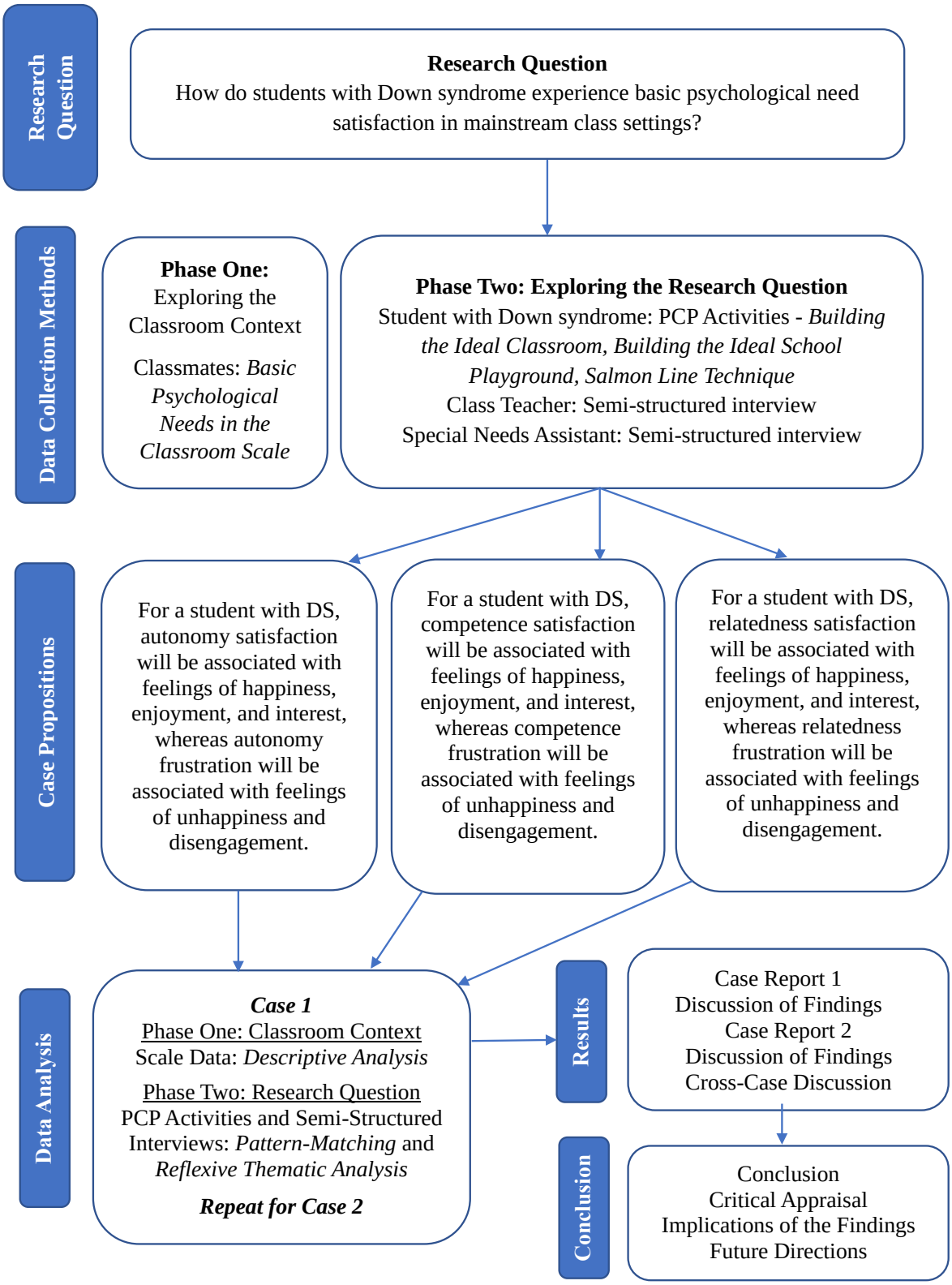
Guided by the constructivist research paradigm, the study adopted an explanatory case study design (Yin, 2018). Using a multiple-case study design, the study involved two cases. Each case included a student with DS, their classmates, class teacher, and Special Needs Assistant (SNA). In line with recommendations from previous research (e.g., Lewis-Dagnell et al., 2023; Lundy, 2007), multiple methods were used to elicit the views of students with DS. These included adapted versions of techniques based upon Personal Construct Psychology (Kelly, 1955) and incorporated model-making activities, visual rating scales, and adapted interviews. The perspectives of the class teacher and SNA were explored using semi-structured interviews. The classmates were invited to complete a questionnaire to explore the perceived classroom climate regarding basic psychological need satisfaction.

Descriptive analysis, pattern-matching, and reflexive thematic analysis were used to analyse the data. Within-case patterns from each case were explored. This was followed by a cross-case synthesis of findings (Yin, 2018). The strengths and limitations of the study were considered based on Yin's (2018) guidance on the characteristics of an exemplary case study. The implications

of the study's findings for practice, policy, and research were explored. The overall structure of the thesis is presented in Figure 1.1.

Figure 1.1

Overview of Thesis Structure



2 Chapter 2: Review Paper

2.1 Introduction

This chapter will document an exploration of the relevant literature pertaining to the research topic. The chapter comprises two sections. The first section will begin by introducing the concept of self-determination. This will be followed by an overview of key theoretical frameworks, namely, Self-Determination Theory (SDT) (Deci & Ryan, 1985; Ryan & Deci, 2017) and Basic Psychological Needs Theory (BPNT) (Ryan, 1995). This will be succeeded by an exploration of need satisfaction and frustration within educational contexts. Thereafter, policy and context, both nationally and internationally, will be explored. Subsequently, additional educational needs (AEN) will be defined and discussed, focusing on intellectual difference (ID) and Down syndrome (DS).

Within the second section of the chapter, literature relating to self-determination and ID will be systematically reviewed. This review will be conducted in two phases. The first phase will examine current knowledge about self-determination and ID while the second phase will explore the concept of self-determination among students with ID in the education context. Using a Weight of Evidence (Gough, 2007) framework, findings from the selected studies will be analysed. Arising from this literature review, implications for the current study will be outlined. Subsequent to this review of literature, the research question for the current study will be presented.

2.2 Self-Determination Theory

2.2.1 Overview of Self-Determination Theory

SDT (Deci & Ryan, 1985; Ryan & Deci, 2017) provides a broad framework for exploring and understanding human motivation, personality development, and wellness. The theory proposes that although individuals have an inherent tendency toward growth and flourishing, they also have vulnerabilities for defensiveness and pathological functioning (Vansteenkiste & Ryan, 2013). As an organismic meta-theory, SDT assumes that "rather than being naturally passive entities whose functioning is determined by contextual factors, individuals are proactive organisms that have the inclination to share and optimise their own life conditions" (Vansteenkiste & Ryan, 2013, p. 264). SDT postulates that while individuals have innate propensities toward psychological growth and integration, these tendencies cannot be realised without certain basic psychological needs, namely, autonomy, competence, and relatedness (Ryan & Deci, 2020). Whereas the satisfaction of

autonomy, competence, and relatedness promotes well-being, integration, and adjustment, the frustration of these psychological needs contributes to ill-being, psychopathology, and problem behaviour (Vansteenkiste et al., 2023).

SDT is a macro-theory and encompasses six mini-theories (Ryan & Deci, 2017). These mini-theories have developed over time based on findings from clinical settings and real-world research. The first mini-theory, *Cognitive Evaluation Theory* (Deci & Ryan, 1980), focused exclusively on intrinsic motivation. It explores how social contexts and events can facilitate or undermine intrinsic motivation. Thereafter, SDT expanded to include extrinsic motivation and *Organismic Integration Theory* (OIT) (Ryan & Connell, 1989) was developed. With regard to extrinsic motivation, this mini-theory focuses on the process of internalisation. That is, OIT explores how extrinsically motivation behaviours become autonomous (Ryan & Deci, 2017). Building on this broader understanding of motivation, a third mini-theory, *Causality Orientations Theory* (Deci & Ryan, 1985), was introduced. This mini-theory explores individual differences in people's motivational orientations and proposes three general causality orientations (autonomy orientation, controlled orientation, and impersonal orientation).

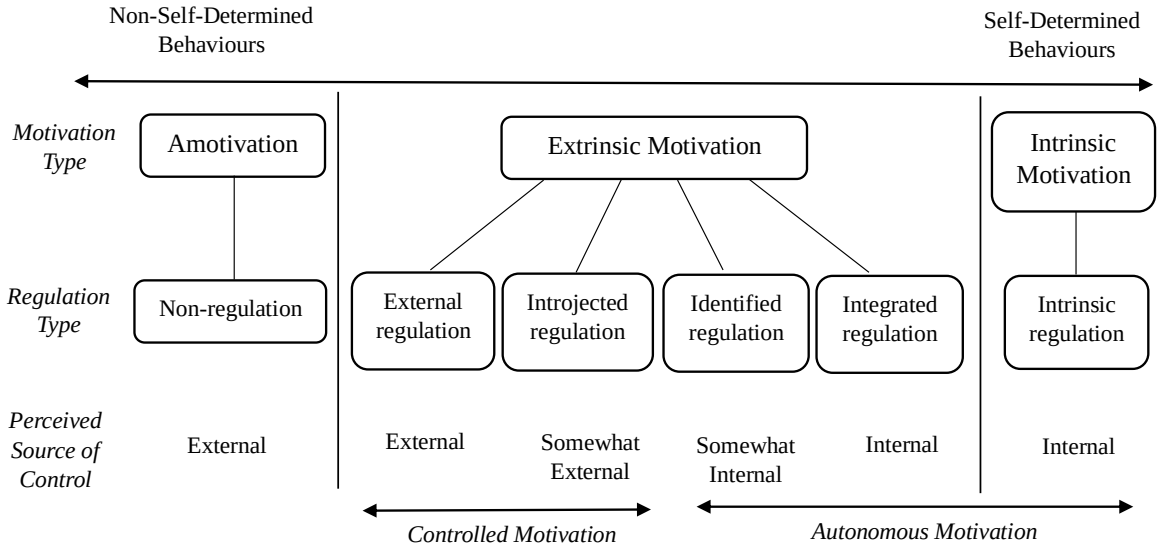
Having explored the factors which support optimal motivation, SDT incorporated a fourth mini-theory, *Basic Psychological Needs Theory* (BPNT) (Deci & Ryan, 2000; Ryan & Deci, 2002), which focuses on the universal importance of autonomy, competence, and relatedness for psychological health and well-being. BPNT explores how need satisfaction contributes to positive outcomes such as vitality and well-being, and need frustration leads to negative outcomes such as psychopathology and defensiveness. Building upon BPNT, the fifth mini-theory, *Goals Contents Theory* (Vansteenkiste et al., 2010), focuses on individuals' life goals and explores differences between extrinsic and intrinsic goals. The final mini-theory, *Relationships Motivation Theory* (RMT) (Ryan & Deci, 2017), concerns the development and maintenance of high-quality close relationships. RMT focuses on mutual need satisfaction within relationships and the processes through which these high-quality relationships are promoted.

As noted above, SDT initially focused on intrinsic motivation and subsequently expanded to incorporate extrinsic motivation (Deci & Ryan, 1980; Ryan & Connell, 1989). As illustrated in Figure 2.1, a taxonomy of regulatory styles was developed to differentiate between intrinsic motivation, extrinsic motivation, and amotivation (Ryan & Deci, 2000; Ryan & Deci, 2017).

Intrinsic motivation occurs when an individual engages in an activity because of the inherent enjoyment and satisfaction they derive from the behaviour (Deci & Ryan, 2000). SDT identifies four types of extrinsic motivation (Ryan & Deci, 2017). *External regulation* refers to behaviours driven by external contingencies such as rewards or punishments and represents the most controlled form of extrinsic motivation (Ryan & Deci, 2017). *Introjected regulation* pertains to behaviours that are regulated by internal rewards such as promoting self-esteem or avoiding shame, and represents another form of controlled motivation (Ryan & Deci, 2020). In contrast to *external* and *introjected regulation*, *identified regulation* and *integrated regulation* represent autonomous forms of motivation. *Identified regulation* refers to motivation that occurs when an individual identifies with the value of an action and considers the activity to be worthwhile and important (Ryan & Deci, 2020). *Integrated regulation* represents the most autonomous form of extrinsic motivation and occurs when an individual values an activity, and feels that it aligns with their core values (Ryan & Deci, 2017). Finally, SDT considers *amotivation* which refers to a state whereby an individual lacks intention or reason to act (Ryan & Deci, 2017). As demonstrated in Figure 2.1, SDT distinguishes between autonomous and controlled motivation (Ryan & Deci, 2017). Autonomous motivation means acting volitionally with a sense of choice, while controlled motivation involves feeling pressured to behave in a particular way (Ryan & Deci, 2022).

Figure 2.1

Continuum of Motivation within SDT (adapted from Ryan & Deci, 2017)



2.2.2 Basic Psychological Needs Theory

BPNT (Deci & Ryan, 2000; Ryan & Deci, 2002), a core sub-theory of SDT, provides the theoretical framework upon which the current study is based. Within BPNT, basic psychological needs refer to psychological nutrients that are *essential* for an individual's health, integrity, and growth (Ryan, 1995; Ryan & Deci, 2017). Moreover, BPNT predicts that vulnerability for psychopathology, maladaptive functioning, and defensiveness arises when these needs are frustrated (Vansteenkiste et al., 2023). As noted above, autonomy, competence, and relatedness have been formally recognised as basic psychological needs (Deci & Ryan, 2000). Autonomy refers to the experience of volition and authenticity in relation to one's actions and decisions. When satisfied, an individual experiences a sense of integrity as their thoughts, feelings, and actions are authentic. When frustrated, an individual feels pressured or compelled to behave in a particular manner (Vansteenkiste et al., 2020). Competence relates to the experience of mastery and effectiveness. When frustrated, an individual experiences a sense of incompetence and helplessness (Vansteenkiste et al., 2023). Relatedness pertains to the experience of warmth, bonding, and care. When satisfied, an individual experiences a sense of belonging and connection with others. Conversely, relatedness frustration may give rise to feelings of loneliness and social isolation (Vansteenkiste et al., 2023).

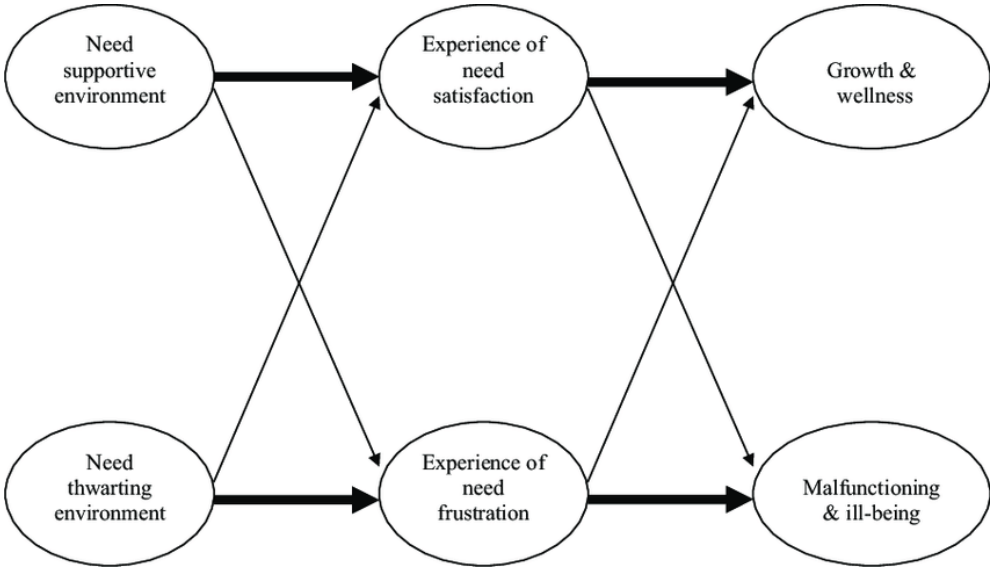
2.2.2.1 Need Satisfaction and Need Frustration. Whereas BPNT initially focused on the 'bright' side of human development by exploring need satisfaction and need supports (Ryan, 1995), research conducted over the past decade has shed light on the 'dark' side of human functioning by examining need frustration and need thwarting experiences (e.g., Bartholomew et al., 2011a; Haerens et al., 2016; Hughes et al., 2023). Accordingly, BPNT focuses on need satisfaction and need frustration, proposing that need frustration gives rise to "a stronger and more threatening experience than the mere absence of its fulfilment" (Vansteenkiste et al., 2020, p. 3). Moreover, SDT researchers distinguish between need frustration and need dissatisfaction or unfulfillment (Bartholomew et al., 2011b; Vansteenkiste & Ryan, 2013). Need frustration involves the direct obstruction of an individual's psychological needs within a social context, whereas need dissatisfaction occurs when an individual is indirectly prevented from experiencing need satisfaction (Vansteenkiste & Ryan, 2013; Hughes et al., 2023).

Need frustration happens when an individual's psychological needs are thwarted in a social context (Vansteenkiste & Ryan, 2013). In contrast, need satisfaction is experienced when an individual's needs are supported and nurtured within a social context (Ryan & Deci, 2017). Research has consistently demonstrated the benefits of need satisfaction for individuals including well-being, intrinsic motivation, positive affect, and engagement in different domains such as education (Conesa et al., 2022), physical activity (Teixeria et al., 2018), and the workplace (Van den Broeck et al., 2016). On the other hand, studies have illuminated the negative, and indeed harmful, impacts of need frustration such as ill-being (Bartholomew et al., 2011a), stress (Olafsen et al., 2017), controlled motivation, and amotivation (Bartholomew et al., 2018). Furthermore, in response to need frustration, individuals may demonstrate compensatory behaviours such as oppositional defiance, rigid behavioural patterns, and reduced self-control (Vansteenkiste & Ryan, 2013).

As outlined in Figure 2.2, the dual process model (Vansteenkiste & Ryan, 2013; Vansteenkiste et al., 2023) illuminates the distinction between need satisfaction and need frustration (Bartholomew et al., 2011b; Vansteenkiste & Ryan, 2013). Reflecting the essential role of the basic psychological needs, the model outlines two primary pathways of human functioning. First, stemming from a need-supportive environment, the model illustrates a 'bright' pathway from need satisfaction to well-being. In contrast, the model also depicts a 'dark' pathway from need frustration to ill-being which is derived from a need-thwarting environment (Vansteenkiste & Ryan, 2013; Vansteenkiste et al., 2023).

Figure 2.2

Dual-Process Model, as sourced from Vansteenkiste & Ryan (2013, p. 265)



2.2.2.2 Need-Supportive and Need-Thwarting Contexts. Within BPNT, researchers have explored the practices and behaviours associated with need-supportive and need-thwarting contexts (Vansteenkiste et al., 2020). In social contexts, SDT proposes that socialising agents (e.g., teachers and parents) may be need supportive, need depriving, or need thwarting (Vansteenkiste & Ryan, 2013). Whereas need thwarting involves active obstruction of students' basic psychological needs, a need depriving style implies a more passive and indirect approach (Hughes et al., 2023). Within educational contexts, need-supportive practices include approaches that nurture students' basic psychological needs, while need-thwarting practices refer to behaviours that actively inhibit or obstruct students' needs (Howard et al., 2024).

Concerning contextual need supports, a significant body of research has explored the concept of autonomy support within educational settings (e.g., Patall et al., 2018; Reeve, 2009; Reeve & Cheon, 2021). Autonomy support refers to behaviours that support students' experiences of autonomy. Examples include providing meaningful choice to students, being open to students' suggestions, adapting lessons to suit students' preferences, and providing rationales (Ahmadi et al., 2023; Reeve & Cheon, 2021). Competence support involves strategies that promote students' perceptions of competence. These include providing optimal challenges, offering task-specific feedback, and acknowledging students' effort and improvements (Ahmadi et al., 2023). Relatedness support refers to practices that nurture students' experiences of relatedness. These include demonstrating empathy, expressing warmth and affection, and providing unconditional positive regard (Ahmadi et al., 2023).

On the other hand, contextual need thwarts include need-thwarting behaviours that actively frustrate students' basic psychological needs (Howard et al., 2024). Autonomy-thwarting behaviours are also referred to as controlling behaviours and have been studied by SDT researchers over the past decade (e.g., Bartholomew et al., 2011a; Haerens et al., 2015). In educational settings, autonomy-thwarting practices include using commands, pressuring students to attain teacher-prescribed goals, and using rewards and punishment to promote compliance (Howard et al. 2024; Reeve & Cheon, 2021). Competence-thwarting practices make students feel ineffective and incompetent and involve providing vague feedback or criticism, comparing peers to each other, and criticising characteristics that students are unable to change (Ahmadi et al., 2023). Finally, within school contexts, relatedness-thwarting occurs when teachers use harsh and intimidating language, treat students unfairly in terms of praise and punishment, and are ignorant or sarcastic toward students (Ahmadi et al., 2023).

There is a large volume of empirical literature exploring the impact of contextual need supports and need thwarts on students' outcomes within educational settings. Much of this research has focused on the concept of autonomy support (e.g., Reeve & Cheon, 2021). Findings from an experimental study of 2,227 middle and high school students by Cheon et al. (2023) found that the use of an autonomy-supportive teaching intervention promoted prosocial behaviour, need satisfaction, and a supportive classroom climate. Patall et al. (2018) examined the impact of autonomy-supportive and autonomy-thwarting practices on students' motivation and engagement in high school settings. These researchers found that perceived autonomy support enhanced students' autonomous motivation and engagement, whereas perceived autonomy thwarting increased students' controlled motivation and disaffection (Patall et al., 2018).

Relatedly, competence satisfaction has been found to be associated with prosocial behaviour at school (Tian et al., 2018), positive affect (Tian et al., 2014), and autonomous student motivation (Vasconcellos et al., 2020). Regarding relatedness, Sparks et al. (2017) conducted an experimental study involving 383 high school students to explore the impact of a relatedness-supportive teaching programme within physical education (PE) classes. These researchers found that, in comparison to the control group, students in the intervention group reported higher levels of PE enjoyment and confidence in their teacher's ability. On the other hand, findings from a meta-analysis by Howard et al. (2024) highlighted the negative student outcomes associated with need-

thwarting behaviours in educational contexts. These included significant and negative correlations between autonomy thwarting and academic performance, engagement, and emotional well-being; a negative association between competence thwarting and engagement; and positive relationships between relatedness thwarting and general ill-being and externalised misconduct (Howard et al., 2024).

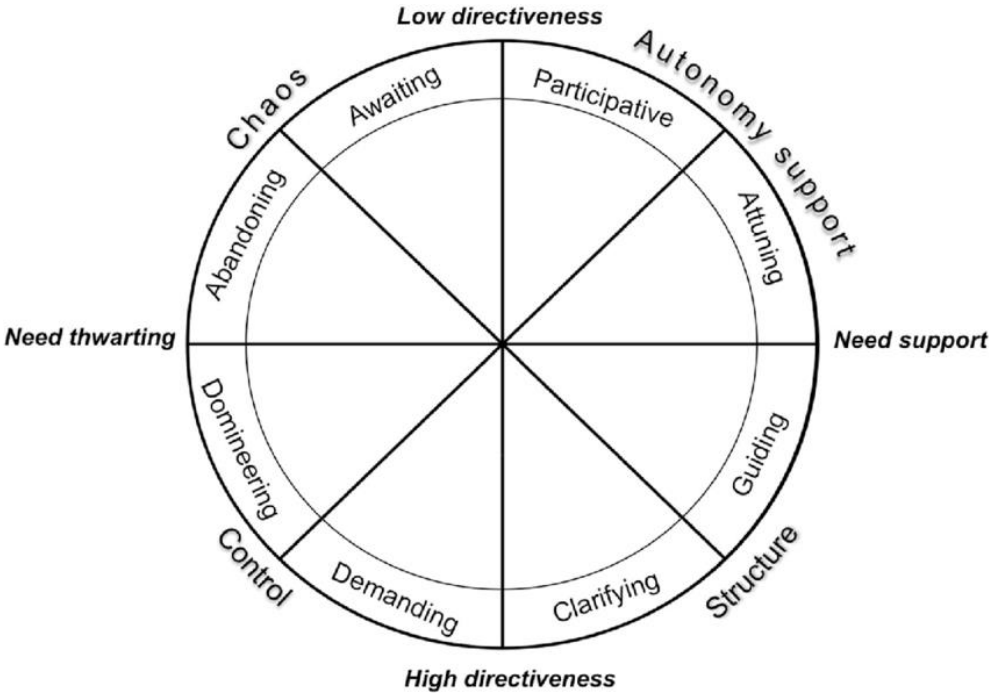
2.2.2.3 Teachers' Motivational Styles. In a similar vein, SDT researchers have explored the impact of teachers' motivational styles on students' outcomes in educational contexts (e.g., Aelterman et al., 2019; Cohen et al., 2022; Reeve, 2009). Findings from empirical studies have demonstrated that an autonomy-supportive motivating style is related to favourable student outcomes. Specifically, in a cross-sectional study involving 1,036 high school students, Vansteenkiste et al. (2012) found that a teaching style characterised by perceived autonomy support and clear expectations (i.e., structure) was associated with positive student outcomes. These included higher levels of autonomous student motivation, greater student engagement with self-regulated learning strategies, and lower levels of problem behaviour (Vansteenkiste et al., 2012). In a related manner, Jang et al. (2010) found that the use of autonomy support and structure predicted students' behavioural engagement in high school settings. Contrastingly, researchers have found that a controlling motivating style is associated with negative student outcomes (Haerens et al., 2016). To illustrate, within the PE context, Bartholomew et al. (2018) found that perceived controlling teaching was associated with maladaptive outcomes including controlled motivation and amotivation, with need frustration mediating these relationships. Haerens et al. (2015) demonstrated similar relationships between controlling teaching and controlled motivation and amotivation among secondary school students, and found that a controlling teaching style was related to oppositional defiance.

Relatedly, when applied to educational contexts, the dual-process model helps to explain students' need experiences and functioning in school (Jang et al., 2016). That is, the model proposes that a controlling teaching style stimulates the 'dark' side of students' functioning and motivation (i.e., controlled motivation, amotivation, and disengagement) through need frustration, whereas an autonomy-supportive teaching style promotes the 'bright' side of students' functioning and motivation such as engagement and autonomous motivation through need satisfaction (Haerens et al., 2015; Jang et al., 2016).

More recently, Aelterman and colleagues (2019) proposed a circumplex model (see Figure 2.3) which identifies four main motivational teaching styles. Within the model, the researchers identify two need-supportive motivating styles, autonomy support and structure, and two need-thwarting demotivating styles, control and chaos. To provide a more refined understanding of a teacher's motivating style, Aelterman et al. (2019) divide these four main styles into eight subareas. Thus, the model provides clarity and precision about the approaches which can be utilised by teachers to support or thwart students' basic psychological needs in classroom settings. Ahmadi et al. (2023) have further enhanced understanding of the circumplex model and need-supportive and need-thwarting teaching practices by outlining specific behaviours that demonstrate support and thwarting for the basic psychological needs within educational settings.

Figure 2.3

Circumplex Model, as sourced from Aelterman et al. (2019, p. 499)



Findings from empirical studies (e.g., Aelterman et al., 2019; Delrue et al., 2019) indicate that certain subareas of the circumplex model such as the guiding and attuning approach are associated with adaptive outcomes, while other subareas such as the domineering and abandoning approach are related to maladaptive outcomes. Specifically, Aelterman et al. (2019) found that the attuning and guiding approach were positively related to teachers' autonomous motivation to

teach, student rated teacher quality, and students' autonomous motivation. On the other hand, teachers' controlled motivation and depersonalisation were positively related to the abandoning and domineering approach. Relatedly, in a sporting context, Delrue et al. (2019) used the circumplex model to explore different coaching styles and found the strongest positive correlations between coaches' and athletes' need satisfaction and the attuning and guiding approach. Similar patterns emerged for athletes' autonomous motivation. Contrastingly, for need frustration, the strongest positive associations were observed for the abandoning approach for coaches, and for the abandoning and domineering approach for athletes. Similar patterns were demonstrated for controlled motivation and amotivation.

Interestingly, some researchers have explored the relationship between approaches in the circumplex model and certain antecedents such as teachers' motivation type, need experiences, and mindset. To illustrate, in a study involving 357 higher education teachers, Vermote et al. (2020) found that autonomous motivation and a growth mindset were positively related to need-supportive approaches (i.e., guiding and attuning), whereas controlled motivation, amotivation, and a fixed mindset were positively associated with need-thwarting approaches (i.e., domineering and abandoning). Furthermore, Moè et al. (2022) found that teachers' need satisfaction was related to motivating behaviours, while need frustration was associated with demotivating teaching behaviours. Teachers' competence and relatedness satisfaction were positively related to all four motivating approaches in the circumplex model.

2.3 Policy and Context

Self-determination and basic psychological need satisfaction are reflected within national and international policy. Over the past few decades, different legislation and initiatives have been proposed by the Irish Government and international organisations to promote children and young people's (CYP) independence, participation, and sense of belonging.

2.3.1 International Context

The need for autonomy is referenced within the UNCRC (United Nations, 1989). Article 12 states that every child is entitled to express their opinions and to have their viewpoints considered and taken seriously. With regard to children with AEN, Article 23 alludes to the importance of promoting independence by stating that children with disabilities "should enjoy a full and decent life, in conditions which ensure dignity, promote self-reliance and facilitate the

child's active participation in the community" (United Nations, 1989, p. 10). Similar views are echoed within the UNCRPD (United Nations, 2006). The convention acknowledges the importance of autonomy, choice, decision-making, and independence for individuals with AEN. Moreover, Article 24 refers to the need for competence, proposing that students with additional needs should be provided with the necessary supports to enable them to fulfil their potential and to "maximise (their) academic and social development" (United Nations, 2006, p. 17).

Alongside these rights-based policy documents, the topics of self-determination and basic psychological needs are referenced within other international initiatives. These include the *Wellbeing and Mental Health at School: Guidelines for School Leaders, Educators, and Teachers* (European Commission, 2024) and the *EU Strategy on the Rights of the Child* (European Commission, 2021). In terms of education, the concept of *student agency* represents one of the seven key elements within the *OECD Learning Compass 2030* (Organisation for Economic Co-Operation and Development [OECD], 2019). This framework outlines the knowledge, skills, competencies, and attitudes required by students to thrive and flourish in the future. Reflecting the constructs of self-determination and autonomy, student agency is defined as "the belief that students have the will and the ability to positively influence their own lives … the capacity to set a goal, reflect and act responsibly" (OECD, 2019, p. 16). Furthermore, student agency refers to the development of self-efficacy and a sense of belonging, and develops within the context of supportive relationships (OECD, 2019). These factors relate to students' needs for competence and relatedness.

2.3.2 National Context

Similarly, in the Irish context, the concepts of self-determination, autonomy, competence, and relatedness have been considered within national policy. With respect to students with AEN, self-determination and the need for autonomy are reflected in the *Education for Persons with Special Educational Needs* (EPSEN) *Act* (Oireachtas, 2004). This Act stipulates that students with AEN should be enabled to develop the skills needed to live independent and fulfilled lives, and to participate in society to the best of their ability.

Within the *Better Outcomes, Brighter Futures: the National Policy Framework for Children and Young People 2014-2020* (Department of Children and Youth Affairs [DCYA], 2014), competence and relatedness align with two of the desired outcomes for CYP. These include

that CYP are "achieving their full potential in all areas of learning and development" and are "connected, respected, and contributing to their world" (DCYA, 2014, p. xiv). Stemming from this framework, the importance of promoting children's autonomy, decision-making, and participation is acknowledged in the *Young Ireland: National Policy Framework for Children and Young People 2023-2028* (DCEDIY, 2023) and the *Participation of Children and Young People: Action Plan 2024-2028* (DCEDIY, 2024). The latter publication, which is underpinned by Lundy's (2007) *Model of Participation,* proposes specific actions for enhancing children's participation within decision-making. Notably, the Action Plan intends to "embed the voice of children and young people … in the education system" and "develop participation structures that are inclusive, accessible and safe for all … including those who need additional supports in order to engage and participate" (DCEDIY, 2024, p. 15).

In a related manner, the significance of basic psychological need satisfaction is highlighted in Irish educational policy. Within *Looking at Our School 2022: A Quality Framework for Primary Schools and Special Schools* (Department of Education, 2024), students' needs for autonomy, competence, and relatedness are reflected in several standards and statements of highly effective practice. In terms of autonomy, the framework proposes that students should "have a sense of ownership of their learning … and (be) able to set meaningful personal goals" (Department of Education, 2024, p. 28). The framework alludes to students' need for competence, stating that, "pupils' enjoyment in learning is evident and arises from a sense of making progress and of achievement" (Department of Education, 2024, p. 26). With regard to relatedness, the framework suggests that "interactions among pupils and between pupils and teachers are respectful and positive, and conducive to wellbeing" (Department of Education, 2024, p. 28). Furthermore, within the *Wellbeing Policy Statement and Framework for Practice* (DES, 2019), the importance of autonomy, competence, and relatedness satisfaction for students' well-being is highlighted. The three needs are considered as part of the multifaceted approach for well-being promotion (DES, 2019). To illustrate, indicators of success include that students "experience a sense of belonging", that "systems are in place so that the voice of the child/young person is heard", and that learning "provides opportunities for success for all" (DES, 2019, p. 36).

In a similar vein, within the recently published *Primary Curriculum Framework* (NCCA, 2023), the basic psychological needs are reflected in the overarching principles and key

competencies underpinning the framework. With regard to self-determination and autonomy, the principle, *Engagement and Participation,* advocates the importance of fostering agency, independence, and decision-making among students. Similarly, the competency entitled, *Being an Active Learner,* promotes the development of the skills, attitudes, knowledge, and values needed to nurture agentic and independent learners. The need for competence relates to several principles including *pedagogy* and *assessment and progression.* In addition, the Framework promotes the use of inclusive learning environments such that students feel "confident and safe so they can engage in meaningful learning and reach their potential" (NCCA, 2023, p. 32). The need for relatedness aligns with the principle of *relationships* which emphasises the importance of caring relationships for students' engagement and motivation.

2.4 Additional Educational Needs

In seeking to define special educational needs (SEN), the National Council for Special Education (NCSE) (2014) proposes that a child's development incorporates many elements including their personality, strengths, and desire to learn. The Council adopts the following definition of SEN which is outlined in the EPSEN Act (Oireachtas, 2004):

> … a restriction in the capacity of the person to participate in and benefit from education on account of an enduring physical, sensory, mental health or learning disability, or any other condition which results in a person learning differently from a person without that condition.

The prevalence of AEN within Irish schools has been explored over the past few decades. Interestingly, arising in part from the lack of a universally accepted classification system for SEN, differences have been observed among prevalence rates. Banks and McCoy (2011) examined data from Growing Up in Ireland (Department of Health, 2010), a national longitudinal study of children, and estimated a prevalence rate of 25% for SEN among nine-year-olds. On the other hand, the European Agency for Special Needs and Inclusive Education (2016) reported a prevalence rate of 5% for Ireland. Alongside differences in classification systems and categories, it is argued that prevalence statistics may be influenced by changes in relation to accessing supports and psychological assessments (Cosgrove et al., 2018).

2.4.1 Intellectual Disability

The term *intellectual disability* refers to significant differences in an individual's intellectual and adaptive functioning in conceptual, social, and practical domains (American Psychiatric Association [APA], 2022). These differences must occur during the developmental period (APA, 2022) and impact an individual's ability to learn, apply new skills, and function in daily life (National Centre on Birth Defects and Developmental Disabilities, n.d.).

In recent years, there has been much debate about the use of terminology pertaining to additional needs and differences. It is argued that the language used within society to describe differences is of social, political, and economic importance (Wendell, 1996). Over the past decades, terms used to refer to individuals with learning differences have included "mental retardation", "mentally deficient", and "mentally handicapped". Such terms were previously used for medical classification and welfare distribution purposes (Cluley, 2017). For progressive reasons, in America, the term "mental retardation" has been replaced with "intellectual disability", while in England, the term "mentally handicapped" has been replaced with "learning disabilities". Subsequently, international diagnostic manuals have been updated to reflect progressive changes in terminology. As opposed to using the term "mental retardation", the Diagnostic and Statistical Manual of Mental Disorders (APA, 2013; 2022) has adopted the term "intellectual developmental disorder (intellectual disability)". Similarly, within the International Classification of Diseases, Eleventh Edition, the term "disorders of intellectual disability" has been included to replace the term "mental retardation". Consistent with other countries such as Australia, New Zealand, and Canada, in Ireland, the term "intellectual disability" has been adopted.

2.4.2 Neurodiversity

Over the past few decades, the concept of neurodiversity (Singer, 1999) has gained prominence within the field of educational psychology. Stemming from the autistic community, neurodiversity represents a movement away from traditional, medical models of disability. Neurodiversity promotes the belief that neurodevelopmental differences should not be viewed as conditions or disorders to be treated or cured (Ortega, 2009). Within the neurodiversity paradigm, neurological differences such as autism, dyslexia, and ID are considered natural and normal variations of the human brain (Griffin & Pollak, 2009). Another core assumption of the neurodiversity paradigm is that neurological differences are valuable and should be appreciated

(Walker, 2012). However, proponents of neurodiversity (e.g., den Houting, 2019) argue that the concept does not seek to imply that individuals with neurodevelopmental differences do not require support. Within the autistic community, neurodiversity advocates argue that autistic individuals should be accepted as important members of society and be given access to suitable supports to meet their needs (den Houting, 2019).

Within the neurodiversity paradigm, much consideration has been given to the terminology used to describe neurological differences. The importance of language has been highlighted by Monk et al. (2022) who argue that, "well-informed use of terminology can empower and support people, while also changing attitudes of the broader community" (p. 791). In contrast to medicalised, deficit-based language (e.g., disorder, cure), advocates of the neurodiversity movement propose the use of neuro-affirmative language (e.g., neurodevelopmental difference, specific support) (Monk et al., 2022). Therefore, in the current thesis, in line with neuro-affirmative language, the term "intellectual difference" will be adopted by the researcher.

2.4.3 Down Syndrome

Down syndrome (DS) is a genetic condition which is usually caused by the presence of an additional copy of chromosome 21. DS is one of the most common genetic causes of ID among individuals (Clarke & Faragher, 2014) and significantly impacts an individual's cognitive and behavioural development across the lifespan (Grieco et al., 2015). While there is considerable individual variation among people with DS, they demonstrate some common cognitive and behavioural profiles that develop within specific developmental periods (Grieco et al., 2015).

In terms of cognitive functioning, for individuals with DS, the processing of verbal information represents an area of need relative to the processing of visual information (Miller, 1999). Language skills represent an area for development among children with DS. Specific areas of relative need may include expressive language, syntax, articulation, and verbal working memory (Grieco et al., 2015). Additionally, verbal and nonverbal long-term memory may represent areas of relative need for individuals with DS (Kogan et al., 2009). Conversely, children with DS can demonstrate relative strengths in nonverbal cognitive abilities (Channell et al., 2014). Regarding social, emotional, and behavioural development, areas of relative strength include social motivation, observational learning, and empathetic behaviour (Kasari, et al., 2003; Reed et al., 2011). Individuals with DS are often perceived as affectionate, sociable, and cheerful (Fidler et al.,

2008). Concerning areas for development, previous studies suggest that these may include social distraction, task persistence, and stubbornness (Kasari & Freeman, 2001).

2.4.4 Educational Provision for Students with Additional Education Needs

The provision of education for students with AEN has been considered for many decades. Much of this debate has focused on the concept of inclusive education. Within the Irish education system, seminal publications include the *SERC Report* (SERC, 1993), the *Salamanca Statement and Framework for Action on Special Needs Education* (UNESCO, 1994), the *EPSEN Act* (Oireachtas, 2004), and *Special Educational Needs: A Continuum of Support* (Department of Education and Science, 2007). There is a consensus among policy-makers that students with additional needs and differences should be educated within mainstream settings and inclusive environments, and that they should have the same opportunities to benefit from education as their typically developing peers (Oireachtas, 2004; UNESCO, 1994).

As recommended in the *SERC Report* (SERC, 1993), students with SEN are supported using a continuum of educational provision. The supports range from full-time enrolment in mainstream classes to full-time enrolment in special schools. Placement options for students with SEN include the following: (a) a mainstream class with additional support from Special Education Teachers; (b) a special class in a mainstream school; and (c) a special school. SNAs are allocated to mainstream and special schools to support students with SEN who have significant care needs (NCSE, 2013).

2.4.4.1 Educational Provision for Students with Down syndrome. As outlined above, according to Article 24 of the *UN Convention on the Rights of Persons with Disabilities* (United Nations, 2006), students with SEN, including DS, are entitled to access an inclusive and equitable quality education. Over the past decades, Irish government policy has advocated for the inclusion of students with SEN in mainstream schools. During this time, in line with other countries such as England (Van Herwegen et al., 2018), there has been an increase in the number of students with ID attending mainstream schools in Ireland. According to the Annual Report of the National Intellectual Disability Database Committee 2014 (Kelly, 2015), the number of students with ID attending mainstream schools increased from 703 in 1996 to 2,106 in 2014. Meanwhile, the number of students with ID attending special classes at primary level decreased from 799 in 1996 to 398 in 2014.

The inclusion of students with DS in mainstream schools is promoted by advocacy groups and organisations including Down Syndrome Ireland (DSI) and Down Syndrome International (DSi). According to DSi (Faragher et al., 2020), inclusive education should enable all students to attend their local school and to learn and participate within the educational setting. Moreover, the organisation argues that, as part of an inclusive education, students with DS should be provided with opportunities to nurture their interests, develop friendships, and foster independence (Faragher et al., 2020). In Ireland, similar views are echoed by DSI (2018) who argue that students with DS have the right to attend their local mainstream school. DSI (2018) proposes that students with DS should have access to the necessary supports to enable them to access the curriculum. Thus, it could be argued that, within mainstream settings, students with DS should be appropriately supported in their environment to reach their full potential, academically and socially.

2.5 Student Voice

2.5.1 Eliciting the Voices of Students with Additional Educational Needs

Within education, the importance of recognising the voices of students with AEN has gained prominence within policy and research. Arising in part from the UNCRC (United Nations, 1989), the concept of learner voice has been advocated for many years. As proposed by the UNCRC (United Nations, 1989), CYP have the right to express their views and to have their opinions considered. Stemming from a rights-based perspective, learner voice has been promoted within policy documents in Ireland such as *Looking at Our Schools 2022: A Quality Framework for Primary and Special Schools* (Department of Education, 2024). However, despite policy documentation, there remains a gap between theory and practice in terms of the inclusion of students with AEN within decision-making (Lundy, 2007; Robinson, 2014). As noted by Lundy (2007), CYP with additional needs are often excluded from participating in decision-making processes because of a "double denial" (p. 935) of their voice. That is, they are excluded due to doubts about their ability to formulate and articulate a view for two reasons, namely, being a child, *and* being a child with additional needs.

Many researchers (e.g., Bloom et al., 2020a; Robinson, 2014) argue that consideration should be given to how the views of marginalised students, including those with AEN, can be

elicited. As highlighted by Lundy (2007), Article 12 of the UNCRC should be considered alongside other articles, including Article 13 which states:

> The child shall have the right to freedom of expression; this right shall include freedom to seek, receive and impart information and ideas of all kinds, regardless of frontiers, either orally, in writing or in print, in the form of art, or through any other media of the child's choice.

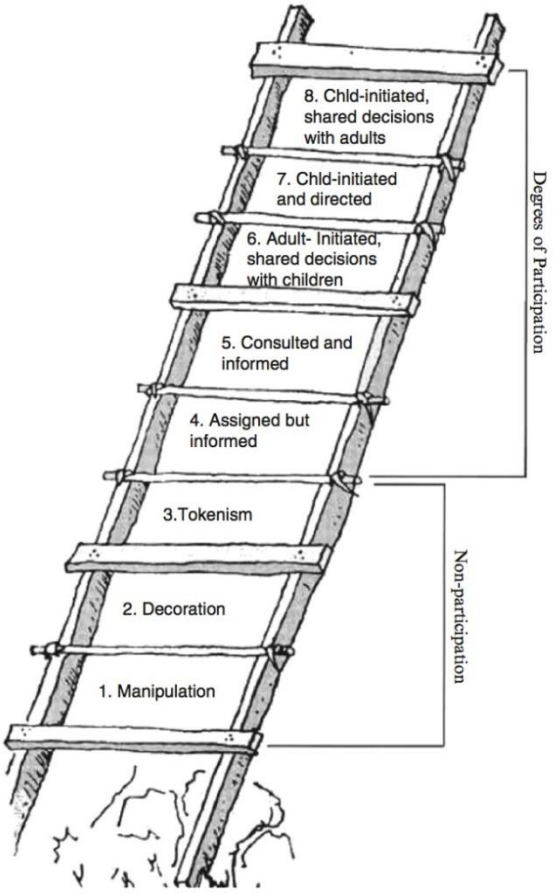
Accordingly, Lundy (2007) proposes that CYP with AEN should be provided with a range of tools and approaches to enable their voices to be heard.

2.5.2 Models of Participation

Over the past three decades, different models of child participation (e.g., Hart, 1992; Lundy, 2007) have been proposed to explore children's involvement in research and practice. In his seminal paper entitled, *Children's Participation: From Tokenism to Citizenship,* Hart (1992) introduced the *Ladder of Participation.* As illustrated in Figure 2.4, this influential model outlines eights steps of children's involvement, each denoting an increasing level of participation. The bottom three rungs of the ladder are described as *non-participation*, while the five upper rungs refer to *degrees of participation* (Hart, 1992). Among Hart's (1992) categories of non-participation is *tokenism.* In relation to student voice, this term refers to "the experiences of children whose views have been sought by adults but not taken seriously" (Lundy, 2018, p. 342). This concept has been contrasted with the experience of meaningful involvement (Sewell, 2020). The latter form of participation is deemed to be reflective of high quality participation (Sewell, 2020). This type of involvement pertains to the upper levels of Hart's (1992) *Ladder of Participation.* Notably, however, Lundy (2018) has defended the notion of tokenistic participation arguing that it may provide a positive learning experience for children, instigate further action, and that adults may benefit from *all* opportunities to engage with and consult children.

Figure 2.4

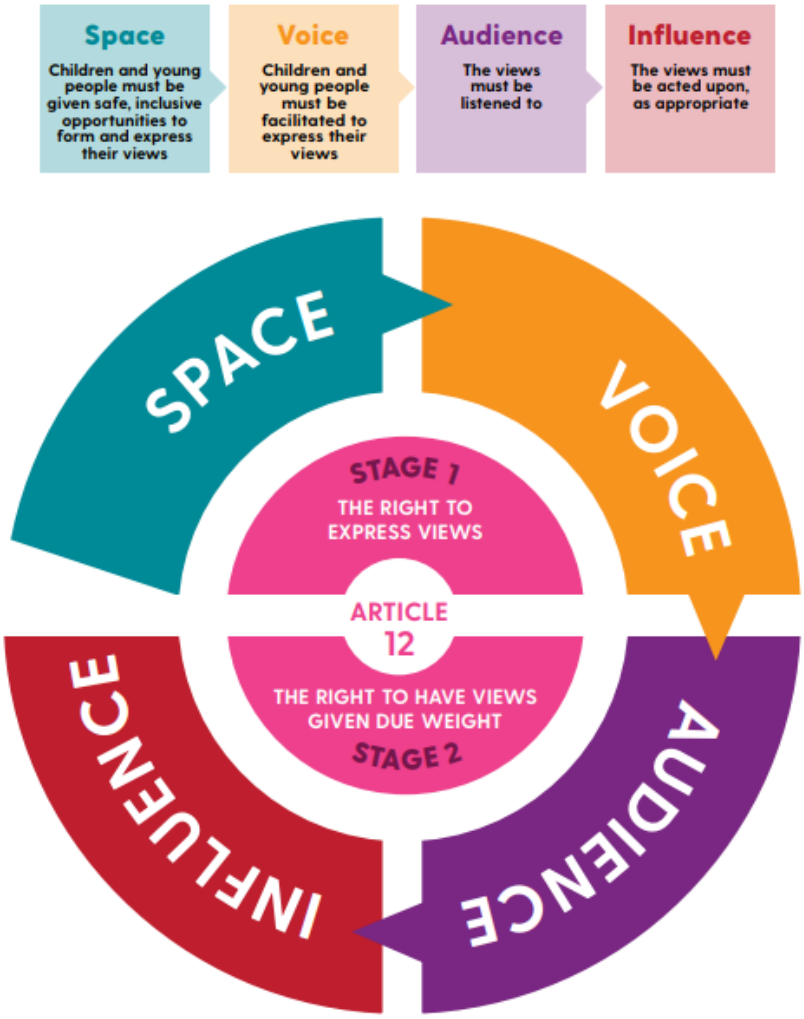
Hart's (1992) Ladder of Participation, as sourced from Hart (1992, p. 8)



In a similar manner to Hart (1992), Lundy (2007) identifies four conditions necessary for meaningful student voice, namely, space, voice, audience, and influence (see Figure 2.5). Within her *Model of Participation*, Lundy (2007) proposes that learners should have a space in which they can share their views; a voice to express their opinions; and an audience to listen to their ideas. Furthermore, with regard to influence, Lundy (2007) proposes that students' views should instigate a response and action. Importantly, the latter phases of *audience* and *influence* are deemed critical for the realisation of students' meaningful involvement (Sewell, 2020).

Figure 2.5

Lundy's (2007) Model of Participation, as cited in DCEDIY (2021, p. 15)



2.5.3 Methods to Elicit the Views of Students with Additional Educational Needs

Recent systematic reviews (Bloom et al., 2020a; Lewis-Dagnell et al., 2023) have examined different methods used to explore the views of students with AEN about their educational experiences. Bloom et al. (2020a) explored the approaches used to elicit the voices of children with differences, focusing specifically on children with speech, language, and communication needs. These included *Talking Mats* (Murphy, 1998), *The Mosaic Approach* (Clark & Moss, 2001), *The Ideal School Drawing Technique* (Williams & Hanke, 2007), and focus groups.

Similarly, Lewis-Dagnell et al. (2023) carried out a systematic review to examine methods used in research to elicit the voices of CYP with significant communication and/or cognitive differences about their educational experiences. Based on the findings, Lewis-Dagnell et al. (2023)

highlighted the value of using a "toolbox" (Gray & Winter, 2011, p. 313) to provide children with a variety of methods to enable them to participate. Lewis-Dagnell et al. (2023) observed that most studies utilised multi-modal approaches which incorporated photographs, observations, symbols, sign language, and adapted questionnaires. As recommended by Lewis and Porter (2007), the approaches were often used flexibly to suit the participants' communication preferences. Examples of approaches used within studies to elicit the views of CYP with cognitive differences or DS include: observations and adapted interviews (Hart, 2021); observations, photographs, *Talking Mats*, adapted questionnaires, and the *Mosaic Approach* (Rouvali & Riga, 2021); semi-structured interviews, questionnaires, observations, reports, and interviewers' reflections (Bloom et al., 2020b); adapted interviews using photograph elicitation, Makaton, and *Talking Mats* (Whitehurst, 2007).

The above findings suggest that a holistic understanding of student voice should be embraced within research and practice (Lewis-Dagnell et al., 2023). Students with AEN should be provided with multiple means of expressing their views. Depending on the students' communication needs and preferences, a multi-modal approach for students with AEN might include adapted questionnaires, photographs, symbols, sign language, or adapted interviews. Bloom et al. (2020a) highlight the importance of learner voice stating that a crucial part of enabling a child's participation in education is providing them with a means to express their views.

2.5.3.1 Personal Construct Psychology. To support meaningful student voice, it is argued that researchers should utilise a range of engaging and child-friendly approaches that elicit and reflect the student's view of the world (Sewell, 2020). Personal Construct Psychology (PCP) (Kelly, 1955) offers promising vision in this regard (Sewell, 2020). Griffin (2024) proposed PCP as a suitable approach for addressing the intricacies of Lundy's (2007) *Model of Participation* and incorporating the upper rungs of Hart's (1992) *Ladder of Participation.*

PCP was developed by George Kelly, an American Psychologist, in 1955. Kelly (1955) believed that every individual has their own particular 'lens' through which they view the world. According to PCP, individuals develop personal theories of life, termed constructs, about how the world works. Kelly's (1955) theory posits that individuals construe their experiences in terms of what they are and what they are not. That is, personal constructs are bipolar, which means they are

composed of two opposing sides. Kelly (1955) proposed that both similarity and contrast are necessary to understand the meaning a person gives to events.

As outlined by Burr and colleagues (2014), techniques based upon PCP are suitable for use within qualitative research. Because PCP focuses on an individual's subjective experience, the approaches are useful for exploring issues relating to personal experience and identity (Burr et al., 2014). Additionally, PCP approaches enable researchers to adopt the words and language suggested by participants which can help to promote the participant's voice within the research (Burr et al., 2014). Although PCP approaches are participant-led, they can promote collaboration between the researcher and participant. However, to support the participant-led nature of PCP approaches, it is recommended that researchers consider the degree to which they intervene or provide guidance when participants are completing tasks (Burr et al., 2014).

Previous studies have utilised PCP to explore the voice of students regarding their educational experiences. Different techniques based upon PCP have been used in research with students with AEN. These include *Building the Ideal School with Lego*™ (Morgan-Rose, 2016) and *The Ideal School Drawing Technique* (Williams & Hanke, 2007). Furthermore, using a case study approach, Maxwell (2006) employed a combination of PCP tools to explore the views of 13 students with SEN in primary school about their experiences of school. These included *A Drawing and Its Opposite* (Ravenette, 1999), the *Triadic Sort Technique* (Fransella & Dalton, 1990), and *Laddering* (Landfield, 1971).

2.6 Rationale for Current Review

As outlined at the beginning of this chapter, BPNT (Deci & Ryan, 2000; Ryan & Deci, 2002) posits that three basic psychological needs – autonomy, competence, and relatedness – are essential for promoting psychological health and well-being (Ryan & Deci, 2017). With regard to educational contexts, need satisfaction is related to critical student outcomes including school satisfaction (Tian et al., 2014), engagement, and intrinsic motivation (Conesa et al., 2022). Contrastingly, need frustration is associated with maladaptive student outcomes such as disengagement (Earl et al., 2017) and amotivation (Behzadnia et al., 2023). Considering the proposition within the EPSEN Act (Oireachtas, 2004) that education should enable students with AEN to develop the skills needed to live independent and fulfilled lives, there is merit in advancing knowledge about need satisfaction and self-determination among students with DS. Therefore, to

gain further information, a systematic review was conducted. The review was carried out in two phases. Given the scarcity of research exploring self-determination solely in the context of individuals or students with DS, a decision was made to broaden the review of literature to include participants with ID. The first phase of the review explored current knowledge about self-determination among individuals with ID. Following this, the construct of self-determination among students with ID in educational settings was investigated.

2.7 Systematic Review of Literature

2.8 Systematic Review: Phase One

2.8.1 Review Question

The first phase of the literature review addressed the following review question: *What is known about self-determination and ID?*

2.8.2 Search Strategy

A systematic review of literature was carried out in July 2023 and updated in February 2024 using the following databases: Academic Search Complete, Education Source, ERIC (Education Resources Information Centre), Medline, APA PsycInfo, and APA PsycArticles. These databases were chosen based on their relevance to psychological and educational research. The terms used in the search process are outlined in Table 2.1.

Table 2.1

List of Search Terms (Phase One)

1		2
"self-determin*" OR autonom* OR "need satisfaction"	AND	"intellectual disabilit*" OR "learning disabilit*" OR "intellectual difference" OR "mental retardation" OR "down syndrome" OR "trisomy 21" OR "down's syndrome"

In line with the inclusion criteria (see Table 2.2 below), searches were limited to include articles published in peer-reviewed journals and written in the English language. Results from the databases were compiled, yielding a total of 4,729 papers (Academic Search Complete – 1,079; Education Source – 754; ERIC – 714; Medline – 1,125; APA PsycInfo – 1,042; APA PsycArticles – 15). Duplicates were removed, resulting in a total of 2,626 papers. The studies were title screened and 2,510 were removed. The remaining studies were abstract screened and an additional 66

articles were excluded. Papers excluded during the abstract screening process and reasons for exclusion are outlined in Appendix A. A full text review was carried out on 50 studies. Forty-one studies were excluded during this process (see Appendix B). Nine studies were chosen for inclusion in the review. The studies are presented in Table 2.3 and summarised in Appendix C. The search strategy is outlined in Figure 2.6.

Table 2.2

Criteria for Inclusion and Exclusion (Phase One)

	Criterion	Inclusion Criteria	Exclusion Criteria	Rationale
1.	Journal Type	The study is included in a peer-reviewed journal.	The study is not included in a peer-reviewed journal.	To ensure the study is credible and demonstrates a high standard of quality and methodological rigour.
2.	Language	The study is written in the English language.	The study is not written in the English language.	Accurate translation from the original language is not required.
3.	Participants	Participants have an intellectual disability.	Participants do not have an intellectual disability.	The review question is exploring self-determination among individuals with ID/DS.
4.	Setting	The study explores levels/experiences of self-determination/ need satisfaction among individuals with ID in the general population.	The study explores levels/experiences of self-determination/need satisfaction among individuals with ID in a particular context.	Phase One of the review is exploring self-determination among individuals with ID/DS in the general population.
5.	Data	The study provides primary empirical data.	The study does not provide primary empirical data, e.g., reports or commentaries.	To ensure the findings from previous studies are accurate and original.
6.	Measures	The study includes at least one measure of self-determination/ need satisfaction. Measures may include questionnaires or interviews.	The study does not include any measure of self-determination/ need satisfaction.	The review question is exploring current knowledge about self-determination among individuals with ID/DS.

Table 2.3

Studies Included for Review (Phase One)

References
Álvarez, A. I., Vega Córdova, V., Spencer González, H., González Carrasco, F., Jarpa Azagra, M., & Exss Cid, K. (2022). Levels of self-determination in the ageing population with intellectual disabilities. *British Journal of Learning Disabilities, 50*(4), 494–503. https://doi.org/10.1111/bld.12419
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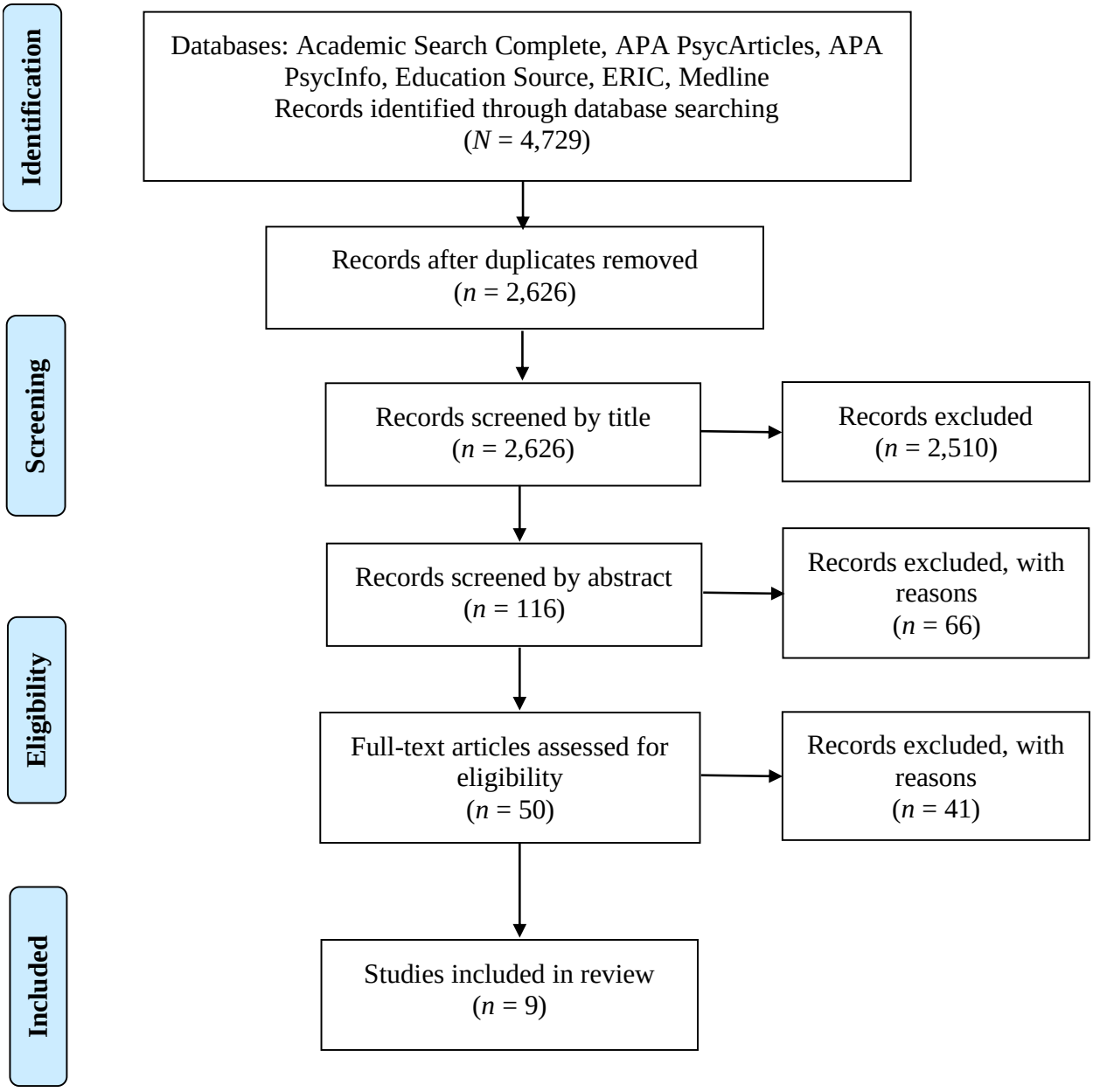
Gaumer Erickson, A. S., Noonan, P. M., Zheng, C., & Brussow, J. A. (2015). The relationship between self-determination and academic achievement for adolescents with intellectual disabilities. *Research in Developmental Disabilities, 36*, 45–54. https://doi.org/10.1016/j.ridd.2014.09.008
Landuran, A., Raynaud, C., & N'kaoua, B. (2022). Cognitive and Motor Skills of People with Down Syndrome According to Their Perceived Self-Determination. *Journal of Developmental & Physical Disabilities, 34*(1), 89–111. https://doi.org/10.1007/s10882-021-09791-z
Mumbardó-Adam, C., Guàrdia, O. J., & Giné, C. (2020). An integrative model of self-determination and related contextual variables in adolescents with and without disabilities. *Journal of Applied Research in Intellectual Disabilities, 33*(5), 856–864. https://doi.org/10.1111/jar.12705
Westera, J. J., van der Molen, M. J., & Schuengel, C. (2023). Basic psychological needs and mental health in adolescents with a mild to borderline intellectual disability. *Journal of Mental Health Research in Intellectual Disabilities.* Advance online publication. https://doi.org/10.1080/19315864.2023.2240732
Wong, P. K. S., & Chow, A. Y. M. (2021). Self-Determination Competencies, (Dis)Agreement in Decision-Making, and Personal Well-Being of Adults with Mild Intellectual Disabilities in Hong Kong. *International Journal of Environmental Research and Public Health, 18*(20). https://doi.org/10.3390/ijerph182010721

Figure 2.6

Prisma Flow Chart (Phase One)



2.8.3 Weight of Evidence

To determine the quality and relevance of the studies included in this review, a Weight of Evidence (WoE) framework (Gough, 2007) was utilised. This incorporated three different elements, namely, WoE A, B, and C. WoE A explores the methodological quality of a study. The criteria and ratings for WoE A are presented in Appendix D and E. WoE B encompasses the appropriateness of a study's research design for the review question. The studies included in this

review were explored using a coding protocol devised by the researcher in line with the inclusion and exclusion criteria. The criteria and ratings for WoE B are outlined in Appendix F. WoE C examines the appropriateness of the characteristics of a study for producing evidence for the review question. WoE C is determined based on judgements, developed by the reviewer, about the participants, setting, and measures used in a study (see Appendix G). An overall weight of evidence (WoE D) was assigned to each of the nine studies (see Table 2.4). All studies were deemed appropriate for inclusion in the review. One study (Frielink et al., 2018) received a high overall rating. Thus, greater weight was given to the findings of this study and its implications for future research. On the other hand, less weight was given to the findings of the study (Di Maggio et al., 2020) which received the lowest overall score.

Table 2.4

Weight of Evidence Ratings (Phase One)

Study	WoE A	WoE B	WoE C	WoE D
Álvarez-Aquado et al. (2021)	3 (High)	2 (Medium)	2 (Medium)	2.3 (Medium)
Di Maggio et al. (2020)	2 (Medium)	2 (Medium)	2 (Medium)	2 (Medium)
Emond Pelletier & Joussemet (2017)	2 (Medium)	3 (High)	2 (Medium)	2.3 (Medium)
Frielink et al. (2018)	2 (Medium)	3 (High)	3 (High)	2.7 (High)
Gaumer Erickson et al. (2015)	2 (Medium)	3 (High)	2 (Medium)	2.3 (Medium)
Landuran et al. (2021)	2 (Medium)	3 (High)	2 (Medium)	2.3 (Medium)
Mumbardó-Adam et al. (2019)	3 (High)	2 (Medium)	2 (Medium)	2.3 (Medium)
Westera et al. (2023)	2 (Medium)	3 (High)	2 (Medium)	2.3 (Medium)
Wong & Chow (2021)	2 (Medium)	2 (Medium)	3 (High)	2.3 (Medium)

Note. < 1.5 = Low; 1.6 – 2.5 = Medium; ≥ 2.5 = High.

2.8.4 Synthesis of Findings

2.8.4.1 Research Design. Eight of the studies (Álvarez-Aguado, 2021; Emond Pelletier & Joussemet, 2017; Frielink et al., 2018; Gaumer-Erickson et al., 2015; Landuran et al., 2021; Mumbardó-Adam et al., 2019; Westera et al., 2023; Wong & Chow, 2021) included in this review employed quantitative research designs. More specifically, one study (Emond Pelletier & Joussemet, 2017) utilised a group experimental design to examine whether the provision of autonomy support promotes a sense of autonomy among individuals with mild ID. Six studies (Frielink et al., 2018; Gaumer Erickson et al., 2015; Landuran et al., 2021; Mumbardó-Adam et al., 2019; Westera et al., 2023; Wong & Chow, 2021) employed correlational designs. Three of these studies (Frielink et al., 2018; Gaumer Erickson et al., 2015; Mumbardó-Adam et al., 2019) used structural equation modelling to analyse the data. One study (Di Maggio et al., 2020) utilised a mixed-method design which included the use of semi-structured interviews and a questionnaire.

2.8.4.2 Participants. All nine studies included in this review recruited individuals with ID as participants. One study (Landuran et al., 2021) recruited participants with DS. Four studies (Emond Pelletier & Joussemet, 2017; Gaumer Erickson et al., 2015; Mumbardó-Adam et al., 2019; Westera et al., 2023) included adolescents. The age of participants included in the nine studies ranged from 11 to 86 years. One study (Álvarez-Aguado et al., 2021) recruited participants aged at least 45 years as the study sought to examine levels of self-determination within the ageing population. Within the quantitative studies, sample sizes ranged from 26 participants (Landuran et al., 2021) to 591 participants (Mumbardó-Adam et al., 2019). In three studies (Di Maggio et al., 2020; Emond Pelletier & Joussemet, 2017; Wong & Chow, 2021), individuals with mild ID were recruited as participants. Two studies (Frielink et al., 2018; Westera et al., 2023) included participants with mild to borderline ID. In another two studies (Álvarez-Aguado et al., 2021; Mumbardó-Adam et al., 2019), participants included individuals with varying levels of ID from mild to severe. Gaumer Erickson et al. (2015) did not provide specific information about the intellectual ability of participants. The study which recruited individuals with DS as participants (Landuran et al., 2021) reported that the standardised IQ of participants ranged from 35 to 84.

2.8.4.3 Measures of Self-Determination and Need Satisfaction. Six studies (Álvarez-Aguado, 2021; Di Maggio et al., 2020; Gaumer Erickson et al., 2015; Landuran et al., 2021; Mumbardó-Adam et al., 2019; Wong & Chow, 2021) included a measure of self-

determination. Two studies (Gaumer Erickson et al., 2015; Landuran et al., 2021) utilised Arc's Self-Determination Scale (Wehmeyer, 1995). This 72-item self-report scale consists of four domains: autonomy, self-regulation, self-realisation, and psychological empowerment. While Landuran et al. (2021) used the original scale, Gaumer Erickson et al. (2015) utilised an adapted version of the scale. In contrast, two other studies (Mumbardó-Adam et al., 2019; Wong & Chow, 2021) used the AIR Self-Determination Scale (Wolman et al., 1994). This 24-item self-report scale measures an individual's capacities and opportunities for self-determination. Mumbardó-Adam et al. (2019) used the Opportunities subscale of a Spanish version of the AIR student report and a Spanish version of the Self-Determination Inventory: Student Report (Shogren et al., 2020). Alternatively, Wong & Chow (2021) utilised a Chinese version of the AIR Self-Determination Scale. Álvarez-Aguado et al. (2021) used an *ad hoc* scale based on the Functional Model of Self-Determination (Wehmeyer, 1999) to explore self-determination levels within the ageing population. Di Maggio et al. (2020) explored the self-determination levels of individuals with mild ID using the Self-Determination Questionnaire-Version for Adults with ID (Soresi et al., 2004).

Three studies (Emond Pelletier & Joussemet, 2017; Frielink et al., 2018; Westera et al., 2023) used scales to measure basic psychological need satisfaction among individuals with ID. In contrast to the studies outlined above, these studies were based upon SDT. Emond Pelletier and Joussemet (2017) utilised the Intrinsic Need Satisfaction Scale (Forest & Mageau, 2008) to measure participants' autonomy, competence, and relatedness satisfaction, with or without the provision of autonomy support. The authors also included the value/usefulness scale of the Intrinsic Motivation Inventory (McAuley et al., 1989) to measure participants' internalisation of the inherent value of the activity in which they were engaged. Similarly, two studies (Frielink et al., 2018; Westera et al., 2023) used the Basic Psychological Need Satisfaction and Frustration Scale – Intellectual Disability (Frielink et al., 2016). The original Basic Psychological Need Satisfaction and Frustration Scale (Chen et al., 2015) was adapted by Frielink et al. (2016) for use among individuals with mild to borderline levels of ID. The 24-item scale assesses satisfaction and frustration of autonomy, competence, and relatedness.

2.8.4.4 Main Findings. In terms of self-determination among individuals with ID, one study (Álvarez-Aguado et al., 2021) provided information about levels of the construct within the ageing population. These researchers found that the self-determination levels of most

participants fell within the low range (39.1%). Some participants demonstrated a medium level of self-determination (33.1%) and other participants reported a high level of self-determination (27.7%). Having explored the variables that affect self-determination among individuals with ID aged 45 years and older, the researchers (Álvarez-Aguado et al., 2021) found a high association between the levels of self-determination and age (r = .883; p < .001), level of ID (r = .891; p < .001), and type of support (r =.801; p < .001). The researchers noted that self-determination levels among adults with mild ID were significantly higher than those with severe ID (SEM = 9.411; p < .001; SD = 51.3).

Alternatively, Landuran et al. (2021) compared the cognitive functioning of individuals with DS according to their levels of self-determination. In contrast to Álvarez Aguado et al. (2021), these researchers found no correlation between self-determination and IQ scores (r = .121; p < .05). However, concerning adults with DS, Landuran et al. (2021) reported significant bilateral correlations between self-determination and vocabulary (r = .617; p < .01); comprehension (r = .686; p < .01); visuo-spatial short-term memory (r = .694; p < .01); and visuo-spatial working memory (r = .614; p < .01). As highlighted by Landuran et al. (2021), the study had a small sample size (N = 24); thus, the findings should be interpreted with caution.

In terms of support for individuals with ID, Álvarez-Aguado et al. (2021) found that individuals who received family support demonstrated higher levels of self-determination than those who only received professional support (SEM = .995; p < .001; d = 1.38). Although these researchers did not explore the type of support provided to adults with ID in home settings, other studies (Emond Pelletier & Joussemet, 2017; Frielink et al., 2018) have explored the impact of autonomy support in the context of individuals with ID. Emond Pelletier and Joussemet (2017) examined the effect of providing autonomy support to individuals with mild ID during a learning task. The researchers found that the participants in the autonomy support group (M = 3.88; SD = .21) reported greater levels of autonomy satisfaction (F (1, 49) = 2.80; P = .10) than individuals in the control group (M = 3.73; SD = .45). A medium effect size (Cohen, 1994) was reported. No significant differences were observed between the two groups regarding their competence or relatedness satisfaction levels (P > .05). Additionally, in comparison to the control group, Emond Pelletier and Joussemet (2017) found that individuals within the autonomy support group perceived the learning task as more valuable (F (1, 49) = 2.89; P = .09); were more engaged during

the activity (F (1, 41); P = .01); and were observed to be less anxious during the task (F (1, 41) = 3.76; P = .05).

In a related manner, Frielink et al. (2018) explored autonomy support, need satisfaction, and autonomous motivation among individuals with mild to borderline levels of ID. Autonomy support was operationalised as participants' perceptions of the degree to which their support staff was autonomy supportive. This was measured using the Health Care Climate Questionnaire – Intellectual Disability (Frielink et al., 2017). In contrast to Emond Pelletier and Joussemet (2017), findings indicated that perceived autonomy support was significantly related to all three basic psychological needs: autonomy (β = .57; p < .001); competence (β = .45, p < .001); and relatedness (β = .46, p < .001). Autonomy support was found to be significantly and positively related to autonomous motivation (β = .50; p < .001). Frielink et al. (2018) demonstrated a significant relationship between autonomy support and controlled motivation (β = .43; p = .002).

In addition, Frielink et al. (2018) found a significant and positive relationship between participants' well-being and their needs for autonomy (β = .41, p < .001), competence (β = .45, p < .001), and relatedness (β = .15, p < .044). While the direct relationship between autonomy support and well-being was not significant, the researchers observed that autonomy support was significantly related indirectly to well-being via the mediating variables of autonomy (β = .23; p < .001) and competence (β = .21; p < .001). Relatedness was found to be a borderline significant mediator (β = .07; p < .06). Similarly, Wong and Chow (2021) explored the relationship between self-determination and well-being among individuals with mild ID and found self-determination competencies were significantly and positively related to personal well-being (r = .313; p < .001).

In a similar vein, Westera et al. (2023) examined the relationship between need satisfaction and frustration and mental health concerns among adolescents with mild to borderline ID. These researchers found that frustration scales for autonomy, competence, and relatedness were significantly and positively associated with anxiety, depression, and externalising behaviours. Correlation values ranged from .35 to .66 (p < .001). Adolescents with higher levels of need frustration demonstrated higher levels of mental health concerns (Westera et al., 2023). Satisfaction scales for autonomy and competence were significantly and negatively related to anxiety, depression, and externalising behaviours. Correlation values ranged from -.29 to -.69 (p < .001). Participants with lower levels of need satisfaction reported higher levels of mental health

concerns (Westera et al., 2023). Relatedness satisfaction was significantly and negatively related to anxiety (r = -.52; p < .001) and depression (r = -.25; p = .021).

Di Maggio et al. (2020) explored the future goals of individuals with ID. These researchers found that participants' most frequently cited goals for five and 10 years' time related to the satisfaction of the need for autonomy (e.g., finding or keeping a job, having one's own house, and being financially independent) and the need for relatedness (e.g., having a family or forming friendships).

While most studies (e.g., Álvarez-Aguado et al., 2021; Di Maggio et al., 2020; Frielink et al., 2018) recruited adults with ID as participants, other studies (Gaumer Erickson et al., 2015; Mumbardó-Adam et al., 2019) explored self-determination in the context of young people with ID. Gaumer Erickson et al. (2015) reported positive correlations between academic achievement and the three self-determination subscales: autonomy (r = .208); self-realisation (r = .286); and empowerment (r = .553). Higher levels of autonomy, self-realisation, and empowerment were associated with higher levels of academic achievement.

Mumbardó-Adam et al. (2019) explored the impact of contextual factors on self-determination characteristics among young people with and without ID. The researchers found that opportunities at home impacted self-determination related constructs including volitional actions, agentic actions, and action-control beliefs. However, for students without ID, opportunities at home were not found to impact action-control beliefs. On the other hand, opportunities at school were found to directly impact action-control beliefs and indirectly influence agentic actions. The researchers observed that opportunities at school were not found to impact volitional actions.

2.8.5 Summary

Taken together, the findings from this review shed light on the unique experiences of individuals with ID in relation to self-determination and the three basic psychological needs. Notably, the findings demonstrate the importance of providing autonomy support to individuals with ID (e.g., Emond Pelletier & Joussemet, 2017). For individuals with mild to borderline levels of ID, perceived autonomy support was significantly related to need satisfaction for autonomy, competence, and relatedness (Frielink et al., 2018). Importantly, significant and positive relationships were identified between individuals' well-being and self-determination capacities

(Wong & Chow, 2021) and need satisfaction (Frielink et al., 2018). On the other hand, Westera et al. (2023) found significant and positive relationships between need frustration and anxiety, depression, and externalising behaviours for adolescents with mild to borderline ID. Adolescents with high need frustration and low need satisfaction reported higher levels of mental health concerns (Westera et al., 2023).

Some discrepancies were observed between findings in terms of the association between intellectual ability and self-determination. Álvarez-Aguado et al. (2021) reported a high association between self-determination scores and level of ID whereby participants with mild ID demonstrated significantly higher levels of self-determination than individuals with severe ID. On the other hand, Landuran et al. (2021) explored levels of self-determination among adults with DS and found no correlation between self-determination and IQ scores. However, this study had a small sample size and therefore the findings should be interpreted with caution. Finally, concerning young people with ID, positive correlations between academic achievement and the characteristics of self-determination were identified (Gaumer-Erickson et al., 2015).

In sum, this review has uncovered pertinent information about self-determination in the context of individuals with ID. However, to gain information about the expression and development of self-determination among students with ID, it is necessary to explore the construct in an educational context. Thus, the second phase of the systematic review was conducted to examine self-determination and ID within educational settings.

2.9 Systematic Review: Phase Two

2.9.1 Review Question

The second phase of the literature review addressed the following review question: *What is known about self-determination and students with ID within the educational context?*

2.9.2 Search Strategy

A systematic review of literature was carried out in August 2023 and updated in February 2024 using the following databases: Academic Search Complete, British Education Index, Education Source, ERIC (Education Resources Information Centre), APA PsycInfo, and APA PsycArticles. These databases were chosen based on their relevance to psychological and educational research. The terms used in the search process are outlined in Table 2.5.

Table 2.5

List of Search Terms (Phase Two)

1		2		3
"intellectual disabilit*" OR "learning disabilit*" OR "intellectual difference" OR "mental retardation" OR "down syndrome" OR "trisomy 21" OR "down's syndrome"	AND	"self-determin*" OR autonom* OR "need satisfaction"	AND	education OR edu* OR school OR learning

Searches were limited to include articles published in peer-reviewed journals and written in English, as per the inclusion criteria (see Table 2.6 below). Results from the databases were combined, yielding a total of 1,839 papers (Academic Search Complete – 429; APA PsycInfo – 465; APA PsycArticles – 4; British Education Index – 109; Education Source – 409; ERIC - 423). Duplicates were removed, resulting in a total of 899 articles. The studies were title screened and 769 were removed. The remaining studies were abstract screened and another 88 articles were excluded. Papers removed during the abstract screening process and reasons for exclusion are outlined in Appendix H. A full text review was carried out on 42 studies. Thirty-six studies were excluded during this process (see Appendix I). Six studies were chosen for inclusion in the review. The studies are presented in Table 2.7 and summarised in Appendix J. The search strategy is outlined in Figure 2.7.

Table 2.6

Criteria for Inclusion and Exclusion (Phase Two)

	Criterion	**Inclusion Criteria**	**Exclusion Criteria**	**Rationale**
1.	Journal Type	The study is included in a peer-reviewed journal.	The study is not included in a peer-reviewed journal.	To ensure the study is credible and demonstrates a high standard of quality and methodological rigour.
2.	Language	The study is written in the English language.	The study is not written in the English language.	Accurate translation from the original language is not required.
3.	Participants	Participants are students with an	Participants are not students with an	The review question is exploring self-

		intellectual disability.	intellectual disability.	determination among students with ID/DS.
4.	Setting	The study is conducted in an educational setting.	The study is not conducted in an educational setting.	Phase two of the review is exploring self-determination among students with ID/DS.
5.	Data	The study provides primary empirical data.	The study does not provide primary empirical data, e.g., reports or commentaries.	To ensure the findings from previous studies are accurate and original.
6.	Measures	The study includes at least one measure of self-determination/ need satisfaction. Measures may include questionnaires or interviews.	The study does not include any measure of self-determination/ need satisfaction.	The review question is exploring current knowledge about self-determination among students with ID/Ds.

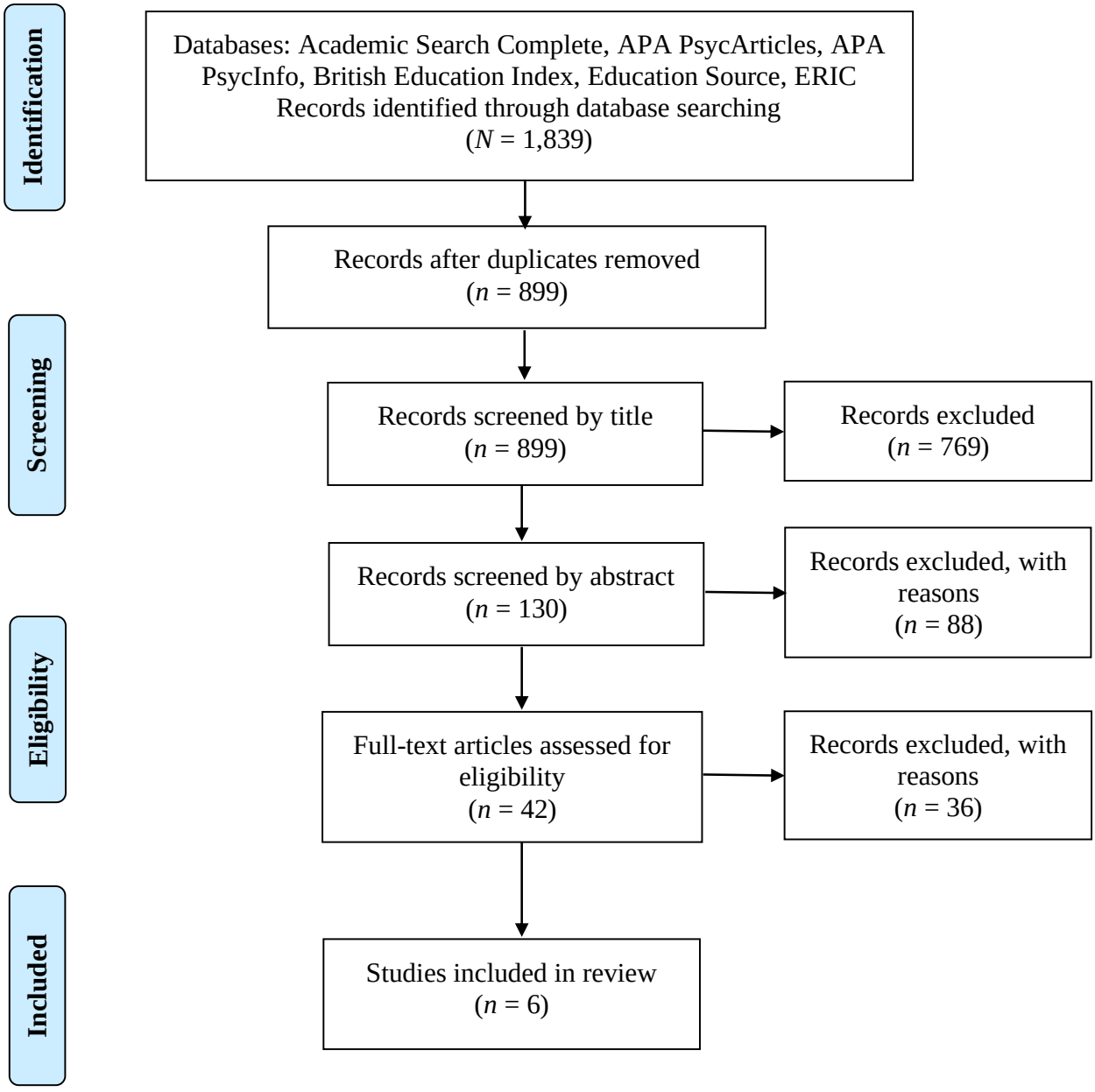
Table 2.7

Studies Included for Review (Phase Two)

References
Behzadnia, B., Rezaei, F., & Salehi, M. (2022). A need-supportive teaching approach among students with intellectual disability in physical education. *Psychology of Sport and Exercise, 60*(3). https://doi.org/10.1016/j.psychsport.2022.102156
Mumbardó-Adam, C., Shogren, K. A., Guàrdia-olmos, J., & Giné, C. (2017). Contextual Predictors of Self-Determined Actions in Students with and without Intellectual Disability. *Psychology in the Schools, 54*(2), 183–195. https://doi.org/10.1002/pits.21987
Qian, X., Shogren, K., Odejimi, O. A., & Little, T. (2022). Differences in Self-Determination Across Disability Categories: Findings from National Longitudinal Transition Study 2012. *Journal of Disability Policy Studies, 32*(4), 245–256. https://doi.org/10.1177/1044207320964396
Shogren, K. A., Wehmeyer, M. L., & Palmer, S. B. (2007). Examining Individual and Ecological Predictors of the Self-Determination of Students with Disabilities. *Exceptional Children, 73*(4), 488–509.
Vicente, E., Verdugo, M. A., Gómez-Vela, M., Fernández-Pulido, R., Wehmeyer, M. L., & Guillén, V. M. (2019). Personal characteristics and school contextual variables associated with student self-determination in Spanish context. *Journal of Intellectual & Developmental Disability, 44*(1), 23–34. https://doi.org/10.3109/13668250.2017.1310828
Wehmeyer, M. L., Palmer, S. B., Shogren, K., Williams-Diehm, K., & Soukup, J. H. (2013). Establishing a Causal Relationship between Intervention to Promote Self-Determination and Enhanced Student Self-Determination. *Journal of Special Education, 46*(4), 195–210. https://doi.org/10.1177/0022466910392377

Figure 2.7

Prisma Flow Chart (Phase Two)



2.9.3 Weight of Evidence

In a similar manner to Phase One, a WoE framework (Gough, 2007) was used to assess the quality and relevance of the studies included in the review. The criteria and ratings for WoE A are presented in Appendix K and L. WoE B explores the appropriateness of the research design of a study for the review question. The criteria and ratings for WoE B can be found in Appendix M. The criteria and ratings for WoE C are documented in Appendix N. An overall weight of evidence (WoE D) was assigned to each of the studies (see Table 2.8). All studies were deemed appropriate for inclusion in the review. Four studies (Behzadnia et al., 2022; Mumbardó-Adam et al., 2017; Shogren et al., 2007; Vicente et al. 2019) received a high overall rating. Therefore, greater emphasis was given to the findings of these studies and their relevance for future research. Less weight was given to the findings of the study (Wehmeyer et al., 2013) which received the lowest overall score.

Table 2.8

Weight of Evidence Ratings (Phase Two)

Study	WoE A	WoE B	WoE C	WoE D
Behzadnia et al. (2022)	2 (Medium)	3 (High)	3 (High)	2.7 (High)
Mumbardó-Adam et al. (2017)	3 (High)	2 (Medium)	2 (Medium)	3 (High)
Qian et al. (2022)	2 (Medium)	2 (Medium)	1 (Low)	2 (Medium)
Shogren et al. (2007)	2 (Medium)	3 (High)	3 (High)	2.7 (High)
Vicente et al. (2019)	2 (Medium)	3 (High)	3 (High)	2.7 (High)
Wehmeyer et al. (2013)	2 (Medium)	2 (Medium)	3 (High)	2.3 (Medium)

Note. < 1.5 = Low; 1.6 – 2.5 = Medium; ≥ 2.5 = High.

2.9.4 Synthesis of Findings

2.9.4.1 Research Design. All of the studies included in the second phase of the review employed a quantitative research design. Two of the studies (Mumbardó-Adam et al., 2017; Qian et al., 2022) utilised quantitative descriptive research designs. These studies aimed to explore differences in relation to various aspects of self-determination among students with ID and peers

without ID (Mumbardó-Adam et al., 2017) and students with other disabilities (Qian et al., 2022). Two other studies (Shogren et al., 2007; Vicente et al., 2019) used correlational research designs. Both studies examined the relationship between personal and contextual factors and levels of self-determination among students with ID in school settings.

The fifth quantitative study (Wehmeyer et al., 2013) employed a randomised controlled placebo group study design. The aim of this study was to examine whether interventions designed to enhance self-determination were effective in promoting the self-determination levels of students with ID over a three-year period. At the school level, students were randomly assigned to an intervention or control group. Students in the intervention group received instruction from one or more research-based interventions designed to promote self-determination.

The final study (Behzadnia et al., 2022) utilised an experimental design based on SDT. The researchers sought to explore the impact of a need-supportive teaching approach in PE on need satisfaction and frustration, motivation, and well-being among students with mild and borderline ID. Teachers were randomly assigned to an intervention condition (needs-supportive teaching style) or control condition (usual teaching style). Teachers in the intervention condition received training in needs-supportive teaching approaches.

2.9.4.2 Participants. All six studies included in the review recruited students with ID as participants. The age of participants ranged from 11 to 25 years. Two studies carried out in Spain (Mumbardó-Adam et al., 2017; Vicente et al., 2019) recruited students with ID from special and general educational settings. Two studies carried out in the United States (Shogren et al., 2007; Wehmeyer et al., 2013) recruited participants from high school settings. Another study (Behzadnia et al., 2022) was conducted in Iran and involved students with mild and borderline ID in special school settings. The final study (Qian et al., 2022) used data from the National Longitudinal Study 2012 which explored the experiences of secondary students with and without disabilities. However, these authors (Qian et al., 2022) did not provide specific information about the school settings from which the participants were recruited.

Three studies (Mumbardó-Adam et al., 2017; Shogren et al., 2007; Vicente et al., 2019) included students with mild and moderate levels of ID. Behzadnia et al. (2022) recruited students with mild and borderline ID. The other two studies (Qian et al., 2022; Wehmeyer et al., 2013) included students with ID, however, the researchers did not provide specific information about the

intellectual ability of participants. Some differences were observed in the terminology used by authors to describe participants' intellectual ability. Four studies (Behzadnia et al., 2022; Mumbardó-Adam et al., 2017; Qian et al., 2022; Vicente et al., 2019) used the term "intellectual disability". The two remaining studies (Shogren et al., 2007; Wehmeyer et al., 2013) utilised the term "mental retardation". Both these studies were conducted in the United States and were published in 2007 and 2013, respectively. As previously discussed in the literature review, these differences may be explained by changes in terminology which were introduced in 2013 in the Diagnostic and Statistical Manual of Mental Disorders (APA, 2013).

2.9.4.3 Measures of Self-Determination and Need Satisfaction. Five studies (Mumbardó-Adam et al., 2017; Qian et al., 2022; Shogren et al., 2007; Vicente et al., 2019; Wehmeyer et al., 2013) included a measure of self-determination. Two studies (Shogren et al., 2007; Wehmeyer et al., 2013) used the Arc's Self-Determination Scale (Wehmeyer & Kelchner, 1995) and the AIR Self-Determination Scale (Wolman et al., 1994). The Arc's Self-Determination Scale is a 72-item self-report measure which provides an overall self-determination score. It provides subscale scores for the four characteristics of self-determined behaviour: autonomy, self-regulation, psychological empowerment, and self-realisation. As outlined in Phase One of the systematic review, the AIR Self-Determination Scale assesses a student's capacity and opportunities for self-determination and has student, educator, and parent versions. Wehmeyer et al. (2013) used the student self-report version while Shogren et al. (2007) used both the student and educator versions. Another study (Mumbardó-Adam et al. 2017) utilised an adapted version of the AIR Self-Determination Scale. Mumbardó-Adam et al. (2017) used the Spanish pilot version of the student self-report form and the Spanish pilot version of the Self-Determination Inventory System (Shogren et al., 2015). The latter scale evaluates three essential characteristics of self-determined action, namely, volitional actions, agentic actions, and action-control beliefs.

One study (Qian et al., 2022) examined the findings from a subset of items from a standardised measure of self-determination. Qian et al. (2022) evaluated the data from the National Longitudinal Transition Study 2012 which used 21 items from the Arc's Self-Determination Scale (Wehmeyer & Kelchner, 1995). Only three of the four characteristics associated with self-determination were included: autonomy, psychological empowerment, and self-realisation. Similarly, another study (Vicente et al., 2019) used a scale based on the Arc's Self-Determination

Scale (Wehmeyer, 1995). Vicente et al. (2019) used the ARC-INICO Self-Determination Assessment Scale (Verdugo et al., 2015).

In contrast to the other five studies, Behzadnia et al. (2022) included a measure of need satisfaction. Based upon SDT, this study explored students' perceived need satisfaction using a shortened version of the Basic Psychological Need Satisfaction and Frustration Scale (Chen et al., 2015). This 12-item validated measure included four items to explore each psychological need. Two items measured need satisfaction and the remaining two assessed need frustration.

2.9.4.4 Main Findings. Findings from three studies (Mumbardó-Adam et al., 2017; Qian et al., 2022; Shogren et al., 2007; Vicente et al., 2019) indicated that students with ID demonstrated lower levels of self-determination than students without disabilities and those with other additional needs. Mumbardó-Adam et al. (2017) found significant differences between students with and without ID in terms of essential characteristics of self-determined behaviour: volitional actions (t (112) = 2.49, p = .046); agentic action (t (96.31) = -7.22, p < .001); and action-control beliefs (t (102.65) = -4.641, p < .001). Students without ID attending mainstream schools reported higher scores in all three areas. In terms of students' self-reported capacities for self-determination, students with ID in special schools demonstrated lower scores. This difference was not found to be statistically significant, however, a tendency toward significance was reported.

In comparison to students with other additional needs, two studies (Qian et al., 2022; Shogren et al., 2007) found that students with ID demonstrated lower levels of self-determination. Qian et al. (2022) observed that, alongside students with autism and multiple disabilities, students with ID demonstrated lower scores than students with high incidence disabilities in terms of autonomy, psychological empowerment, and self-realisation. Shogren et al. (2007) found that students with mild and moderate ID demonstrated lower mean scores using the Arc's Self-Determination Scale than students with learning disabilities and other health concerns in relation to capacity and self-determination constructs. However, based on scores from the AIR Self-Determination Scale, no significant differences were found between the disability groups in terms of opportunities and self-determination constructs.

Similarly, Vicente et al. (2019) explored differences in self-determination between students with mild and moderate ID. The researchers found significant differences in self-determination scores between students with mild and moderate levels of ID (t (164) = 4.379, p <.001) with a

medium effect size (d =.71). Students with mild ID reported significantly higher levels of self-determination than students with moderate ID. Additionally, significant differences were observed between students with lower and higher support needs (t (69) = 3.284, p =.002, d = .79). Students with higher support needs obtained significantly lower levels of self-determination than students with fewer support needs. Vicente et al. (2019) found significant correlations between self-determination scores and ID levels, and the intensity of support required by students. However, findings from a multiple regression analysis indicated that the support needs variable was the only significant factor. Therefore, level of ID was not a predictor of self-determination when support needs factor was included as an independent variable.

Several studies (Behzadnia et al., 2022; Mumbardó-Adam et al., 2017; Vicente et al., 2019; Wehmeyer et al., 2013) explored contextual factors associated with self-determination and need satisfaction among students with ID. In one study (Mumbardó-Adam et al., 2017), opportunities to perform self-determined behaviours at home significantly predicted volitional action (p = .015) and action-control beliefs (p < .001). Opportunities to carry out self-determined actions at school significantly predicted action-control beliefs (p = .006). In terms of opportunities to develop self-determination at home and school, Mumbardó-Adam et al. (2017) identified significant differences between students with ID attending special schools and students without ID attending mainstream schools. Students without ID reported more opportunities to develop self-determination at home, however, students with ID reported more opportunities to perform self-determined actions in school. In another study, Vicente et al. (2019) examined whether certain school contextual variables explained students' self-determination. The researchers found that the school setting (private or public), classroom placement (general, combined, or special education), and experience in transition programmes were not significant factors for explaining participants' self-determination scores.

In terms of contextual need supports, Behzadnia et al. (2022) explored the impact of a need-supportive teaching approach on students' perceived need satisfaction and frustration, motivation, and well-being. Students in the experimental group demonstrated higher levels of perceived need satisfaction (p < .001, d = 1.15), positive affect (p < .001, d = 1.13), and perceived need support (p = .001, d = 0.68) than students in the control group. On the other hand, lower levels of perceived need frustration (p < .001, d = 1.35), amotivation (p < .001, d = 1.39), and negative affect (p <

.001, d = 1.71) were reported by students in the experimental group at the end of the experiment. Interestingly, the researchers observed no significant changes in autonomous or controlled motivation among participants in the experimental condition over the course of the intervention.

Wehmeyer et al. (2013) explored the effectiveness of interventions designed to promote self-determination and found that, while all participants demonstrated increases in their self-determination scores over the three years of the project, students in the intervention group demonstrated a significantly greater increase in self-determination scores over time. These findings were based on scores measured using the AIR Self-Determination Scale. Conversely, data gathered using the SDS indicated that all participants' self-determination scores increased over time; however, a non-significant intervention group effect and non-significant group by time interaction were observed. Students with ID who were assigned to the intervention group demonstrated a significant increase in their self-determination scores over time.

2.9.5 Summary of Main Findings

In sum, the studies included in both phases of this systematic review highlighted pertinent findings about self-determination, need satisfaction, and ID. Notably, students with ID were found to demonstrate lower levels of self-determination than students without disabilities (Mumbardó-Adam et al., 2017) and students with other additional needs (Qian et al., 2022; Shogren et al., 2007). Across both phases of the review, some researchers reported significant correlations between self-determination scores and ID levels among adults (Álvarez-Aguado et al., 2021) and students (Vicente et al., 2019). Importantly, however, Vicente et al. (2019) found that intellectual ability was not a significant predictor for self-determination when support needs were included as an independent variable. Therefore, when seeking to promote levels of self-determination, this finding highlights the potential importance of focusing on the provision of appropriate supports for students with ID.

Mumbardó-Adam et al. (2017) found that opportunities to engage in self-determined actions at school predicted students' self-reported capacities for self-determination and action-control beliefs. The researchers reported that opportunities to engage in self-determined actions at home significantly predicted students' volitional action, action-control beliefs, and self-reported capacities for self-determination. However, differences were noted between students with and without ID in terms of their opportunities to engage in self-determined actions. Students without

ID attending mainstream schools reported more opportunities to develop self-determination at home, whereas, students with ID in special schools reported more opportunities to develop the construct at school (Mumbardó-Adam et al., 2017). Similarly, Álvarez-Aguado et al. (2021) reported that adults with ID who received family support demonstrated higher levels of self-determination than adults who only received professional support.

Only four studies (Behzadnia et al., 2022; Emond Pelletier & Joussemet, 2017; Frielink et al., 2018; Westera et al., 2023) included across both phases of the systematic review were based upon SDT. Other studies (e.g., Álvarez-Aguado et al., 2021; Mumbardó-Adam et al., 2017; 2019) were informed by alternative theories of self-determination such as Causal Agency Theory (Shogren et al., 2015) and the Functional Theory of Self-Determination (Wehmeyer, 1999). The studies based upon SDT demonstrated the importance of providing autonomy and contextual need supports to students and adults with ID. In one experimental study, adolescents and adults with mild ID who received autonomy support demonstrated greater autonomy satisfaction levels (Emond Pelletier & Joussemet, 2017). In another study (Frielink et al., 2018), perceived autonomy support was significantly related to autonomy, competence, and relatedness satisfaction for adults with mild and borderline ID. On the other hand, Westera et al. (2023) found that perceived need frustration was significantly related to anxiety, depression, and externalising behaviours for adolescents with mild and borderline ID. Within educational settings, researchers demonstrated the importance of contextual need supports for students with mild and borderline ID. Behzadnia et al. (2022) found that a need-supportive teaching approach increased students' perceived need satisfaction, positive affect, and perceived support; and decreased students' perceived need frustration, negative affect, and amotivation.

2.9.6 Implications for Future Research

While the findings presented in this systematic review provide insights into self-determination and need satisfaction for students with ID, there are some issues which merit further exploration. Vicente et al. (2019) argue that more research is needed to identify a specific set of personal and environmental variables that predict the development of self-determined behaviour among students with ID. These researchers propose that such an understanding would be helpful in designing appropriate practices and supports to promote self-determination. Similarly, Qian et al. (2022) suggest that enhancing knowledge about contextual factors and self-determination

would facilitate the development of individualised interventions. Furthermore, Qian and colleagues argue that alternative approaches are needed to explore the self-determination levels of students with ID. As opposed to relying on self-report measures, Qian et al. (2022) suggest that further research is required to develop different tools such as observational methods to assess self-determination among students with additional needs.

Across both phases of the systematic review, only one study (Landuran et al., 2021) specified that individuals with DS were recruited to partake in the study. As evidenced in this review, although DS is one of the most common genetic causes of ID among individuals, there is a dearth of research exploring self-determination in the context of students with DS in education settings. Additionally, while the second phase of the review sought to explore knowledge about self-determination among students in education contexts, most studies recruited participants from secondary or high school contexts. One study noted that students were also recruited from a university setting. Thus, participants in these studies ranged in age from 12 – 23 years. One study (Vicente et al., 2019) included younger students aged 11 – 19 years. Nonetheless, none of the studies included in the review recruited students with ID solely from primary school settings.

Research findings highlight the potential benefits associated with contexts that support self-determination and need satisfaction for students and adults with ID. These include enhanced well-being (Frielink et al., 2018; Wong & Chow, 2021), positive affect (Behzadnia et al., 2022), and academic achievement (Gaumer Erickson et al., 2015). Thus, it is unsurprising that many researchers (e.g., Mumbardó-Adam et al., 2017; Shogren et al., 2007; Vicente et al., 2019; Wehmeyer et al., 2013) propose that further work is needed to promote self-determination among students with ID, and to empower teachers to enable students with ID to learn and develop skills associated with self-determination. However, in light of the limited research about self-determination and need experiences in the context of young students with DS, it is argued that future research should advance knowledge about need satisfaction among this specific and heterogenous group of students with ID.

Therefore, in light of the systematic review findings and the gap in research exploring self-determination and need satisfaction in the context of young students with DS, the aim of the current study is to explore how students with DS experience basic psychological need satisfaction in mainstream class settings. Furthermore, given that all of the studies included in this review were

conducted outside of Ireland, the current study will enhance the research base by exploring the unique experiences of students with DS in the Irish context.

3 Chapter 3: Empirical Paper

3.1 Introduction

3.1.1 Overview

This chapter will provide an overview of the empirical study. A brief account of key concepts will be provided. This will be followed by a summary of the main findings derived from the systematic review. Thereafter, the research question for the current study will be presented. Subsequently, an overview of the research design, research paradigm, measures, data collection procedures, and analytical techniques will be presented. The findings of the study will be examined. Within-case patterns will be presented. Following this, the cross-case synthesis of findings will be discussed. Finally, a summary of the strengths and limitations of the research and the implications of the findings will be presented.

3.1.2 Additional Educational Needs

Over the past decades, much consideration has been given to the provision of education for students with additional educational needs (AEN) such as intellectual difference (ID) and Down syndrome (DS). Policy-makers have argued that students with AEN should be afforded equal opportunities to access education and should be educated within mainstream settings alongside their typically developing peers (Oireachtas, 2004; UNESCO, 1900; 1994). Importantly, national and international policy has acknowledged the importance of eliciting student voice and promoting students' independence, achievement, and well-being in schools (Department of Education, 2024; DES, 2019; OECD, 2019). It is argued that students with AEN should be enabled to develop the skills needed to live independent lives and to participate fully within education and the community (Oireachtas, 2004; United Nations, 2006).

3.1.3 Self-Determination

In line with this contemporary rights-based discourse, the concept of self-determination has gained prominence within the context of students with ID. Self-Determination Theory (SDT) (Deci & Ryan, 1985; Ryan & Deci, 2017) offers a broad framework for understanding human motivation and development. SDT proposes that individuals have a dual nature which is both growth-oriented and self-protective (Ryan & Deci, 2017). That is, individuals have innate tendencies toward growth and integrity *and* vulnerabilities for defensiveness, passivity, and ill-being (Vansteenkiste et al., 2023). The current study is underpinned by Basic Psychological Needs

Theory (BPNT) (Deci & Ryan, 2000; Ryan & Deci, 2002), an important sub-theory of SDT. A central tenet of BPNT is that three basic psychological needs, namely, autonomy, competence, and relatedness are essential for optimal functioning, wellness, and psychological health (Deci & Ryan, 2017). The essentiality of the basic psychological needs is demonstrated through a dual-process model (Vansteenkiste & Ryan, 2013). The first process illustrates a 'bright' pathway from need satisfaction to well-being which stems from a need-supportive environment. The second process outlines a 'dark' pathway from need frustration to ill-being which derives from a need-thwarting environment (Vansteenkiste & Ryan, 2013; Vansteenkiste et al., 2023).

3.1.3.1 Basic Psychological Needs and Education. Over the past two decades, a large and growing body of research has explored the basic psychological needs within the context of education (e.g., Conesa et al., 2022; Reeve & Cheon, 2021). Research in this area has demonstrated the benefits of need satisfaction for students including intrinsic motivation, engagement (Conesa et al., 2022), and autonomous motivation (Vasconcellos et al., 2020). Conversely, researchers have highlighted the harmful costs of need frustration for students such as disengagement (Earl et al., 2017) and amotivation (Behzadnia et al., 2023). In a related manner, several SDT researchers have examined the impact of teachers' motivational styles on students' outcomes and experiences of psychological needs (e.g., Ahmadi et al., 2023; Cohen et al., 2022; Reeve, 2009). As demonstrated in the recently developed circumplex model (Aelterman et al., 2019), need-supportive practices (i.e., autonomy-support and structure) promote need satisfaction, whereas need-thwarting practices (i.e., chaos and control) obstruct students' basic needs (Aelterman & Vansteenkiste, 2023; Howard et al., 2024).

3.1.3.2 Basic Psychological Needs, Self-Determination, and Intellectual Difference. As stated above, self-determination is an important concept within the education of students with ID. ID refers to significant differences in an individual's cognitive and adaptive functioning and affects a person's ability to learn, apply new skills, and cope independently (APA, 2022). DS is one of the most common genetic causes of ID and significantly impacts an individual's cognitive and behavioural development across the lifespan (Clarke & Faragher, 2014; Grieco et al., 2015).

A significant body of research has been published exploring self-determination and basic psychological needs among students and adults with ID. Although DS is among the most common

genetic causes of ID, previous studies have not focused on the unique experiences of individuals with DS. Literature reviews in the area of self-determination and ID highlight some of the potential benefits associated with contexts that support self-determination and need satisfaction. These include significant and positive correlations with well-being (Frielink et al., 2018; Wong & Chow, 2021) and academic achievement (Gaumer-Erickson et al., 2015). Specifically, Frielink et al. (2018) found that need satisfaction was associated with higher psychological well-being among adults with mild to borderline levels of ID. Relatedly, Wong and Chow (2021) found that self-determination competencies were significantly and positively correlated with personal well-being among adults with mild ID. In contrast, Westera et al. (2023) found that need frustration was significantly and positively related to anxiety, depression, and externalising behaviours for adolescents with mild and borderline ID. Adolescents with high need frustration and low need satisfaction demonstrated higher levels of mental health concerns (Westera et al., 2023).

With regard to contextual need supports for individuals with ID, Frielink et al. (2018) found that perceived autonomy support was significantly related to need satisfaction for autonomy, competence, and relatedness. In a related manner, Emond Pelletier and Joussemet (2017) explored the impact of providing autonomy support to individuals with ID during a learning task and found that participants in the autonomy support group reported greater levels of autonomy satisfaction than the control group. Individuals in the autonomy support group also perceived the learning task as more valuable and were observed to be more engaged in the activity (Emond Pelletier & Joussemet, 2017). Similarly, in education settings, previous research highlights the significance of contextual need supports for students with ID. Using an experimental design, Behzadnia et al. (2022) found that the use of a need-supportive teaching approach increased students' perceived need satisfaction, positive affect, and perceived support; and decreased students' perceived need frustration, negative affect, and amotivation.

In terms of future research, Mumbardó-Adam et al. (2017) argue that further work is required to explore ways of promoting self-determination for students in mainstream settings. Some authors (e.g., Behzadnia et al., 2022) suggest that future research should explore the impact of peers' and parents' need-supportive versus need-thwarting behaviours on the experiences of students with mild and borderline ID in education settings. In addition, Qian et al. (2022) argue that alternative approaches should be used to explore levels of self-determination among students

with ID. As opposed to using self-report measures, Qian et al. (2022) propose that further research is needed to develop other tools to explore self-determination among students with additional needs.

3.1.4 Current Study

Although previous findings highlight important information about the experiences of individuals and students with ID in relation to self-determination and need satisfaction, there remains a paucity of research exploring the perspectives of students with DS regarding basic psychological need satisfaction. If students with DS are to be enabled to live independent lives, it is argued that they should be provided with opportunities to develop self-determination and to experience need satisfaction in school. However, to date, limited research has explored basic psychological need satisfaction in the context of young people with ID. Moreover, little is known about the unique experiences and perceptions of students with DS in schools in relation to autonomy, competence, and relatedness. Thus, the current study aimed to address this research gap by exploring how students with DS experience basic psychological need satisfaction in mainstream primary schools. Guided by Lundy's (2007) *Model of Participation,* the study sought to enhance the research base by eliciting the voices of students with DS in the Irish context. In line with recommendations from previous research (e.g., Lewis-Dagnell et al., 2023; Lundy, 2007), multiple methods were used to elicit the perspectives of students with DS. The current study sought to explore the aforementioned research gap by examining the following research question: *How do students with Down syndrome experience basic psychological need satisfaction in mainstream class settings?*

3.2 Method

3.2.1 Overview

This section provides an overview of the research design for the current study. The section begins by outlining the research design. This is followed by an overview of the research paradigm and assumptions upon which the study is based. Following this, the components of case study research are explored. Thereafter, the measures utilised in the study are presented. The data collection procedures and methods for data analysis are outlined. Finally, ethical issues arising from the research study are discussed.

3.2.2 Research Design

The current study adopted a case study design. This qualitative methodology commonly "explores a real-life contemporary bounded system (a case) or multiple bounded systems (cases) over time, through detailed, in-depth data collection involving multiple sources of information" (Creswell, 2013, p. 97). Different approaches to case study have been proposed by researchers (e.g., Dul & Hak, 2008; Merriam, 1998; Stake, 1995; Yin, 2018). Yin's (2018) approach is embedded within theory, and theoretical propositions are used to guide the case study. Yin (2018) outlines a structured sequence for conducting case study research. In a similar manner, Merriam (1998) proposes specific guidelines for designing the case study. These include the development of a theoretical framework to inform and guide the research. Contrastingly, Stake (1995) presents a flexible design and suggests that researchers utilise their intuition and impression to guide the analysis. Various types of case study research have been presented. These include intrinsic, instrumental, and collective (Stake, 1995); descriptive, explanatory, and exploratory (Yin, 2018); and single case and comparative case studies (Dul & Hak, 2008).

Within the current study, the researcher employed an explanatory multiple-case study design (Yin, 2018). In contrast to inductive case study approaches (e.g., Merriam, 1998; 2009), the explanatory design enabled the researcher to interpret the experiences of students with DS in mainstream settings by drawing upon the theoretical framework underpinning the study. As recommended for all case study approaches (e.g., Merriam, 1998; Stake, 1995; Yin, 2018), the researcher utilised multiple methods of data collection to facilitate the process of triangulation. To explore the experiences of students with DS regarding basic psychological need satisfaction, qualitative methods were employed by the researcher (Merriam, 1998; Stake, 1995).

Importantly, case study research has been recognised for its ability to provide a detailed understanding of a phenomenon bound by context and its capacity to apply abstract theory to complex practice (Crowe et al., 2011; Luck et al., 2006). Thus, within the current study, the case study methodology provided a suitable approach for providing a thorough understanding of the students' experiences of need satisfaction; a phenomenon which cannot be understood without considering the context in which it exists (Deci & Ryan, 2002).

3.2.3 Research Paradigm

A research paradigm refers to the researcher's worldview and incorporates philosophical assumptions that guide the researcher's thinking and actions (Mackenzie & Knipe, 2006; Mertens, 2015). The current study was based upon a constructivist research paradigm (Guba & Lincoln, 1994). This paradigm is commonly associated with qualitative case study research (Merriam, 2009). Other researchers (e.g., Denzin & Lincoln, 2000; Luck et al., 2006) argue that case study research is a flexible approach; thus, as opposed to fitting within one specific paradigm, the methodology can provide a 'paradigmatic bridge' between paradigms (Luck et al., 2006). However, in light of this freedom to choose between paradigms, researchers are required to demonstrate coherence between their philosophical stance, study design, and research methods (Luck et al., 2006).

By definition, constructivism is subjectivist and transactional in its epistemological stance (Guba & Lincoln, 1994). One of the core assumptions underpinning the paradigm is that reality is socially constructed (Mertens, 2015). Thus, it is assumed that "individual constructions can be elicited and refined *only* through interaction between and among the investigator and respondents" (Guba & Lincoln, 1994, p. 111). Accordingly, within the current study, qualitative data collection methods were employed to facilitate interaction between the researchers and participants. These included the use of interactive tools such as model-making or drawing activities, follow-up discussions, and semi-structured interviews. To complement the constructivist paradigm, the researcher utilised techniques based upon PCP (Kelly, 1995) to explore the perspectives of the students with DS. This is notable given that Kelly's theory of PCP is based upon a constructivist epistemology (Burr et al., 2014; Chiari & Nuzzo, 2003).

The epistemological position associated with the constructivist paradigm had important implications for the current study. Because constructivism is subjectivist in its epistemological stance, researcher reflexivity and transparency are important elements within the paradigm (Mills et al., 2006). Given that the study used a predominantly deductive orientation to analyse the data from the PCP techniques and semi-structured interviews, researcher reflexivity was embraced throughout the data collection and analytic processes. Using a research diary, the researcher reflected upon their positionality within the study and the influence of their pre-existing theoretical knowledge and experiences on their constructions of knowledge.

Notably, other case study approaches which solely use inductive processes to analyse data (e.g., Merriam, 2009) highlight the importance of theory. Merriam (2009) proposes that qualitative research shapes or changes existing theory because data are "interpreted in light of the concepts of a particular theoretical orientation, and a study's findings are discussed in relation to existing knowledge with an eye to demonstrating how the study has contributed to the expanding knowledge base" (p. 70). Indeed, it is argued that "atheoretical research is impossible" (Schwandt, 1993, p. 7). Thus, as noted by Braun and Clarke (2021), qualitative data analysis "is *always* underpinned by theoretical assumptions, and these assumptions need to be acknowledged and reflected on" (p. 8).

To align with the ontological assumption that there is no objective reality (Mertens, 2015), certain steps were followed by the researcher to ensure that the data analytic procedures were consistent with the constructivist paradigm. When applying the pattern-matching technique (Yin, 2018), the researcher was open and attentive to alternative patterns and rival propositions that did not fit the coding template. As recommended for case study research (Merriam, 1998; Yin, 2018) the researcher recruited an independent coder, without prior knowledge of the theoretical framework, to review the codes and themes from the analytic techniques. Following this process, alternative codes and themes were discussed and incorporated into the findings. Additionally, the data were considered using alternative theoretical perspectives, and findings which did not align with the researcher's theoretical framework were explored. It should be noted that the reflexive thematic analysis (RTA) process (Braun & Clarke, 2021) incorporated some elements of an inductive orientation. That is, when exploring the experiences of students with DS in relation to the three psychological needs, the analysis was guided by the data as opposed to the theoretical propositions.

3.2.4 Components of a Case Study

There are five important components which should be included within case study research (Yin, 2018). These include: the research question(s); propositions; case(s); logic linking the data to the propositions; and criteria for interpreting the findings (Yin, 2018). These elements were incorporated into the research design.

3.2.4.1 Research Question. The research question for the study was informed by a review of relevant theory and literature in relation to self-determination, basic psychological

needs, and students with ID. The study addressed an identified gap in literature by exploring the following research question: *How do students with Down syndrome experience basic psychological need satisfaction in mainstream class settings?* The study was conducted in two phases. The first phase explored the mainstream class context regarding perceived need satisfaction. The second phase explored the following: (1) the perceptions of the student with DS in relation to autonomy, competence, and relatedness; and (2) the perspectives of the class teacher and SNA concerning the experiences of, and opportunities provided for, the student with DS in relation to the basic psychological needs.

3.2.4.2 Case Propositions. As recommended by Yin (2018), case study propositions were established to explore the research question. Given that the study was underpinned by BPNT, the propositions were developed in line with its theoretical assumptions. The research question and case propositions are presented in Table 3.1.

Table 3.1

Case Propositions

Research Question	How do students with Down syndrome experience basic psychological need satisfaction in mainstream class settings?		
Case Propositions	For a student with DS, autonomy satisfaction will be associated with feelings of happiness, enjoyment, and interest, whereas autonomy frustration will be associated with feelings of unhappiness and disengagement.	For a student with DS, competence satisfaction will be associated with feelings of happiness, enjoyment, and interest whereas, competence frustration will be associated with feelings of unhappiness and disengagement.	For a student with DS, relatedness satisfaction will be associated with feelings of happiness, enjoyment, and interest whereas, relatedness frustration will be associated with feelings of unhappiness and disengagement.

3.2.4.3 The Case. Within a case study, a case can comprise an individual, group, or organisation (Yin, 2018). The current study utilised cases that consisted of groups. Each group included a student with DS in a mainstream class (Fifth or Sixth Class), their classmates, class teacher, and SNA. Given the specificity of each case, purposive sampling was used to recruit participants. A summary of the main inclusion criteria for cases is illustrated in Table 3.2.

Table 3.2

Case Inclusion Criteria

Criteria	Rationale
Mainstream class in primary school	The study is exploring the experiences of students in mainstream primary class settings.
Student with Down syndrome enrolled in the mainstream class	The study is specifically focusing on the experiences of students with Down syndrome in mainstream class settings.
Fifth or Sixth Class	Students in these class levels were deemed the most appropriate age for accessing and understanding the data collection measures (e.g., Basic Psychological Needs in the Classroom Scale).

3.2.4.3.1 Participants. Local organisations that support CYP with DS were contacted to assist with recruitment. When potential schools were identified, information about the study was provided to school principals (see Appendix P). Principals from three schools granted permission to conduct the study within their school. Informed consent was sought from class teachers, SNAs, and the parents/guardians of students (see Appendix Q). Informed assent was obtained from all students using developmentally appropriate information sheets and assent forms (see Appendix R).

Participants included students with and without DS, class teachers, and SNAs. Case 1 involved a Sixth Class in a co-educational mainstream primary school. The case consisted of a student with DS, their classmates (n = 16), class teacher, and SNA. Case 2 was a Fifth Class in an all-girls mainstream primary school. This case included a student with DS, their classmates (n = 21), class teacher, and SNA. An anonymised overview of participants included in the study is presented in Table 3.3. Detailed information for each case is presented in Appendix S.

Table 3.3

Overview of Participants

Case	Class	Participant	Pseudonym
Pilot Case	Fifth	Student with DS (n = 1) Class Teacher (n = 1) Special Needs Assistant (n = 1) Classmates (n = 23)	Billy Sarah Lisa
Case 1	Sixth	Student with DS (n = 1) Class Teacher (n = 1)	Sophie Helen

		Special Needs Assistant (*n* = 1) Classmates (*n* = 16)	Breda
Case 2	Fifth	Student with DS (*n* = 1) Class Teacher (*n* = 1) Special Needs Assistant (*n* = 1) Classmates (*n* = 21)	Emma Niamh Anne

3.2.4.4 Linking Data to Propositions. Within case studies, the data collection processes and the data analytic techniques are informed by the case study propositions (Yin, 2018). To explore the research question, data was gathered from different sources. These included a student questionnaire, adapted versions of approaches based upon PCP (Kelly, 1955), and semi-structured interviews. These measures are described later in the chapter.

3.2.4.5 Criteria for Interpreting the Findings. Given that data was gathered from multiple sources, different data analytic techniques were employed to analyse the data. The criteria used for interpreting the findings are presented in Table 3.4 below. Detailed information about the data analytic techniques used in the study are outlined in subsequent sections.

Table 3.4

Criteria for Interpreting the Findings

Research Question	**Proposition**	**PCP Activity – *Building the Ideal Classroom* and *Salmon Line Technique***	**PCP Activity – *Building the Ideal School Playground* and *Salmon Line Technique***	**Semi-Structured Interviews with Teacher and SNA**
How do students with Down syndrome experience basic psychological need satisfaction in mainstream class settings?	**Proposition 1** For a student with DS, autonomy satisfaction will be associated with feelings of happiness, enjoyment, and interest, whereas autonomy frustration will be associated with feelings of unhappiness and disengagement.	**Pattern-Matching:** Elements of models/drawings or comments that link students' opportunities to make choices/ decisions or self-direct learning/ behaviour with feelings of happiness, enjoyment, and interest in school and vice versa. **Reflexive Thematic Analysis:** Themes within the data set that refer to autonomy in school.	**Pattern-Matching:** Elements of models/drawings or comments that link students' opportunities to make choices/ decisions or self-direct learning/ behaviour with feelings of happiness, enjoyment, and interest in school and vice versa. **Reflexive Thematic Analysis:** Themes within the data set that refer to autonomy in school.	**Pattern-Matching:** Interview responses that link students' opportunities to make choices/ decisions or self-direct learning/ behaviour with feelings of happiness, enjoyment, and interest in school and vice versa. **Reflexive Thematic Analysis:** Themes within the data set that refer to autonomy in school.
How do students with Down syndrome experience basic psychological need satisfaction in mainstream class settings?	**Proposition 2** For a student with DS, competence satisfaction will be associated with feelings of happiness, enjoyment, and interest, whereas competence frustration will be associated with	**Pattern-Matching:** Elements of models/drawings or comments that link students' opportunities to experience success/ achievement and mastery/ progress with feelings of happiness, enjoyment, and interest in school and vice versa.	**Pattern-Matching:** Elements of models/drawings or comments that link students' opportunities to experience success/ achievement and mastery/ progress with feelings of happiness, enjoyment, and interest in school and vice versa.	**Pattern-Matching:** Interview responses that link students' opportunities to experience success/ achievement and mastery/ progress with feelings of happiness, enjoyment, and interest in school and vice versa.

	feelings of unhappiness and disengagement.	**Reflexive Thematic Analysis:** Themes within the data set that refer to competence in school.	**Reflexive Thematic Analysis:** Themes within the data set that refer to competence in school.	**Reflexive Thematic Analysis:** Themes within the data set that refer to competence in school.
How do students with Down syndrome experience basic psychological need satisfaction in mainstream class settings?	**Proposition 3** For a student with DS, relatedness satisfaction will be associated with feelings of happiness, enjoyment, and interest, whereas relatedness frustration will be associated with feelings of unhappiness and disengagement.	**Pattern-Matching:** Elements of models/drawings or comments that link students' opportunities to form friendships/ relationships with others and experience a sense of belonging/connection with feelings of happiness, enjoyment, and interest in school and vice versa. **Reflexive Thematic Analysis:** Themes within the data set that refer to relatedness in school.	**Pattern-Matching:** Elements of models/drawings or comments that link students' opportunities to form friendships/ relationships with others and experience a sense of belonging/connection with feelings of happiness, enjoyment, and interest in school and vice versa. **Reflexive Thematic Analysis:** Themes within the data set that refer to relatedness in school.	**Pattern-Matching:** Interview responses that link students' opportunities to form friendships/ relationships with others and experience a sense of belonging/connection with feelings of happiness, enjoyment, and interest in school and vice versa. **Reflexive Thematic Analysis:** Themes within the data set that refer to relatedness in school.

3.2.5 Measures

Within case study research, it is acknowledged that a single case may be influenced by several variables. Thus, different forms of data collection are needed (Yin, 2018). In the current study, data was gathered from various sources. These included a student questionnaire, three PCP techniques, and semi-structured interviews. The measures are described below.

3.2.5.1 Student Questionnaire. To explore the baseline level of students' perceived need satisfaction in the mainstream classroom, the classmates of the student with DS were invited to complete an adapted version of a questionnaire - *The Basic Psychological Needs in the Classroom Scale* (Conesa & Duñabeitia, 2021; see Appendix T). The scale was used to provide context in terms of the classroom climate within the mainstream setting in relation to need satisfaction through the perceptions of classmates. The scale was not intended to be used for comparative purposes; rather, it was utilised to provide a rich picture of the classroom context within which the student with DS was learning.

The *Basic Psychological Needs in the Classroom Scale* (Conesa & Duñabeitia, 2021) is a 17-item student report measure designed to explore autonomy, competence, relatedness, and novelty satisfaction in classrooms. For the current study, the scale was adapted to include the following three subscales: autonomy satisfaction, competence satisfaction, and relatedness satisfaction. The adapted scale contained 12 items with four items to measure each need (see Table 3.5 for sample items). As part of the pilot study, the scale was piloted on a sample of 23 students. Some minor revisions were made to the language used in certain items to mitigate potential misunderstandings for students. Participants responded to items using a five-point Likert scale ranging from a score of 1 (disagree a lot) to a score of 5 (agree a lot).

Table 3.5

Sample Subscale Items

Subscale	**Sample Items**
Autonomy Satisfaction	*The activities I do in class match perfectly with the way I want to do them.*
Competence Satisfaction	*In class, I feel confident that I can do things well.*
Relatedness Satisfaction	*I feel like I have a close relationship with my teachers and classmates.*

3.2.5.2 Personal Construct Psychology Techniques. Three of the measures used in the study were based upon PCP (Kelly, 1955). PCP was utilised to explore the perspectives of students with DS for several reasons. Firstly, the PCP tools provided engaging methods for exploring the students' subjective experiences (Burr et al., 2014; Sewell, 2020). Secondly, the PCP techniques enabled the researcher to incorporate Lundy's (2007) *Model of Participation* and Hart's (1992) *Ladder of Participation* to promote students' meaningful involvement with the research process (Griffin, 2024; Sewell, 2020). Students with DS were invited to complete three PCP activities to elicit their perspectives about autonomy, competence, and relatedness in relation to their educational experiences.

3.2.5.2.1 Building the Ideal Classroom and School Playground. Two of the PCP techniques used in the study were adapted versions of an activity called *Building the Ideal Classroom with PCP and Lego*™ (Morgan-Rose, 2016). The adapted techniques used in this study were entitled *Building the Ideal Classroom* (see Appendix U) and *Building the Ideal School Playground* (see Appendix V). The PCP techniques were administered in line with the Universal Design for Learning (UDL) approach (Meyer & Rose, 2006; Meyer et al., 2014). That is, students with DS were provided with multiple means of expressing their views. Students were given a choice of creating their ideal and non-ideal classroom and school playground using Lego Duplo™ or drawing materials. Students were reminded that there was no right or wrong way of completing the tasks and they were afforded flexibility and autonomy when engaging with the Lego™ and drawing materials.

As outlined in Appendix U, the student with DS was first invited to create their ideal and non-ideal classroom using Lego Duplo™ and/or drawing materials. As the student created the model or drawing of their ideal classroom, the researcher invited the student to label and describe the objects and people in the classroom using the following questions: *What's this? Who is this? What are they doing?* When the student had completed the model or drawing of their ideal classroom, the researcher invited the student to take a photograph of their construction. Subsequently, the student was invited to partake in a brief semi-structured interview with the researcher to discuss their model/drawing and to elicit their views in relation to autonomy, competence, and relatedness. The interview schedule is presented in Table 3.6 below.

Table 3.6

Building the Ideal Classroom – Interview Schedule

1.	What is your favourite thing in this classroom? a. What would you like to do in this classroom?
2.	If this classroom had rules, what would they be? a. What subjects would you do in this classroom? b. Where would you like to do your work?
3.	Tell me three things the students are good at doing in this classroom. a. What are they proud of?
4.	What people would be in this classroom? a. If you were in this classroom, who would you sit with?
5.	If you walked into the classroom, how would you feel?

Following the brief semi-structured interview, the student was invited to create their non-ideal classroom. As the student created their model or drawing, the researcher invited the student to label and describe the objects and people in the classroom using the following questions: *What's this? Who is this? What are they doing?* As above, the student was invited to take a photograph of their work. Printed images of the student's model or drawing of their ideal and non-ideal classroom were placed on the table and a line was drawn between both images. The student was invited to consider which image was most similar to their classroom. A visual image was placed on the line to represent the student's response.

As documented in Appendix V, the above steps were repeated for the second PCP technique, *Building the Ideal School Playground.* Similarly, in line with the principles of UDL, the student with DS was invited to create their ideal and non-ideal school playground using Lego Duplo™ and/or drawing materials. As the student created the model or drawing of their ideal school playground, the researcher invited the student to label and describe the objects and people in the playground using the following questions: *What's this? Who is this? What are they doing?* When the student had completed their ideal school playground, the researcher invited the student to take a photograph of their model or drawing. Following this, the student was invited to partake in a brief semi-structured interview with the researcher to discuss their model/drawing and to elicit their views in relation to the basic psychological needs. The interview schedule is presented in Table 3.7 below.

Table 3.7

Building the Ideal School Playground – Interview Schedule

1.	What is your favourite thing in this playground? a. What would you like to do in this playground?
2.	If this playground had rules, what would they be? a. What games would you play in this playground?
3.	Tell me three things the students are good at doing in this playground. a. What are they proud of?
4.	What people would be in this playground? a. If you were in this playground, who would you play with?
5.	If you walked into the playground, how would you feel?

Subsequently, the student was invited to create their non-ideal school playground. As the student created their model or drawing, the researcher invited the student to label and describe the objects and people in the playground using the following questions: *What's this? Who is this? What are they doing?* The student was invited to take a photograph of their work. Printed images of the student's model or drawing of their ideal and non-ideal school playground were placed on the table and a line was drawn between both images. The student was invited to consider which image was most similar to their school playground. A visual image was placed on the line to represent the student's response.

3.2.5.2.2 Salmon Line Technique. After completing the model-making and/or drawing activities, students were invited to complete an adapted version of another PCP technique called the *Salmon Line Technique* (Salmon, 1988) to explore their perceptions in terms of autonomy, competence, and relatedness satisfaction in school. In line with PCP, Salmon Line scales were created using emergent contrast poles. Notably, in this study, supplied constructs (visual images) were used to depict need satisfaction and need frustration.

As illustrated in Appendix W, students were provided with scales and visual images which related to autonomy, competence, and relatedness. In some instances, students were invited to describe the visual images (constructs) and the students' words and descriptions were used when completing the scales. On other occasions, the researcher described the visual images to reflect the

intended constructs (e.g., student thinks school is fun *versus* student feels bored in school; this girl finds her work easy *versus* this boy finds his work hard; this girl does her work by herself *versus* this girl needs some help with her work; the teacher tells student what to do *versus* the student gets to pick what they do). For each scale, students were invited to consider how they perceived themselves in relation to the constructs using the following questions: *What is your classroom/playground in school like? Is your classroom more like this classroom or that classroom? Are you more like this person or that person? If you had a wish, what would your classroom/playground be like?* Students were invited to stick a visual icon on the line between the two images to represent their responses.

3.2.5.3 Semi-Structured Interviews. The student's class teacher and SNA were invited to participate in a semi-structured interview (see Appendix X). The questions were designed to explore the experiences of, and opportunities provided for, students with DS in mainstream settings. Specific emphasis was placed upon the exploration of participants' viewpoints relating to autonomy, competence, and relatedness.

3.2.6 Pilot Study

Prior to the commencement of the main study, a pilot study was completed with a pilot case to ensure that the research design, measures, and procedures were suitable and accessible, particularly for students with DS. A pilot study plan (Ismail et al., 2018) was used to guide this process.

The pilot case was conducted in an all-boys mainstream primary school. One male student with DS in Fifth Class was invited to partake in the pilot study. The student's classmates, class teacher, and SNA were also invited to participate. In total, consent and assent were obtained from 24 students and their parents/guardians to partake in the study. All student participants were male and ranged in age from ten to eleven years.

As part of the pilot study, the classmates of the student with DS were invited to complete an adapted version of the *Basic Psychological Needs in the Classroom Scale* (Conesa & Duñabeitia, 2021). Following this, the student with DS was invited to complete the three PCP techniques, namely, *Building the Ideal Classroom, Building the Ideal School Playground* and the *Salmon Line Technique.* These approaches were carried out in a one-to-one setting in the student's

school over two sessions. Finally, the student's class teacher and SNA were each invited to partake in a semi-structured interview.

Verbal feedback was sought from participants during and after the completion of the measures. Based on insights gleaned from the pilot study, the research design, measures, and procedures were refined. The case study protocol was revised to reflect these changes. Some minor revisions were made to the language used for certain items on the student questionnaire to mitigate potential misunderstandings or confusion for students. Based on observations during the pilot study, the researcher decided to incorporate more visual supports into the PCP techniques for students with DS. For example, as opposed to using the constructs or language suggested by the child when discussing their ideal classroom or school playground, visual images were incorporated into the Salmon Line scales to explore students' perceptions. The researcher decided to incorporate visual images to embrace students' potential strengths in relation to the processing of visual information, and to ensure that the technique explored students' perceptions in relation to autonomy, competence, and relatedness. Following the pilot study, the researcher decided to remove the follow-up questions based on the non-ideal classroom and school playground. During the pilot study, the questions appeared confusing and complex for the student with DS. The interview schedule for the ideal classroom and school playground was revised. A summary of the changes is presented in Appendix Y. Similarly, as documented in Appendix Y, the interview schedule for the semi-structured interview with the class teacher and SNA was refined and modified following the pilot study. A detailed overview of the changes applied to the measures following the pilot study is presented in Appendix Y. Given that the procedures and measures were adapted and revised for the main study, the data gathered during the pilot study were not analysed.

3.2.7 Data Collection

To enhance the reliability of the study, a case study protocol (Yin, 2018) was used. Yin (2018) argues that a case study protocol is necessary when employing a multiple-case design. As illustrated in Appendix O, the protocol includes four main sections: an overview of the study; data collection procedures; protocol questions; and an outline of the case study report. The protocol assisted the researcher in remaining focused on the research topic, conducting each case study, and anticipating potential barriers.

3.2.7.1 Data Collection Procedures – Student Questionnaire. All students with consent to partake in the study completed the questionnaire. The scale was administered by the researcher in the students' classroom. To accommodate potential learning differences among students, the questionnaire was administered by the researcher in line with the principles of the UDL approach (Meyer & Rose, 2006; Meyer et al., 2014). That is, instructions were provided to students in verbal and written format. Each statement was read aloud by the researcher as the students completed the questionnaire. Students were encouraged to ask questions to clarify the meaning of words or phrases.

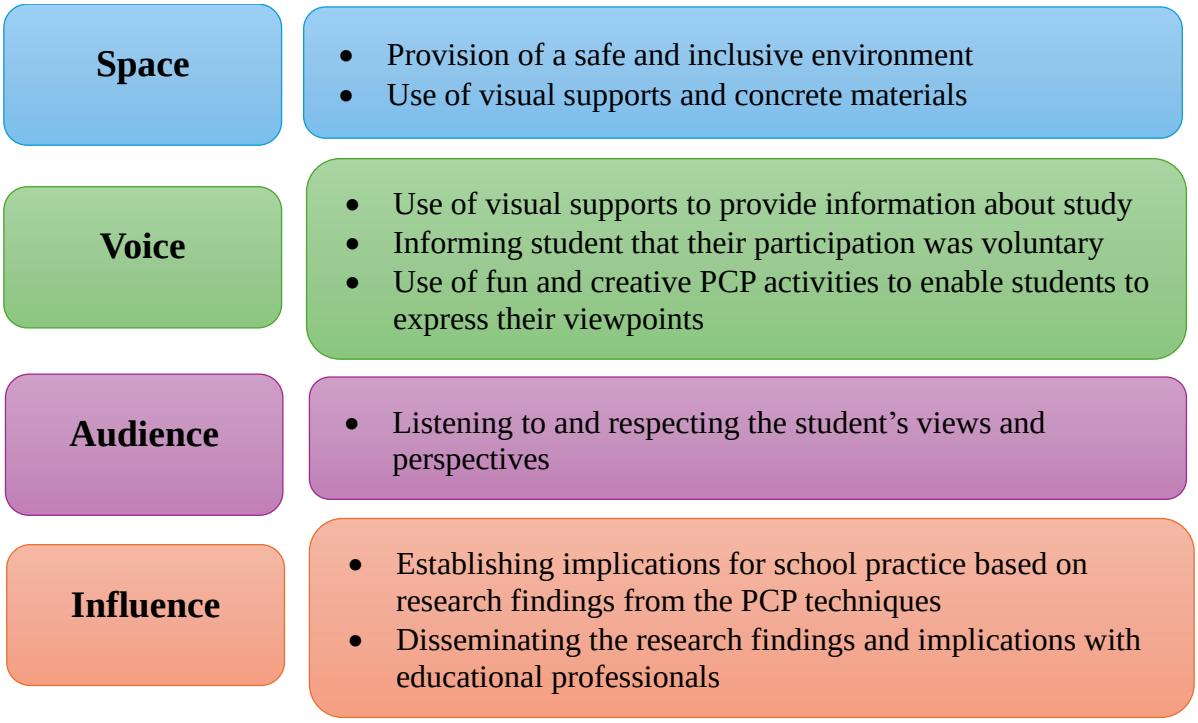
3.2.7.2 Data Collection Procedures – Personal Construct Psychology Techniques. Upon receiving informed consent and assent, students with DS were invited to complete three techniques based upon PCP. As outlined above, these included the following activities: *Building the Ideal Classroom, Building the Ideal School Playground,* and the *Salmon Line Technique.* The PCP activities were completed with the student with DS in a one-to-one setting in the student's school. With parental consent and participant assent, the sessions were audio recorded using a dictaphone to enable the researcher to analyse the data.

The PCP techniques were carried out in three separate sessions: (1) *Building the Ideal Classroom*; (2) *Building the Ideal School Playground*; and (3) *Salmon Line Technique*. Each session lasted approximately 20 to 30 minutes. The sessions were carried out over two days. The *Building the Ideal Classroom* and *Building the Ideal School Playground* activities were completed on Day 1 while the *Salmon Line Technique* was completed on Day 2. At the beginning of each session, the researcher welcomed the student and explained the purpose of the session using the visual supports outlined on the Participant Information Sheet (see Appendix R). A visual schedule was used to explain the structure of the session. As noted above, the PCP activities were conducted in line with the principles of the UDL approach (Meyer & Rose, 2006; Meyer et al., 2014). As such, students were offered choice and flexibility when using the Lego™ and drawing materials to create their ideal/non-ideal classrooms and school playgrounds.

3.2.7.2.1 PCP Techniques and Models of Participation. Moreover, as illustrated in Figure 3.1, the data collection procedures aligned with the elements in Lundy's (2007) *Model of Participation*. As noted in Chapter Two, Lundy (2007) describes four essential factors for facilitating children's right to participation; space, voice, audience, and influence. Firstly, the researcher sought to provide a safe and inclusive space for the student with DS to share their views. The sessions took place in a familiar classroom in the student's school. Visual supports and concrete materials were utilised to create a safe and inclusive environment. In terms of *voice*, the researcher utilised the Participant Information Sheet (see Appendix R) to provide the student with DS with relevant information regarding their involvement in the study. This information was presented in a child-friendly format using visual supports. As part of this, the student was informed that their participation in the study was voluntary. Additionally, the PCP activities provided fun, engaging, and creative methods to support the student with DS to articulate their viewpoints.

Figure 3.1

Data Collection Procedures Applied to Lundy's (2007) Model of Participation



Students' meaningful involvement within the research process was promoted using the final two phases of Lundy's (2007) model. In relation to *audience*, the researcher sought to ensure that the student's perspectives were listened to and respected. As will be discussed in Chapter

Four, the final condition, *influence*, was addressed by the researcher when considering the implications for school practice arising from the study and the dissemination of the research findings. Furthermore, as opposed to facilitating tokenistic participation, the researcher sought to ensure that the students' participation aligned with the upper rungs of Hart's (1992) *Ladder of Participation.* In this regard, the students' involvement aligned with levels four and five, *assigned but informed* and *consulted and informed.* That is, although the research project was facilitated by the researcher, students were informed about the purpose of their involvement, invited to choose whether they would like to participate, and enabled to share their views which were taken seriously by the researcher.

3.2.7.3 Data Collection Procedures – Semi-Structured Interview. Following the completion of the PCP techniques, the student's class teacher and SNA were each invited to partake in separate semi-structured interviews with the researcher. The interview schedule is presented in Appendix X. Each semi-structured interview lasted approximately 30 minutes. The interviews were conducted with the staff during the school day in the school setting.

3.2.8 Data Analysis

The data analytic process was guided by the criteria for interpreting the findings. The data from each case were analysed and interpreted separately. Thereafter, a cross-case synthesis of findings was conducted (Yin, 2018). Table 3.8 below provides a summary of the data analytic process. The techniques are described in detail in the following sections.

Table 3.8

Data Analytic Process

Step 1: Organise quantitative data	Questionnaire data were input into SPSS v28. The internal consistency of the three subscales and overall scale was measured using Cronbach's Alpha.
Step 2: Transcribe qualitative data	Interviews from the PCP activities with students and interviews with the teacher and SNA were transcribed by the researcher.
Step 3: Calculate and interpret composite scores	Composite scores were calculated for each participant for the three subscales and overall scale. These were obtained by averaging the participants' responses for the items for each relevant subscale/overall scale (Gagné, 2003). Scores were interpreted based on the following levels: low, medium or high level of perceived need satisfaction (Alkharusi, 2022).

Step 4: Apply pattern-matching technique	The pattern-matching technique was applied to the qualitative data from the PCP activities and interviews. Specific pattern-matching codes, informed by the case propositions, were used to analyse the data.
Step 5: Conduct reflexive thematic analysis	The data from the PCP tasks and interviews were analysed using reflexive thematic analysis. The researcher completed the six stages of the thematic analysis process. A second coder was employed to review the codes and themes. This process yielded themes and subthemes relating to the three psychological needs.
Step 6: Repeat for Case 2	Steps 1-5 were repeated for Case 2.
Step 7: Conduct cross-case synthesis	The researcher conducted a cross-case synthesis to compare the findings from both cases.

3.2.8.1 Descriptive Analysis. The data gathered from the student questionnaires were input into SPSS v28. The internal consistency of each subscale and overall scale was measured using Cronbach's α. To score the questionnaire, the researcher followed approaches used for similar scales such as the *Basic Psychological Needs Scale* (Gagné, 2003). In line with previous research (e.g., Johnston & Finney, 2010; Meyer et al., 2007), composite scores were calculated for the three subscales and overall scale. As suggested by Gagné (2003), composite scores were obtained by averaging participants' scores for the relevant items for the subscales and overall scale. To interpret the scores, the researcher used an approach recommended by Alkharusi (2022) for analysing Likert scale data. For each of the subscales and overall scale, a triple scale of class intervals was developed to interpret scores. The following categories were used: low, moderate, or high level of perceived need satisfaction. The method is outlined in Appendix Z. Higher scores indicated higher need satisfaction (Cromhout et al., 2018). As recommended by Sullivan & Artina (2013), the collated data were explored using frequency analysis whereby the percentage of responses in each category was calculated.

3.2.8.2 Pattern-Matching. Given that the study employed an explanatory case study design, pattern-matching was used to analyse the data (Yin, 2018). This approach compares empirical patterns based on the study's findings with predicted patterns based on previous theory (Trochim, 1989). Pattern-matching can be used to support the quality and validity of the research (Johnson & Onwuegbuzie, 2004). To use pattern-matching, theoretical propositions must be developed by the researcher prior to the collection of data. These propositions should be informed by knowledge gained from literature and the researcher's own experience (Almutairi et al., 2014).

Following the collection and coding of qualitative data, the theoretical propositions are compared with the empirical research findings. If similarities are evident between the empirical and predicted patterns, the findings should enhance the internal validity of the study (Yin, 2018).

In the current study, pattern-matching was used to analyse the qualitative data gathered from the PCP techniques and semi-structured interviews. The pattern-matching codes are outlined in Appendix AA. The pattern-matching process was guided by a step-by-step approach outlined by Attard Cortis and Muir (2022). The main steps included conducting a literature review; defining propositions; collecting and coding data; matching data to propositions; celebrating congruency; and explaining discrepancies.

3.2.8.3 Reflexive Thematic Analysis. In addition, reflexive thematic analysis (RTA) (Braun & Clarke, 2021) was utilised to investigate the data. Braun and Clarke (2021) describe RTA as a method of approaching thematic analysis. According to Braun and Clarke (2006), thematic analysis refers to "a method for identifying, analysing, and reporting patterns (themes) within data" (p. 6). In the context of RTA, reflexivity involves the practice of critical refection on one's role as researcher within the research process (Braun & Clarke, 2021). Importantly, the approach acknowledges the inherent subjectivity that a researcher brings to the research (Braun & Clarke, 2021). However, as opposed to viewing the researcher's subjectivity as a problem to be controlled, it is regarded as an important resource for analysing the data (Braun & Clarke, 2021).

The data sets, including the transcripts from the PCP activities and semi-structured interviews, were analysed using Braun and Clarke's (2021) six-step RTA process (see Table 3.9). A detailed overview of the process is outlined in Appendix BB. For the current study, RTA utilised a predominantly deductive orientation for exploring students' experiences in relation to basic psychological need satisfaction. The analysis was guided by the underpinning theoretical framework which provided the interpretive lens through which the researcher explored the data (Braun & Clarke, 2021). Notably, however, Braun and Clarke (2021) argue that deductive and inductive orientations are not mutually exclusive; therefore, thematic analysis can incorporate both approaches. Thus, within the current study, elements of an inductive orientation were also used. When exploring the experiences of students with DS in relation to the three psychological needs,

the development of codes and themes was guided by the data as opposed to the theoretical propositions.

Table 3.9

Six Phases of Reflexive Thematic Analysis (Braun & Clarke, 2021)

Phase 1: Familiarising yourself with the dataset	This phase required the researcher to become familiar with the datasets through a process of immersion. This involved transcribing audio transcripts, reading and re-reading the data, and recording initial analytic ideas and insights.
Phase 2: Coding	This phase required the researcher to identify segments of data that were potentially interesting or relevant to the research question and applying code labels to the data. The entire dataset was coded, systematically and thoroughly. The code labels were collated and relevant segments of data were compiled for each code.
Phase 3: Generating initial themes	This phase involved the researcher compiling clusters of codes that shared a core idea or concept. The researcher constructed candidate themes based on the data, the research question, and the researcher's knowledge and insights. Coded data were collated relevant to each candidate theme.
Phase 4: Developing and reviewing themes	This phase required the researcher to ensure that themes made sense in relation to the coded extracts and the full dataset. The central organising concept (core focus or idea) of each theme was considered. A second coder was employed to review the themes.
Phase 5: Refining, defining and naming themes	This phase required the researcher to ensure that each theme was clearly demarcated and based upon a strong core concept. Each theme was defined and named.
Phase 6: Writing up	This phase involved the completion of the formal writing process.

3.2.9 Ethical Considerations

Prior to the commencement of the study, ethical approval was granted by the Mary Immaculate College Research Ethics Committee (see Appendix CC). The study was carried out in line with the ethical standards established by the Psychological Society of Ireland (PSI) (2019). As per the PSI's Code of Professional Ethics (2019), the researcher ensured that the participants' anonymity and confidentiality were protected; that informed consent was obtained from all participants; that participants consented to the audio recording of interviews; and that participants' dignity was protected at all times.

The study recruited children including some with an ID. To protect these vulnerable persons, their parent(s)/guardian(s) were informed about the purpose of the study and were

required to provide written consent (see Appendix R). All children were given an information sheet and assent form with child-friendly and developmentally appropriate language (see Appendix S). The researcher obtained informed assent from students prior to their participation in the study. The language used in the research activities was differentiated to suit the child's level of cognitive ability. Pictorial representations and oral explanations were provided by the researcher to support students' understanding. Throughout the data collection process, students were reminded about their right to withdraw and that their participation was voluntary. Visual supports were available to encourage students to ask for a break, speak to their teacher, express their feelings, or end the activity, if necessary. Given that this study recruited participants from a vulnerable group, the well-being and autonomy of the participants were respected and protected at all times.

3.3 Results

3.3.1 Introduction

The following sections present the findings of the study. Case Report 1 outlines the findings of the first case and Case Report 2 presents the findings from the second case. An anonymised overview of the case background is provided for each case. The data from the student questionnaire were analysed using descriptive analysis to provide an overview of the mainstream class context in relation to perceived need satisfaction. Subsequently, pattern-matching and RTA were used to analyse the data from the PCP activities and semi-structured interviews. Following both case reports, the findings are discussed in relation existing theory and research. The full case reports are presented in Appendix DD and Appendix EE. As recommended by Yin (2018), a cross-case analysis was conducted to synthesise the findings from both cases. The cross-case discussion is presented in Section 3.8.

3.4 Results: Case Report 1

3.4.1 Case Overview: Case 1

Case 1 was carried out in a co-educational mainstream primary school. The school has an administrative principal, 12 class teachers, six support teachers, and one special class teacher. There are approximately 225 students enrolled in the school. The school has one special class for students with autism and seven SNAs. The school has DEIS Band One status. One female student with DS in Sixth Class participated in the study. Additionally, the student's classmates, class teacher, and SNA were recruited as participants. In total, consent and assent were obtained from

17 students and their parents/guardians to participate in the study. Students' ages ranged from eleven to twelve years.

3.4.2 Classroom Context: Case 1

To explore the mainstream class context regarding perceived need satisfaction, data from the *Basic Psychological Needs in the Classroom Scale* (Conesa & Duñabeitia, 2021) were analysed using descriptive analysis. The scale was not intended to be utilised for comparative purposes; rather, it was used to provide a rich picture of the classroom context within which the student with DS was learning.

For Case 1, the overall scale and two subscales achieved acceptable values for internal reliability (α = .84 for overall scale; α = .747 for autonomy satisfaction; α = .806 for relatedness satisfaction). These scores are similar to previous findings reported by Conesa & Duñabeitia (2021) (α = .72 for autonomy satisfaction; α = .78 for relatedness satisfaction). An alpha value of .616 was obtained for competence satisfaction. Given that scores above .7 are considered acceptable (DeVellis, 2017), the findings derived from the competence subscale should be interpreted with caution.

To score and interpret the questionnaire, the researcher followed approaches used to explore similar scales (e.g., Gagné, 2003). Composite scores were calculated for the three subscales and overall scale by averaging participants' scores for the relevant items (Gagné, 2003; Johnston & Finney, 2010; Meyer et al., 2007). As recommended by Alkharusi (2022), a scale of class intervals was developed for interpreting the composite scores (see Appendix Z). Higher scores indicated higher need satisfaction (Cromhout et al., 2018). The collated data were explored using frequency analysis by calculating the percentage of responses in each category (Sullivan & Artina, 2013). Sixteen participants completed the questionnaire. The findings for each subscale are illustrated in Figures 3.2, 3.3, and 3.4. The scores for the overall scale are presented in Figure 3.5.

Figure 3.2

Autonomy Satisfaction Subscale Findings for Case 1

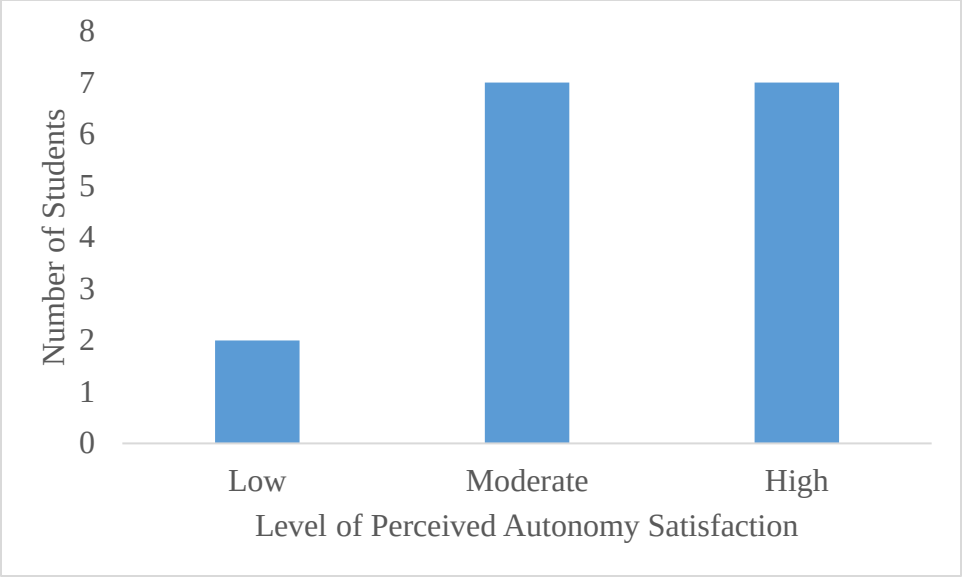


Figure 3.3

Competence Satisfaction Subscale Findings for Case 1

Figure 3.4

Relatedness Satisfaction Subscale Findings for Case 1

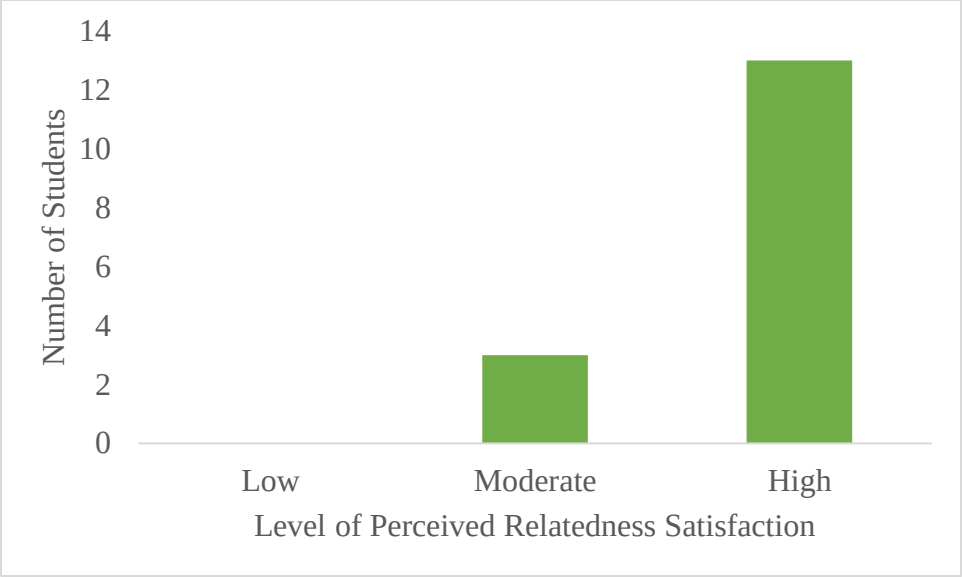
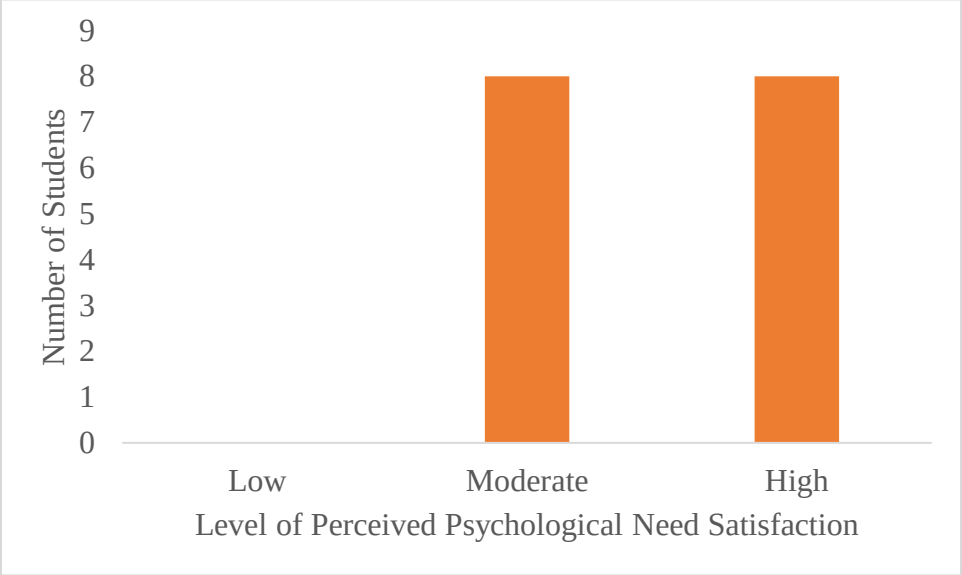


Figure 3.5

Overall Basic Psychological Need Satisfaction Findings for Case 1



As illustrated above, the majority of participants reported moderate and high levels of perceived autonomy, competence, and relatedness satisfaction. No participants reported a low level of perceived competence or relatedness satisfaction. Figure 3.4 suggests that most participants (n = 13; 81.25%) reported a high level of perceived relatedness satisfaction, whereas fewer participants (n = 3; 18.75%) reported a moderate level of perceived relatedness satisfaction. Figure 3.5 demonstrates that half the participants (n = 8; 50%) reported a moderate level in terms

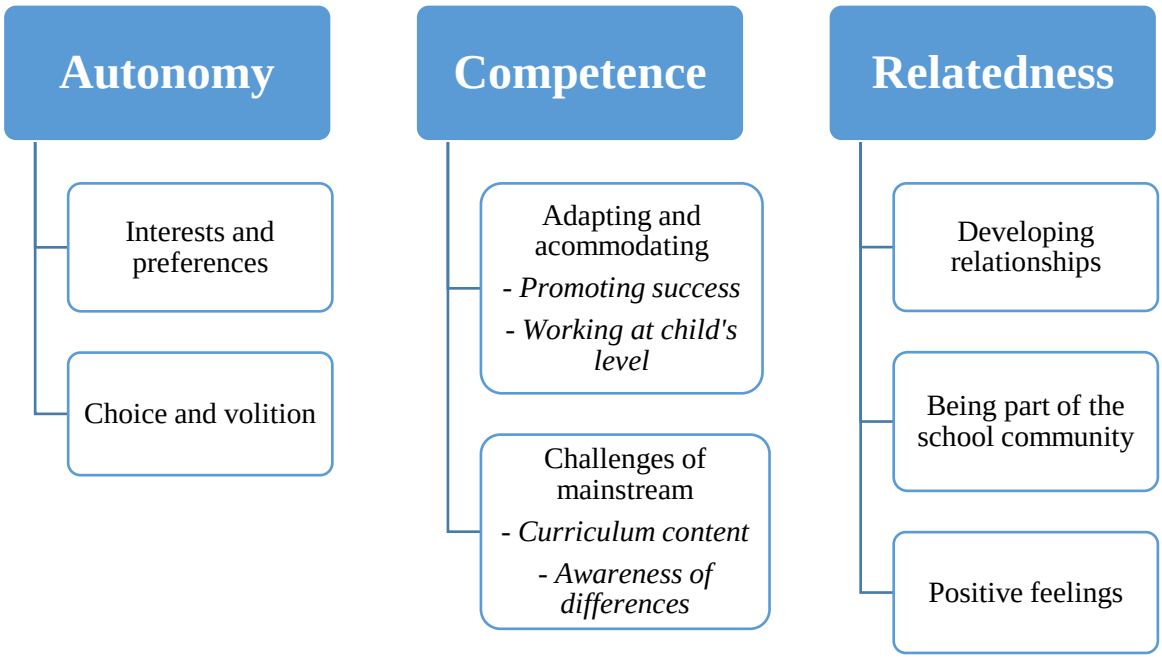
of overall need satisfaction. The other half (n = 8; 50%) reported a high level for overall need satisfaction.

3.4.3 Student's Experiences of the Basic Psychological Needs: Case 1

To explore the research question, the findings from Case 1 are presented in relation to autonomy, competence, and relatedness. For each of the three needs, an overview of how the pattern-matching technique was applied to data is provided. Subsequently, an overview of the themes and subthemes pertaining to each need is outlined. A summary of the themes and subthemes for Case 1 and their link to constructs associated with BPNT is presented in Figure 3.6.

Figure 3.6

Summary of Themes and Subthemes and Associated BPNT Constructs for Case 1



3.4.4 Autonomy: Case 1

The following sections provide an overview of the analysis of findings in relation to autonomy.

3.4.4.1 Pattern-Matching Applied to Proposition 1: Case 1. This section outlines how pattern-matching was applied to data to explore the first proposition which related to

autonomy. Table 3.10 below provides an overview of the predicted and empirical patterns, and a sample of illustrative quotes.

Table 3.10

Pattern-Matching Technique applied to Proposition 1, Case 1

Predicted Pattern	**Empirical Pattern**	**Illustrative Quotes**
For a student with DS, autonomy satisfaction will be associated with feelings of happiness, enjoyment, and interest, whereas autonomy frustration will be associated with feelings of unhappiness and disengagement.	For the student with DS, opportunities to make choices and opportunities to engage in preferred activities were associated with feelings of happiness, enjoyment and increased motivation in the school setting. Conversely, for the student with DS, lack of opportunity to make choices or decisions was associated with lack of interest and disengagement.	**Sophie, Student:** *(Discussing a Salmon Line scale)*  *In this classroom, the girl gets to pick what she'd like to do and, in this classroom, the little girl doesn't get to pick what to do. Which is more like you?* This one [points to 'girl picks what to do'] (choice). *What kind of things do you like to pick in school?* All my songs and all my games and all my favourite treats. (choice). *How do you feel when you get to pick your favourite game or favourite treat?* Like this one [points to 'happy face'] (happiness). **Helen, Class Teacher:** She does have a small group of friends and she will play with them on yard and they will play games that she would like to play (decisions). Games that they probably wouldn't be in to. Games that Infants might play. But yeah, she really enjoys playing with those friends (enjoyment). **Breda, SNA:** *(Describing student's attitude to learning)* I'd say she likes to play a lot so it's very much a reward like, "If you get this much done, then you can have a treat." She likes to pick her own treat (choice). She loves her pegs. She has a peg board and these tiny little begs and she loves just creating her own designs on the board with those (enjoyment/interest). You have to be flexible … She'll come in off the yard when she feels ready … I think if you're someone who's very rigid and just say,

	"No, we have to do this now. We can't do it later" (lack of choice). It just won't work with Sophie and then she just mightn't want to do it at all (lack of interest).

3.4.4.2 Reflexive Thematic Analysis and Autonomy: Case 1. As illustrated in Table 3.11, analysis of responses resulted in two themes that related to autonomy.

Table 3.11

Themes Relating to Autonomy and Illustrative Quotes: Case 1

Theme	Illustrative Quotes
Interests and preferences	**Sophie, Student:** *(Discussing Lego model of the Dream Classroom)*  *Which of these subjects would you like to do in this classroom?* This one [point to 'music']. She's the music teacher [holding small doll]. *If you were in the classroom doing music with the teacher, how would you feel?* This one here [points to 'happy face']. It's so much fun. **Helen, Class Teacher** Sophie loves music and dance so those would be the subject areas that she really enjoys and feels included in. **Breda, SNA:** Science can be very hit and miss. She doesn't like doing experiments and getting her hands messy … She might just do a drawing of the experiment instead or a worksheet with pictures … for those kinds of things, if she's not willing to do them, you can't force it.
Choice and volition	**Sophie, Student:** *(Discussing a Salmon Line scale)*  *Which is more like you?* This one [point to picture for 'girl picks what to do']. *What kind of things do you like to pick in school?* All my songs and all my games and all my favourite treats. *How do you feel when you get to pick your favourite game or favourite treat?* Like this one [point to 'happy' face].

Breda, SNA:

She likes to pick her own treat. She loves her pegs. She has a peg board … and she loves just creating her own designs on the board with those.

When we'd be going out on lunch, she might refuse to go initially and you'd have to be willing to wait because she'll go out when she needs to, when she feels ready.

3.4.4.2.1 Interests and Preferences. Participants' responses highlighted the importance of acknowledging and following Sophie's (student) interests and preferences. Breda (SNA) stressed the need to consider Sophie's viewpoint:

> *You have to think from her perspective … she's an independent lady. She knows what she wants, what she doesn't want.*

In the classroom, alternative tasks were provided by staff to facilitate Sophie's preferences during lessons. Breda alluded to the need for adults to be patient and flexible when seeking to respond to Sophie's preferences stating that, *you'd have to be willing to wait because she'll go out when she needs to.*

The arts subjects emerged as areas of interest for Sophie. Helen (Class Teacher [CT]) suggested that Sophie's participation in activities relating to music and dance appeared to be associated with a sense of enjoyment and fun:

> *Those would be the subject areas that she really enjoys and feels included in.*

3.4.4.2.2 Choice and Volition. The provision of choice emerged as an important element for promoting Sophie's (student) enjoyment and interest in school. Sophie expressed a preference for making decisions and recounted examples of choices that she makes in relation to songs, games, and treats. Helen (CT) described an example of how Sophie is enabled to choose the activities in which she engages in the playground setting:

> *She will play with them on yard and they will play games that she would like to play.*

For Sophie, having the opportunity to experience a sense of volition in her school environment appeared to be linked to feelings of pleasure and interest:

She likes to pick her own treat. She loves her pegs … and she loves just creating her own designs on the board. (Breda, SNA)

Conversely, thwarting Sophie's need for autonomy seemed to lead to a lack of willingness to engage and follow instruction:

If you're someone who's very rigid and just say, "No, we have to do this now." … It just won't work … then she just mightn't want to do it at all. (Breda)

3.4.5 Competence: Case 1

The following sections provide an overview of the analysis of findings in relation to competence.

3.4.5.1 Pattern-Matching Applied to Proposition 2: Case 1. This section outlines how pattern-matching was applied to data to explore the second proposition which related to competence. Table 3.12 below provides an overview of the predicted and empirical patterns, and a sample of illustrative quotes.

Table 3.12

Pattern-Matching Technique applied to Proposition 2, Case 1

Predicted Pattern	**Empirical Pattern**	**Illustrative Quotes**
For a student with DS, competence satisfaction will be associated with feelings of happiness, enjoyment, and interest, whereas competence frustration will be associated with feelings of unhappiness and disengagement.	For the student with DS, opportunities to experience competence and success were associated with feelings enjoyment and engagement. On the other hand, for the student with DS, lack of opportunity to experience success or mastery was	**Sophie, Student:** *What do you like doing in school?* I love art and singing and dressing up (enjoyment). *Wow. And are you really good at doing all those things?* Yes, so good (competence). I love singing (enjoyment). **Helen, Class Teacher:** She loves music but even when the class were learning the ukelele, she tried it for a while but she found it hard (lack of opportunity to experience success/mastery). Her fingers were getting sore and she didn't want to do it anymore … she'd just say, "That's it." And she'd push the ukelele across the table (disengagement). **Breda, SNA:** We do her own Maths in her copy and she knows then that once they're corrected, she picks out her stickers (success). She loves getting to do that work

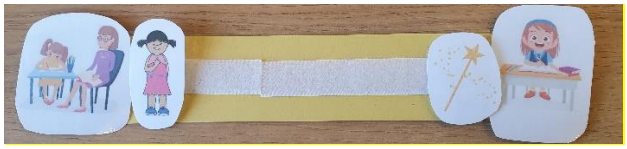
	associated with disengagement and negative affect.	(enjoyment/interest) and she loves getting a bit of praise for her Maths and her reward. Her tasks are generally at her level so she does achieve (achievement). And she does experience success … and she does thrive on it (happiness). There are times where she'd be like, "I can't do it." And she gets frustrated and upset (negative affect) if it's a task that she's not able for (lack of opportunity to experience success).

3.4.5.2 Reflexive Thematic Analysis and Competence: Case 1. As outlined in Table 3.13, analysis of responses yielded two themes and four subthemes that related to competence.

Table 3.13

Themes Relating to Competence and Illustrative Quotes: Case 1

Theme and Subtheme	Illustrative Quotes
Adapting and accommodating • Promoting success	**Sophie, Student:** *(Discussing a Salmon Line scale)*  *Which are you more like?* This one [points to picture 'students get work right']. I have stickers in my copy. *Lovely. And what do you get stickers for?* From my teacher. For my letters and my sums. **Helen, Class Teacher:** In relation to (experiencing success in) learning, that would mostly happen on a one-to-one basis with the SET where the work is differentiated to her level.
Adapting and accommodating • Working at child's level	**Helen, Class Teacher:** Her English and Maths would probably be at a Senior Infant level so she would do most of her instruction outside the classroom on a one-to-one basis with a SEN teacher. **Breda, SNA:** The other subjects would be kind of differentiated to suit her level. She's learning at her pace. She's learning and she's progressing … Every year she has come on but it is very much working at her own level.
Challenges of mainstream	**Helen, Class Teacher:**

• Curriculum content	In terms of the heavier subjects, like we're doing Northern Ireland in History at the moment, and that's very hard to differentiate so far down to Sophie's level that she can be included. **Breda, SNA:** Mainstream is hard and there are times in the day where she maybe feels lost, you know? There are certain subjects … sometimes I don't know if they're relevant to where Sophie is at.
Challenges of mainstream • Awareness of differences	**Sophie, Student:** *(Discussing a Salmon Line scale)*  *Are you more like this girl or this girl?* This one [points to 'student needs help with work']. *And who usually helps you with your work?* That's Breda and that's me. *And if you had a magic wish, which would you like to be?* This girl [points to 'student does work alone']. **Breda, SNA:** There have been times where I would question the appropriateness of mainstream. Things that she would've been struggling with. I suppose you'd be saying, *if she was in a different environment, for her self-esteem and confidence, would it have been better?*

3.4.5.2.1 Adapting and Accommodating. Participants' responses indicated that accommodations are put in place in the mainstream setting to enable Sophie (student) to experience a sense of competence. The staff suggested that differentiation and individual withdrawal for special education teaching are utilised to provide opportunities for Sophie to experience success and progress. Success seemed to be linked to praise and extrinsic rewards, both of which appeared to give rise to feelings of happiness:

> *We do her own Maths in her copy and she knows then that once they're corrected, she picks out her stickers. She loves getting to do that work and she loves getting a bit of praise for her Maths and her reward.* (Breda, SNA)

Similarly, in terms of adaptations and accommodations, participants indicated that Sophie is following an individualised learning programme, particularly for core subjects. While other subject areas are also differentiated, Breda stressed that Sophie is still demonstrating learning and progress at her own level.

3.4.5.2.2 Challenges of Mainstream. The challenges associated with supporting Sophie's (student) learning and development in the mainstream setting were shared by participants. As illustrated by Helen (CT), concerns pertained to the accessibility and relevance of certain curricular content and Sophie's reliance on adult support:

> *I suppose the mainstream curriculum would be very challenging for Sophie. She isn't really able to access most of it. She definitely needs Breda's (SNA) help all the time with things.*

Sophie stated that she usually needs help with her work, however, she expressed a preference for working independently in the classroom. As suggested by Breda (SNA), unfulfillment of Sophie's need for competence in the mainstream classroom appeared to be associated with a sense of unhappiness and lack of enjoyment:

> *There are times where she'd be like, "I can't do it." And she gets frustrated and upset if it's a task that she's not able for.*

In addition, participants alluded to the negative impacts associated with need unfulfillment for Sophie's emotional development. Breda described Sophie's tendency to engage in self-comparisons with peers in relation to her academic ability:

> *She would say, "I'm different." She was becoming more aware of her abilities and comparing them to the class because she would struggle academically ... She was becoming more aware of the fact that she's doing different work.*

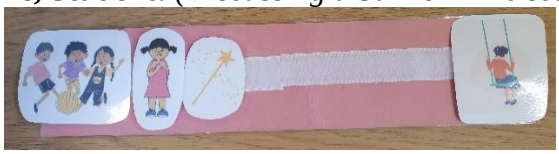
3.4.6 Relatedness: Case 1

The following sections provide an overview of the analysis of findings in relation to relatedness.

3.4.6.1 Pattern-Matching Applied to Proposition 3: Case 1. This section outlines how pattern-matching was applied to data to explore the third proposition which pertained to relatedness. Table 3.14 below provides an overview of the predicted and empirical patterns, and a sample of illustrative quotes.

Table 3.14

Pattern-Matching Technique applied to Proposition 3, Case 1

Predicted Pattern	Empirical Pattern	Illustrative Quotes
For a student with DS, autonomy relatedness will be associated with feelings of happiness, enjoyment, and interest, whereas relatedness frustration will be associated with feelings of unhappiness and disengagement.	For the student with DS, opportunities to develop relationships with peers, to be in the company of friends, and to play with peers were associated with positive affect and a sense of enjoyment.	**Sophie, Student:** *(Discussing a Salmon Line scale)*  *In this picture, the boys and girls are all part of the group. Here, the girl is all alone. Which is more like you?* That's me [points to 'being part of the group'] (belonging). *If you had a magic wand, which would you pick?* This one [points to 'being part of the group']. That's all my friends (friendship). *That's lovely. Have you lots of friends in school?* Yes. Lots of friends. Lucy is my best friend and Sarah, she's my best friend too (friendship). *What do you like to do with Lucy and Sarah?* Playing, dancing … so much fun (enjoyment). **Helen, Class Teacher:** Sophie has a great relationship with the kids in the class (relationship) and they would often, you know, if Breda wasn't there, they would often fly around and help her. So, I've found that is a big thing and Sophie really likes being with the other kids in the class (happiness). **Breda, SNA:** Like all the class are really good with her and nice to her but then she also has her little smaller group (friendship) that she loves to play with as well and they are always there for her (enjoyment).

3.4.6.2 Reflexive Thematic Analysis and Relatedness: Case 1. As illustrated in Table 3.15 below, analysis of responses resulted in three themes that pertained to relatedness.

Table 3.15

Themes Relating to Relatedness and Illustrative Quotes: Case 1

Theme	Illustrative Quotes
Developing relationships	**Helen, Class Teacher** She has great friends … They're friends that she would have had the whole way up through the school … She had a birthday party two months ago and the whole class went. Sophie has a great relationship with the kids in the class … If Breda (SNA) wasn't there, they would often fly around and help her.

	She would have good relationships with all of the adults in the school, especially Breda. **Breda, SNA:** Mary and Trish, the two SEN teachers, so they have her one-to-one now and they've had her for a good few years … she'd have a fairly good bond. Even Maura, the principal, and Trish in the office, she gets on really well with … She'd go in for the little chat with Trish. She has her little group of friends. Like all the class are really good with her and nice to her but then she also has her little smaller group that she loves to play with as well and they are always there for her. They chat away and I know, in more recent years, she goes to houses and has kids up to her house. All the teachers are very fond of her and like she'd go up and give teachers a hug, she'd hold their hand. She has a good relationship with them all, you know? She's very affectionate, very caring. If others are hurt, she'd draw my attention to it or, you know, like she's very aware of others' feelings.
Being part of the school community	**Sophie, Student:** *(Discussing a Salmon Line scale)*  *Which is more like you?* That's me [point to picture for 'part of the group']. *If you had a magic wand, which would you pick?* This one [points to 'being part of the group']. That's all my friends. **Breda, SNA:** The class that she's in are a particularly nice group of kids and they have really helped her to integrate into the school community. She is very much included in the school environment.
Positive feelings	**Sophie, Student:** *What do you like about school?* Having fun. Playing with my friends. *What do you like to do with Lucy and Sarah?* Playing, dancing … so much fun. *Tell me about this picture.* She's happy. *Yes, she's happy going to school. What about this girl?* Sad. *She's sad going to school. Which is more like you?* This girl over here (happy). **Helen, Class Teacher:** And then you look at the friends that she has and how happy she is when she's interacting with them. **Breda, SNA:** … In general, she is quite happy in school.

3.4.6.2.1 Developing Relationships. Helen (CT) and Breda (SNA) indicated that Sophie has formed close relationships with certain peers and has participated in social outings with friends outside of school:

> *She has her little group of friends … and I know, in more recent years, she goes to houses and has kids up to her house.* (Breda)

Similarly, Sophie (student) identified peers within her class with whom she has formed close relationships, *Lucy is my best friend and Sarah, she's my best friend too* (Sophie). Participants' responses suggested that Sophie has developed positive relationships with peers in the mainstream setting:

> *She also has her little smaller group that she loves to play with as well and they are always there for her.* (Breda)

> *All the teachers are very fond of her and like she'd go up and give teachers a hug … She has a good relationship with them all.* (Breda)

Furthermore, participants indicated that Sophie has formed supportive relationships with peers and staff members. Examples of Sophie's peers' willingness to assist her in the mainstream setting and Sophie's ability to seek support from the SNA were shared by participants. Moreover, participants highlighted Sophie's kind and caring nature:

> *She's very affectionate, very caring. If others are hurt, she'd draw my attention to it … she's very aware of others' feelings.* (Breda)

Breda described Sophie's relationship with other members of the school community including Special Education Teachers, the principal, and secretary. Responses suggested that consistency and familiarity were important factors for the development of positive relationships:

> *She would have had Breda (SNA) all the way up through the school so Breda is like her go-to person in school if she ever needs anyone.* (Helen, CT)

3.4.6.2.2 Being Part of the School Community. As part of the Salmon Line scaling technique, Sophie (student) expressed a sense of belonging in the mainstream setting by indicating that she felt part of the group in school. Similar views were shared by Breda (SNA) who stated that Sophie is included by peers and members of the school community. As above, the importance of familiarity for peer acceptance and inclusion was highlighted by Breda:

> *I suppose the fact that she started in Juniors with them, they've seen her go up along … They just accept her … She's very much included as part of the class.*

3.4.6.2.3 Positive Feelings. Sophie expressed positive emotions in relation to her experiences of being in the company of friends stating that she enjoys *playing, dancing … (it's) so much fun*. Similarly, Helen (CT) and Breda (SNA) suggested that the development of close relationships with peers in school may positively influence Sophie's emotional experiences. Helen described Sophie's happiness when interacting with peers, while Breda emphasised the importance of peer recognition:

> *The kids are brilliant … They give her a thumbs up and high-fives and she loves that … she nearly loves the praise from the kids as much as she loves it from any of the adults.*

3.5 Discussion: Case 1

In this section, the findings from Case 1 are discussed in relation to existing theory and previous research.

3.5.1 Student's Experiences of the Basic Psychological Needs: Case 1

3.5.1.1 Autonomy: Case 1. In terms of autonomy, for the student with DS, opportunities to experience a sense of independence and choice were associated with feelings of happiness and enjoyment. Conversely, lack of choice and agency were associated with negative affect and disinterest in school.

In terms of contextual supports, findings indicated that school staff provided opportunities for the student with DS to make choices, and facilitated the student's learning preferences when completing certain tasks. These approaches align with the behaviours associated with need-supportive teaching, specifically in relation to autonomy support (Ahmadi et al., 2023). Notably, the SNA referenced the importance of considering the student's perspective, and in doing so,

accepting the student's expression of negative affect. These strategies reflect the concept of an 'attuning' teaching style (Aelterman et al., 2019), a subcomponent of autonomy support. As illustrated in the circumplex model (Aelterman et al., 2019), this type of teaching style provides a high level of need support, and is associated with favourable outcomes such as need satisfaction and autonomous motivation (Aelterman et al., 2019; Delrue et al., 2019). Consistent with previous research (e.g., Reeve & Cheon, 2021), in the current case, the above approaches (i.e., the provision of choice and perspective-taking) appeared to give rise to positive outcomes for the student with DS. These included a sense of enjoyment, interest, and positive affect. In a similar vein, other researchers (e.g., Emond Pelletier & Joussemet, 2017) found that autonomy-supportive instruction enhanced task engagement and autonomy satisfaction for individuals with ID.

Importantly, alongside autonomy satisfaction, findings highlighted a pattern of limited volition and disengagement for the student with DS. To illustrate, school staff described the student's tendency not to comply with instructions in response to commands or directive language from school staff. The adults' actions in this regard may reflect the behaviours associated with autonomy-thwarting teaching (Ahmadi et al., 2023; Reeve & Cheon, 2021). Consequently, the student's reluctance to follow instruction may be understood as a compensatory behaviour, namely, oppositional defiance, in response to autonomy frustration. Within BPNT, it is proposed that individuals may engage in compensatory behaviours, including oppositional defiance, to cope with the negative impacts associated with need frustration (Vansteenkiste & Ryan, 2013). In the current case, the student's rejection of the adults' instruction may be viewed as a reaction to control and a means of escaping the feeling of being controlled (Vansteenkiste et al., 2020).

Taken together, the above findings suggest that the student with DS experienced both need satisfaction and need frustration in the mainstream setting. Within BPNT, it is proposed that need satisfaction and need frustration are interrelated, yet independent, constructs (Bartholomew et al., 2011b; Vansteenkiste & Ryan, 2013). Thus, as demonstrated in the current study, both constructs may co-occur within a social context (Bartholomew et al., 2011a). Relatedly, in line with BPNT, the findings shed light on the dual-process model (Vansteenkiste & Ryan, 2013). That is, whereas autonomy-supportive teaching promoted autonomy satisfaction and contributed to feelings of happiness and interest for the student with DS (i.e., 'bright' pathway of functioning), autonomy-

thwarting teaching gave rise to autonomy frustration which resulted in disengagement (i.e., 'dark' pathway of functioning).

Analysis of data indicated that the pattern of responses aligned with the theoretical assumptions of BPNT (Ryan, 1995). Alternatively, the findings may be considered from a different theoretical perspective using Choice Theory (Glasser, 1998). In contrast to BPNT, this theory proposes that individuals behave intentionally in order to satisfy one of five basic needs: survival, love and belonging, power, freedom, and fun. Findings indicated that the student with DS had opportunities to choose and determine the games, playground activities, and learning tasks in which she engaged. Therefore, as opposed to satisfying the need for autonomy, Choice Theory (Glasser, 1998) would suggest that the student's behaviour was driven by her desire to fulfil her needs for freedom and fun.

3.5.1.2 Competence: Case 1. For the student with DS, experiences of competence satisfaction were associated with feelings enjoyment and engagement. On the other hand, lack of opportunity to experience success or mastery was associated with negative affect and disengagement.

In relation to contextual factors, findings indicated that the school staff created some opportunities within the mainstream setting to enable the student with DS to experience success and a sense of competence. To illustrate, the student appeared to have opportunities to work at her own pace, and to engage in learning tasks that were suited to her level. As above, these approaches relate to the concept of an 'attuning' teaching style (Aelterman et al., 2019). Participants' responses indicated that these accommodations enabled the student to demonstrate progress and success, and were associated with a sense of happiness and interest. These findings are consistent with previous research by Tian et al. (2014) which found significant relationships between students' competence satisfaction and positive affect, and student's need satisfaction and school satisfaction.

One of the core elements of competence-supportive teaching is the provision of optimally challenging tasks (Ahmadi et al., 2023; Niemiec & Ryan, 2009). Interestingly however, in the current case, school staff indicated that the student with DS was working at a Senior Infant level for core subject areas. Furthermore, staff highlighted specific challenges in relation to competence satisfaction for the student with DS, citing concerns regarding the accessibility of certain curricular topics, the student's reliance on adult support, and the student's awareness of her learning

differences. These findings may reflect an experience of need dissatisfaction or need unfulfillment for the student with DS (Bartholomew et al., 2011b; Huyghebaert-Zouaghi et al., 2024). As such, in contrast to need frustration which would involve the staff actively obstructing the student's need for competence, the student may have experienced need dissatisfaction because staff may have passively or indirectly prevented her from satisfying her need for competence (Vansteenkiste & Ryan, 2013). Although there is limited research exploring competence dissatisfaction in the education context, other related research findings suggest that the outcomes of autonomy unfulfillment and need unfulfillment for students may include classroom disengagement (Cheon et al., 2019), passivity, and withdrawal (Huyghebaert-Zouaghi et al., 2024). Relatedly, in the current case, findings indicated that the student with DS appeared "lost" at times within the mainstream setting and that she disengaged from challenging tasks.

3.5.1.3 Relatedness: Case 1. For the student with DS, opportunities to develop relationships with others in school were associated with positive feelings. Elements of relatedness satisfaction were demonstrated in the current case. For example, findings indicated that the student with DS formed connections with others in the mainstream setting and experienced a sense of belonging in school which were based upon the principles of respect and kindness (Ryan & Deci, 2020; Vansteenkiste et al., 2023).

The language used by school staff to describe the relationship between the student with DS and her peers was of interest. Staff reported that the student's peers "help her", "are nice to her", and "are really good with her". School staff emphasised the willingness of peers to accept, assist, and include the student with DS. On the other hand, staff also highlighted the kind and affectionate nature of the student with DS, referencing her tendency to demonstrate concern for the safety and well-being of her peers. These findings are consistent with the notion that relatedness encompasses reciprocity (Ryan & Deci, 2017). Moreover, the findings highlight the nuances of relatedness satisfaction. As such, the student's experience of relatedness may be understood in the context of a 'faceted approach' (Vansteenkiste et al., 2020). This approach sheds light on the different pathways through which the student's need for relatedness may have been fulfilled (Vansteenkiste et al., 2023). As demonstrated in this case, relatedness may incorporate a 'giving' facet and a 'receiving' facet (Vansteenkiste et al., 2020, p. 9), and, as highlighted above, the concept of benevolence may relate to the 'giving' facet (Vansteenkiste et al., 2020).

The student's experience of relatedness may also be considered using Relationships Motivation Theory (RMT) (Ryan & Deci, 2017), another sub-theory of SDT. One of the core propositions of RMT is that mutual autonomy support is essential for high-quality close relationships (Ryan & Vansteenkiste, 2023). In the current case, although findings suggested that the student with DS formed friendships with peers, it was not possible to determine the mutuality of autonomy satisfaction within these relationships. Interestingly however, when discussing the student's relationships with peers, the teacher indicated that the student's peers played games that she wanted to play as opposed to activities of interest to them. This finding could represent a potential experience of autonomy frustration for peers, thus impacting the mutuality of need satisfaction within the relationship (Ryan & Vansteenkiste, 2023). However, given that the current study did not explore the perspectives of peers regarding their experience of autonomy within their friendships in school, the above findings should be interpreted with caution.

3.6 Results: Case Report 2

3.6.1 Case Overview: Case 2

Case 2 was conducted in an all-girls mainstream primary school. It has an administrative principal, 16 class teachers, seven support teachers, three special class teachers, and ten SNAs. The school has three special classes for students with autism. One female student with DS in Fifth Class participated in the study. The student's classmates, class teacher, and SNA were also recruited as participants. In total, consent and assent were obtained from 22 students and their parents/guardians to partake in the case study. All participants were female and ranged in age from ten to eleven years.

3.6.2 Classroom Context: Case 2

To explore the mainstream class context in relation to need satisfaction, data from the *Basic Psychological Needs in the Classroom Scale* (Conesa & Duñabeitia, 2021) were analysed using descriptive analysis. The overall scale and two subscales achieved acceptable values for internal reliability (α = .865 for overall scale; α = .778 for competence satisfaction; α = .81 for relatedness satisfaction). These scores are similar to previous findings reported by Conesa & Duñabeitia (2021) (α = .76 for competence satisfaction; α = .78 for relatedness satisfaction). An alpha value of .626 was obtained for autonomy satisfaction. Given that scores above .7 are considered

acceptable (DeVellis, 2017), the findings derived from the autonomy subscale should be interpreted with caution.

The composite scores calculated for participants for each subscale and overall scale were interpreted using a scale of class intervals (Alkharusi, 2022; see Appendix Z). Twenty-one participants completed the questionnaire. The findings for each subscale are represented in Figures 3.7, 3.8, and 3.9. The scores for the overall scale are presented in Figure 3.10.

Figure 3.7

Autonomy Satisfaction Subscale Findings for Case 2

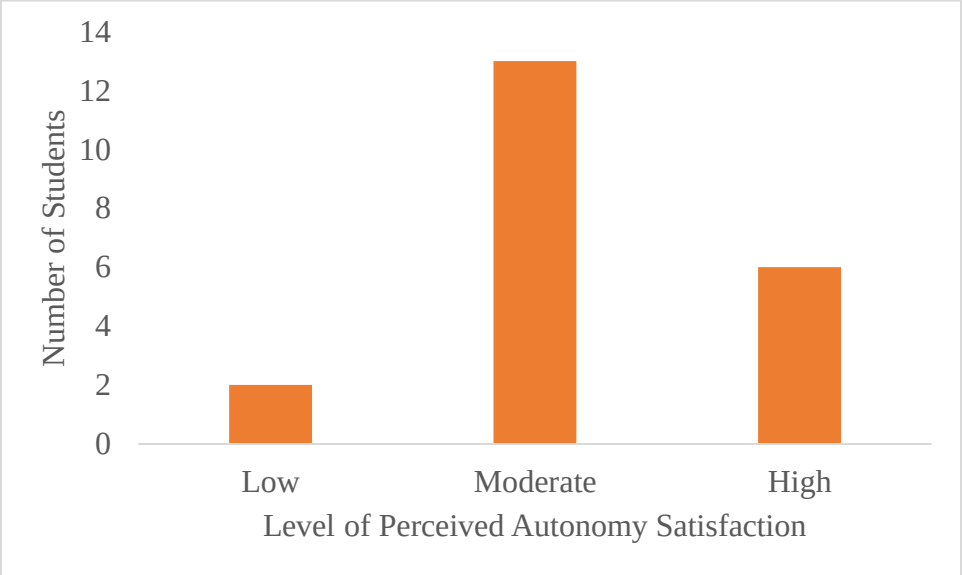


Figure 3.8

Competence Satisfaction Subscale Findings for Case 2

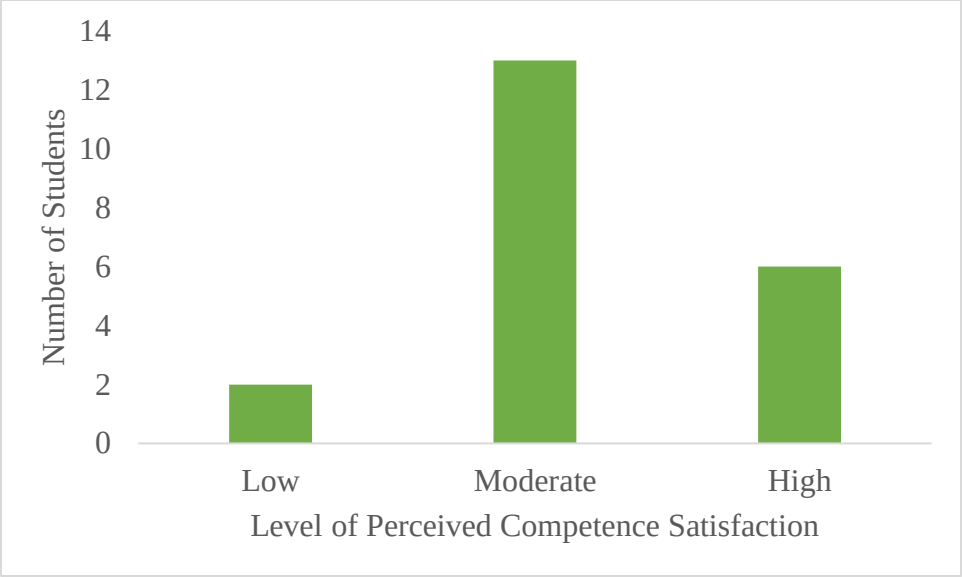


Figure 3.9

Relatedness Satisfaction Subscale Findings for Case 2

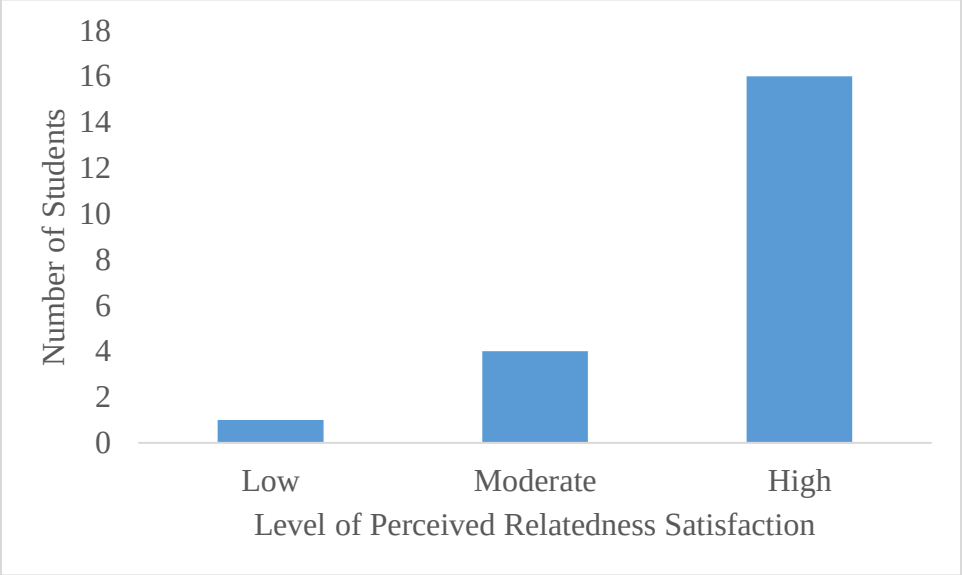
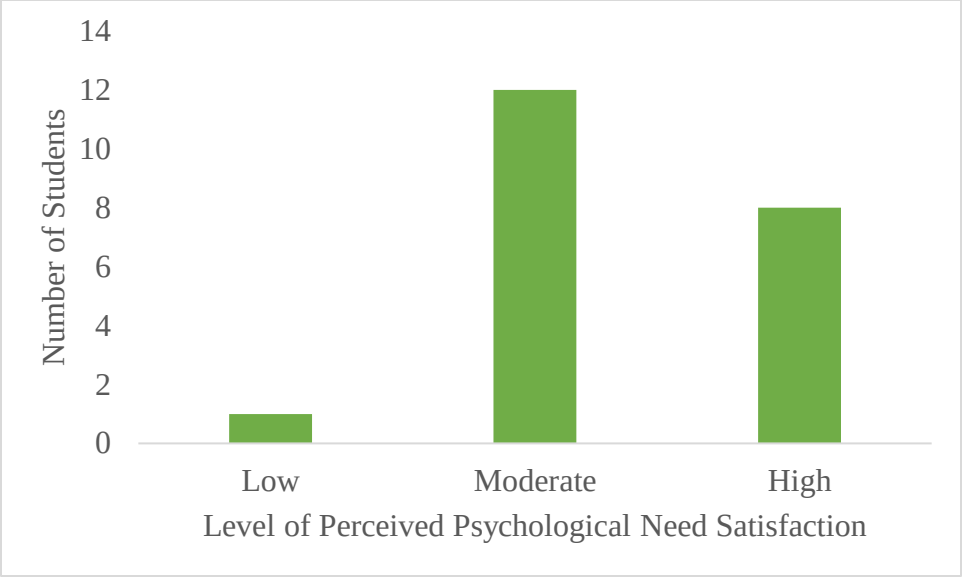


Figure 3.10

Overall Basic Psychological Need Satisfaction Findings for Case 2



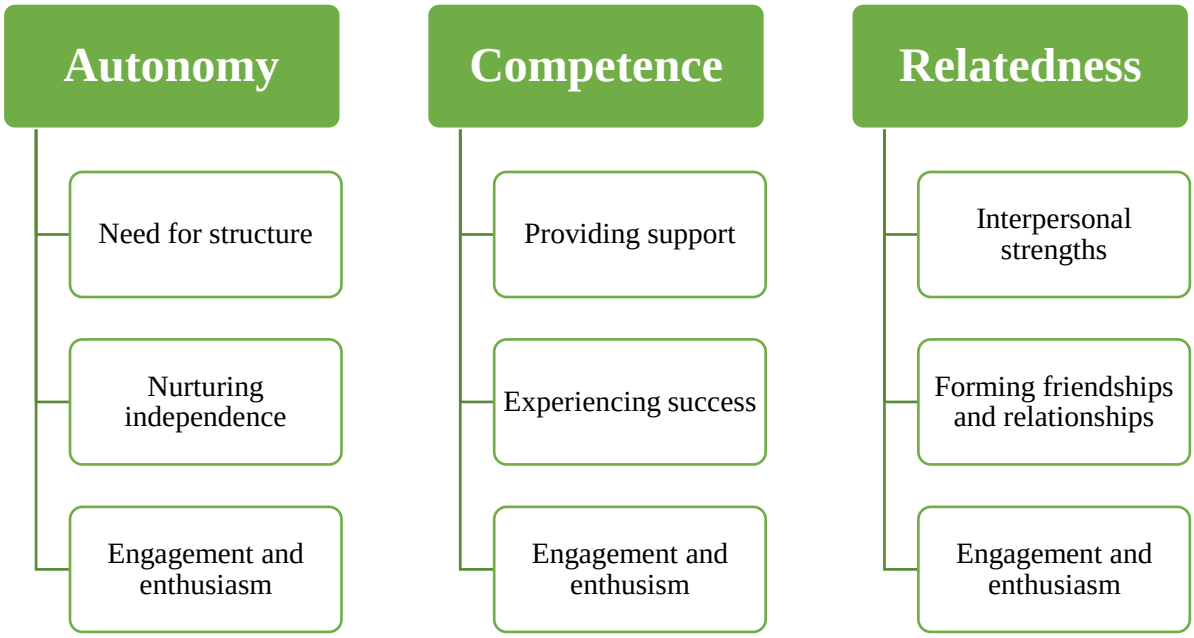
Figures 3.7 and 3.8 illustrate that more than half the participants (*n* = 13; 61.9%) reported moderate levels of perceived autonomy and competence satisfaction. For both subscales, six participants reported high levels of perceived need satisfaction while two participants reported low levels of perceived need satisfaction. As demonstrated in Figure 3.9, the majority of participants (*n* = 16; 76.19%) indicated that they experienced high levels of perceived relatedness satisfaction. One participant reported a low level of perceived relatedness satisfaction. Figure 3.10 illustrates that more than half the participants (*n* = 12; 57.14%) reported a moderate level in terms of their overall need satisfaction. Less than half the participants (*n* = 8; 38.09%) reported a high level for overall need satisfaction while one participant obtained a low overall score.

3.6.3 Student's Experiences of the Basic Psychological Needs: Case 2

To explore the research question, the findings from Case 2 are presented in relation to autonomy, competence, and relatedness. For each of the three needs, an overview of how pattern-matching was applied to data is provided. Thereafter, the themes and illustrative quotes relating to each need are presented. A summary of the themes for Case 2 and their related BPNT constructs is presented in Figure 3.11.

Figure 3.11

Summary of Themes and Associated BPNT Constructs for Case 2



3.6.4 Autonomy: Case 2

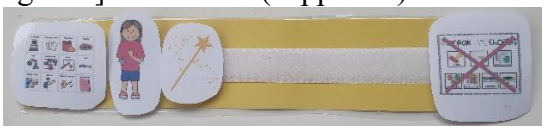
The following sections provide an overview of the analysis of findings in relation to autonomy for Case 2.

3.6.4.1 Pattern-Matching Applied to Proposition 1: Case 2. This section illustrates how pattern-matching was applied to data to explore the first proposition which pertained to autonomy. Table 3.16 provides an overview of the predicted and empirical patterns, and a sample of illustrative quotes.

Table 3.16

Pattern-Matching Technique applied to Proposition 1, Case 2

Predicted Pattern	Empirical Pattern	Illustrative Quotes
For a student with DS, autonomy satisfaction will be associated with feelings of happiness, enjoyment, and	For the student with DS, opportunities to make choices and self-monitor	**Emma, Student:** *(Discussing Salmon Line scales)*  *What's happening in this picture?* Everyone is happy. *Yes, the children are happy and are having fun in school. What about this picture?* The boy is

interest, whereas autonomy frustration will be associated with feelings of unhappiness and disengagement.	their learning were associated with positive affect and a sense of enjoyment.	sad. *Yes, he's feeling sad and bored in school. Which one is more like you?* Happy [points to 'having fun']. Like them (happiness).  *… In this classroom, the girl gets to pick what she'd like to do and, in this classroom, the girl doesn't get to pick. Which is more like you?* This one [points to 'gets to pick'] (making choices). That's so nice (enjoyment). **Niamh, Class Teacher** Having a little checklist and things like that. I find they really keep her on track and focused (interest) … I made this little visual timetable and it has words and pictures and it was a checklist and she would tick the list off (self-direction). In her timetable, I have a slot for free choice time (choice). So, every day, once she gets all her work completed, there's a little slot where she can have her free choice time (choice), she often likes to play one of her English games on the iPad (interest) or she might want to do a bit of art or she loves wordsearches (enjoyment). So I have a bundle of activities that she can choose from (choice).

3.6.4.2 Reflexive Thematic Analysis and Autonomy: Case 2. As illustrated in Table 3.17 below, analysis of responses resulted in two themes that related to autonomy.

Table 3.17

Themes Relating to Autonomy and Illustrative Quotes: Case 2

Theme	Illustrative Quotes
Need for structure	**Niamh, Class Teacher:** I feel like having a structure, a really good routine and these visual timetables, it is such a help and she has been able to have a little bit more independence as well. This (visual timetable) gave her a bit more independence and she knew what was ahead of her each day. There are other areas though that we definitely still need to keep an eye on like she's a flight risk … You can't fully leave her independently in that way.

	Emma, Student: *(Discussing a Salmon Line scale)*  *In this classroom, the teacher lets the little girl choose what she does in school and in this classroom, the teacher tells the girl what to do. Which is more like you?* Sometimes this one and sometimes this one. That's just like my teacher.
Nurturing independence	**Niamh, Class Teacher:** She was crying out for a lot of independence this year. So, there was little things that I put in place to give her that independence … I made this little visual timetable … it is a checklist and she ticks the list off … She knows she has to do her typing because that's one of her targets … So she'd go, "Ms, can I go and get my iPad now?" So she's doing little things, grabbing her iPad … She is telling me what she wants or needs and I'm going with that. In her timetable … Once she gets all her work completed, there's a little slot where she can have her free choice time. **Anne, SNA:** We set our targets. So one of our targets was to come in independently from the yard and join the line with the others in her class. Listening rather than, you know, directing. You're listening to what the child wants to say or do … rather than just telling her what to do.

3.6.4.2.1 Need for Structure. Participants' responses suggested that structure and routine were important factors for promoting the Emma's (student) independence in the mainstream classroom. When responding to a Salmon Line scale about learning tasks, Emma reported that, on some occasions, she has the opportunity to choose what to do while on other occasions, her teacher decides what to do. Without structure, Niamh (CT) remarked that Emma *didn't know what she was doing until she was told*. Structure appeared to be associated with the use of visual timetables and the implementation of rules. Niamh explained that while Emma is developing independence in relation to learning tasks, her safety awareness represents an area for development. Structure and boundaries appeared to play a role in supporting Emma's independence in relation to this area of need:

> *We've just had to have chats with her about the rules and what's okay and what's not okay.* (Niamh)

In a related manner, Emma's developing sense of safety appeared to influence the level of independence afforded to her by staff members:

> *She's a flight risk so therefore you still have to be aware that she's doing this on her own but you'd still have to be there to check.* (Anne, SNA)

3.6.4.2.2 Nurturing Independence. Participants' responses suggested that Emma (student) demonstrated a desire to satisfy the need for autonomy in the mainstream setting. Niamh (CT) described an example of Emma's request for independence:

> *She would say, "Oh I can do this myself. I don't need your help here."*

In a similar vein, when completing a Salmon Line scale, Emma reported that she does her schoolwork alone stating: *I can do it myself.* Likewise, she demonstrated a preference for doing her work independently. Anne (SNA) shared a similar example of Emma's desire for independence stating:

> *It's at the stage now that I have to close my eyes while she's doing it on her own.*

As well as listening to Emma's viewpoints, checklists, targets, and free choice time appeared to be used to nurture her independence in the classroom. In the playground setting, providing opportunities to make choices was identified as an important factor for promoting independence:

> *When she's out on yard, like, "Who do you want to play with? What games do you want to play?" It's all about giving her the choice.* (Niamh)

3.6.4.2.3 Engagement and Enthusiasm. The supports used to nurture Emma's (student) independence in the classroom setting seemed to help promote her engagement in and attitude towards learning:

> *She has such a great work ethic … She is ploughing through her work now. Like she's really focused now, "This is on my list, I'm going to get it done."* (Niamh, CT)

Similarly, as illustrated by Anne (SNA) and Niamh, efforts to nurture Emma's independence appeared to enhance her confidence within the school setting:

She loves being able to do things by herself. (Anne)

She confidently says what she wants to do, who she wants to play with. (Niamh)

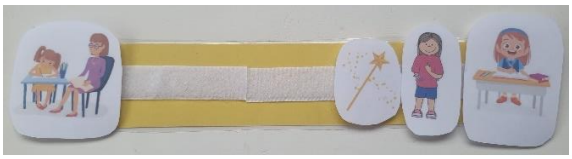
3.6.5 Competence: Case 2

The following sections provide an overview of the analysis of findings in relation to competence.

3.6.5.1 Pattern-Matching Applied to Proposition 2: Case 2. This section outlines how pattern-matching was applied to data from to explore the second proposition which related to competence. Table 3.18 provides an overview of the predicted and empirical patterns, and a sample of illustrative quotes.

Table 3.18

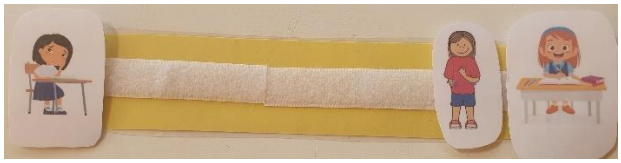
Pattern-Matching Technique applied to Proposition 2, Case 2

Predicted Pattern	**Empirical Pattern**	**Illustrative Quotes**
For a student with DS, competence satisfaction will be associated with feelings of happiness, enjoyment, and interest, whereas competence frustration will be associated with feelings of unhappiness and disengagement.	For the student with DS, opportunities to experience success and complete tasks independently in school were associated with positive affect.	**Emma, Student:** *(Discussing a Salmon Line scale)*  *What about these pictures? This girl does her work by herself and this girl needs some help with her work? Are you more like this girl or this girl?* This one [points to 'does work alone']. I can do it myself (mastery). *And if you had a magic wish, which would you be like?* All by myself. **Anne, SNA:** And her work is suited to her level. It has to be. She feels so good when she gets her work done (happiness/enjoyment). When I got back to the classroom earlier, she had her work finished (success) and I had to close my eyes see what she had completed. You know? Things like that. And that's another feel-good factor for her too (happiness).

3.6.5.2 Reflexive Thematic Analysis and Competence: Case 2. As illustrated in Table 3.19, analysis of participants' responses produced three themes that related to competence.

Table 3.19

Themes Relating to Competence and Illustrative Quotes: Case 2

Theme	Illustrative Quotes
Providing support	**Niamh, Class Teacher** *How is Emma supported to reach her potential in school?* SNA support, lots of encouragement for movement breaks. SET hours obviously. It is so important for Emma to get that one-to-one support. **Anne, SNA:** We have classroom support and resource support outside class, you know, where she would go to the SET teachers for resource. The work she does is suited to her level. It has to be.
Experiencing success	**Emma, Student:** *Tell me three things you like about school.* Tests. I love tests. *Wow, that's great, Emma. Why do you like tests?* Like getting them all right. **Niamh, Class Teacher:** I just feel like she has progressed so much. Like she is ploughing through her work now. **Anne, SNA:** She just loves being able to do things by herself. All children love to experience success, but especially children with Down syndrome. You could see an expression on Emma's face that will tell you so much. With any of the targets we set, I would always say to her, "Well done." The first thing she does is jump up and down.
Engagement and enthusiasm	**Emma, Student:** *(Discussing a Salmon Line scale)*  *Which one is more like you?* Let me think! I pick this one [points to 'student likes doing work']. *What kind of work do you like doing?* I like doing my typing, spellings, stuff like that. **Niamh, Class Teacher:** She's on two kinds of rewards systems. One like a sticker chart that she has and it helps with her work ethic as well. Like depending on her standard of work and behaviour, she'll get her stickers on her chart and then if she gets so many stickers, she gets a homework pass. But also, we've a whole class initiative … So those little initiative keeps her driving on, keeps her focused.

	Anne, SNA:
	She enjoys all areas in school. She loves doing things with the class.

3.6.5.2.1 Providing Support. Participants' responses indicated that different supports are implemented in the mainstream setting to promote Emma's (student) learning and development. These included SNA support, movement breaks, and individual support from Special Education Teachers. As mentioned by Anne (SNA), *every time and facility that can be given to her is given.* Niamh (CT) remarked upon the importance of recognising and embracing Emma's strengths as a learner:

> *With Emma, she's a visual learner so I feel it's very helpful when you work with their strengths and how best they learn … what techniques to use.*

As illustrated by Anne, participants' responses suggested that Emma is supported to engage in some individual learning activities that are suited to her level, and to participate in lessons with the mainstream class:

> *She would have her own certain worksheets to do but, as much as possible, we try and keep her in line, integrated with the class.*

3.6.5.2.2 Experiencing Success. Participants' responses suggested that Emma (student) benefits from opportunities to experience success in school. Niamh (CT) described how activities in the mainstream classroom are differentiated to enable Emma to experience success. Furthermore, Niamh highlighted how these opportunities may enhance Emma's well-being in school:

> *We were learning about Mexico, that was really difficult for her to grasp so she researched a few basic things at her level and then focused on the flag of Mexico. She got to present her project to the class like everyone else and she really enjoyed that. She was so proud.*

Anne (SNA) emphasised the importance of ensuring that all students, including those with DS, have opportunities to experience success. Anne described the sense of contentment that Emma experiences when she achieves targets, receives praise, and completes work independently stating, *she feels so good when she gets her work done*. In a similar vein, Emma expressed a liking for

finding schoolwork easy and doing tasks correctly. She reported that she finds her work in school easy and articulated that she is *able to do (her) work.*

3.6.5.2.3 Engagement and Enthusiasm. Participants' views suggested that the individualised supports and opportunities that are provided by adults in the mainstream setting help to promote Emma's (student) engagement in and attitude towards learning. Emma expressed an interest in partaking in individualised learning activities, such as spelling tests and typing, that are suited to her level: *I love tests … Like getting them all right* (Emma). Alongside the use of checklists and visual timetables, Niamh (CT) suggested that the use of an individual sticker chart helps to *keep her (Emma) focused.*

3.6.6 Relatedness: Case 2

The following sections provide an overview of the analysis of findings in relation to relatedness.

3.6.6.1 Pattern-Matching Applied to Proposition 3: Case 2. This section outlines how pattern-matching was applied to data to explore the third proposition which pertained to relatedness. Table 3.20 below provides an overview of the predicted and empirical patterns, and a sample of illustrative quotes.

Table 3.20

Pattern-Matching Technique applied to Proposition 3, Case 2

Predicted Pattern	**Empirical Pattern**	**Illustrative Quotes**
For a student with DS, relatedness satisfaction will be associated with feelings of happiness, enjoyment, and interest, whereas relatedness frustration will be associated with feelings of unhappiness and disengagement.	For the student with DS, opportunities to develop friendships, connect with others, and interact with peers were associated with positive feelings and a sense of enjoyment.	**Emma, Student:** *(Discussing a Salmon Line Scale)*  *… Look at these pictures. What happening in this picture?* Playing in a group. *Yes. Look, in this picture, somebody was left out. Which is more like your playground?* Playing together (connection). Stick it near that picture. *What do you like doing in your playground?* Playing with Kate and Zoe (friendship). It's great fun (happiness/enjoyment). **Niamh, Class Teacher**

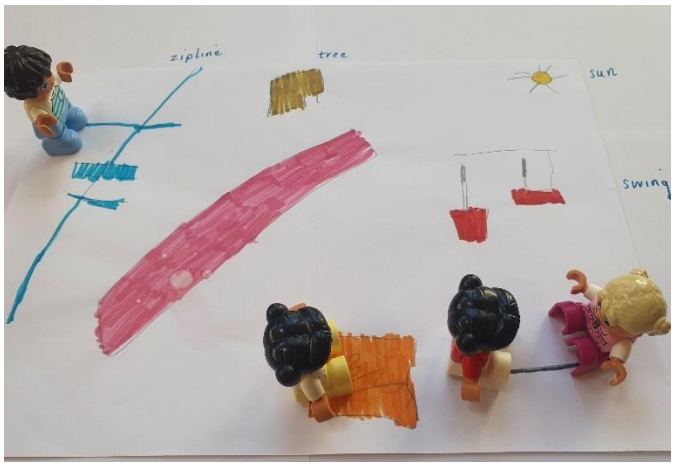
	Oh yeah, she's a really good network of friends (friendship). That's something again I find like giving her choices about what she can do with her friends (connection) and things but she has a really good network of friends and she loves being with them (enjoyment) … the friends that are around her are really good (friendship).

3.6.6.2 Reflexive Thematic Analysis and Relatedness: Case 2. As outlined in Table 3.21 below, analysis of participants' responses resulted in three themes that pertained to relatedness.

Table 3.21

Themes Relating to Relatedness and Illustrative Quotes: Case 2

Theme	Illustrative Quotes
Forming friendships and relationships	**Emma, Student:** *(Discussing model of Dream Classroom)*  *If you were in this classroom, where would you sit?* Here, that's me and Kate [points to two chairs at table]. *I wonder if you walked into the classroom, how would you feel?* I know. This one [points to happy face].  *(Discussing a Salmon Line Scale)* *Which picture is more like you?* This one right here [points to 'children playing together']. *If you had a magic wand, which would you prefer to be?* Here playing with the girls. **Niamh, Class Teacher:**

	Well, building a relationship is always number one for me. And, that's for every kid in the classroom. That's number one. Even when you're going through the corridor in the school, you can see that she's got a relationship with all of her past teachers or even the caretaker! The friends that are around her are really good. The girls in the class, even though they mightn't be in her close circle, they're really friendly with her and just so warm.
Interpersonal strengths	**Niamh, Class Teacher** That's because she's so warm and so friendly. Like she brings such a sparkle to the room. The girls just love Emma. She is an asset to our class. Like she just brings so much brightness to it and fun. **Anne, SNA:** Her people skills are very strong … She would chat to anyone. She is so bubbly and affectionate towards her friends and the others in the class.
Engagement and enthusiasm	**Emma, Student:** *(Discussing drawing of Ideal School Playground)*  *What do you like doing in your playground?* Playing with Kate and Zoe. It's great fun. *What games do you like playing with your friends?* We do hip hop. **Niamh: Class Teacher** She has a really good network of friends and she loves being with them.

3.6.6.2.1 Forming Friendships and Relationships. Responses shared by all participants indicated that Emma (student) has formed friendships and relationships with others in school. When completing the Lego™ model of her Dream Classroom, Emma mentioned that she would like to sit beside her friend, Kate. As part of a Salmon Line scale, Emma indicated that she usually plays with other children in school. Staff indicated while Emma has developed a positive relationship with her classmates, she has also established close friendships with certain peers:

> *She would be friendly with all of the class but there would still be one or two that she would be extremely close with*. (Anne, SNA)

In terms of relationships with adults, Niamh (CT) mentioned that Emma seeks to maintain positive relationships with staff members over time:

> *That's down to the teachers building that relationship with her but she doesn't disconnect every year from the teacher.*

3.6.6.2.2 Interpersonal Strengths and Engagement and Enthusiasm. Participants' responses suggested that Emma's (student) interpersonal strengths are an important factor in the development of relationships and friendships in school. Emma's teacher and SNA shared examples of positive traits that enable her to relate to and connect with others:

> *She's just a very social person … She's very kind, very loving*. (Niamh, CT)

> *She loves doing things with the class … She's very bubbly and sharp*. (Anne, SNA)

Participants' responses indicated that Emma demonstrates positive emotions, such as happiness and delight, when connecting and interacting with her friends in school. Anne reported that *she (Emma) is happy once she gets into the classroom and sees the friends.* Similarly, Emma remarked that, in the playground, she likes *playing with Kate and Zoe* and noted that *it's great fun.*

3.7 Discussion: Case 2

In this section, findings from Case 2 are considered in light of existing theory and previous research.

3.7.1 Student's Experiences of the Basic Psychological Needs: Case 2

3.7.1.1 Autonomy: Case 2. With regard to autonomy, for the student with DS, opportunities to make choices and to work independently appeared to enhance her engagement in, and attitude towards, learning. School staff emphasised the significance of structure for promoting the student's independence and engagement in the classroom. Interestingly, the provision of choice appeared to be accompanied by an element of structure. For example, the teacher included a free choice activity as part of the student's visual timetable and the teacher provided a selection of worksheets from which the student could choose an activity. The offer of input and choice represents one of the core elements of autonomy-supportive teaching (Reeve & Cheon, 2021). Alongside autonomy support, the provision of structure is characteristic of need-supportive teaching (Aelterman & Vansteenkiste, 2023). Importantly, the significance of the combined use of choice and structure in the classroom context, as evidenced in the current case, may be understood using the circumplex model (Aelterman et al., 2019). The provision of meaningful choice pertains to the 'participative' teaching style (Aelterman et al., 2019). However, Aelterman and Vansteenkiste (2023) argue that certain students may feel "overwhelmed by the room for initiative and the possibility of independent choice making" (p. 248) because they have yet to develop the skills and capacities needed to engage in the participatory process. Thus, for these students, a structured participative approach may be required whereby the provision of choice is accompanied with an element of structure to enable them to "benefit in terms of their need-based experiences" (Aelterman & Vansteenkiste, 2023, p. 248).

Findings revealed that the student with DS demonstrated a preference for working independently in the mainstream setting. Further, participants' responses indicated that this desire was articulated by the student to school staff on some occasions. A similar finding was reported by Griffin and Blatchford (2018) who found that some students receiving SNA support in mainstream primary schools expressed a desire for more autonomous functioning. Crucially, in the current case, the adults appeared to facilitate the student's preference to complete tasks independently. Participants indicated that this supported the student's engagement and confidence. Thus, in line with the dual-process model (Vansteenkiste & Ryan, 2013), by facilitating the student's preferences and supporting her need satisfaction through the provision of choice and structure, the school staff enabled the student to experience the 'bright' pathway of human functioning.

3.7.1.2 Competence: Case 2. Analysis of findings from Case 2 indicated that specific supports were used in the mainstream setting to cultivate an environment in which the student with DS was enabled to experience success. Certain approaches used by the school staff, such as aligning instruction with the student's relative strengths in relation to visual processing and praising the student's efforts and achievements, are characteristic of competence-supportive teaching (Ahmadi et al., 2023; Wehmeyer, 2023). Furthermore, staff indicated that differentiation was utilised in the mainstream setting to enable the student with DS to meaningfully engage in whole-class activities at a level that suited her ability. Given that the use of differentiation likely provided the student with an appropriate level of challenge, this pedagogical approach may be viewed as a competence-supportive behavioural strategy (Howard et al., 2024). Thus, as demonstrated in the current case, the competence-supportive approaches used in the mainstream setting appeared to contribute to favourable outcomes, such as positive affect and engagement, for the student with DS. In a related manner, other researchers have found that students' competence satisfaction is associated with positive affect (Tian et al., 2014) and prosocial behaviour (Tian et al., 2018).

Contrastingly, other findings indicated that reward systems were used by school staff in the mainstream setting to promote the student's engagement and motivation. Staff indicated that contingent rewards, such as sticker charts, were utilised to monitor the student's standard of work and behaviour. Although the teacher indicated that the reward systems were used to enhance the student's work ethic, this type of approach actually relates to controlling or autonomy-thwarting behaviours whereby tangible rewards are used to obtain compliance (Howard et al., 2024). The use of controlling rewards can undermine the experience of autonomy and intrinsic motivation (Deci & Ryan, 1980; Ryan & Deci, 2017). Interestingly, regarding the education of students with AEN, some researchers (e.g., Wehmeyer, 2023) argue that the classroom routines and structures often emphasise control (e.g., using rules with contingent rewards and teacher-prescribed goals and guidance).

3.7.1.3 Relatedness: Case 2. In terms of relatedness, for the student with DS, opportunities to form positive relationships and friendships with others in school were associated with feelings of enjoyment and happiness. Findings indicated that members of the school community demonstrated warmth and affection toward the student with DS. This behavioural

approach is characteristic of relatedness-supportive teaching (Ahmadi et al., 2023). Importantly, relatedness satisfaction, which refers to the experience of warmth or care and feelings of connection with others, was demonstrated in the current case (Vansteenkiste et al., 2023).

Notably, findings in the current case indicated that the student's interpersonal skills represented an area of relative strength. Moreover, participants' responses suggested that the student's warm and affectionate nature enabled her to relate to and connect with others in the mainstream setting, thus supporting her need for relatedness. This finding may be explained by the link between personality traits and need experiences (Hughes et al., 2023; Prentice et al., 2019). That is, personality traits can influence the way in which individuals view and interact with their social environments (Hughes et al., 2023).

Agreeableness refers to an individual's interpersonal tendencies (Barrick et al., 2013). These tendencies include being considerate, prosocial, caring, gentle, kind, and cooperative (Blake et al., 2022). In the current case, school staff alluded to many of these qualities when describing the student with DS. Thus, agreeableness could be viewed as the 'tool' which enabled the student with DS to experience relatedness satisfaction (Prentice et al., 2019). Indeed, researchers (Bratko et al., 2022) have demonstrated significant positive correlations between the need for relatedness and agreeableness. More specifically, as noted above, agreeableness may influence the way in which individuals view and engage with their social environments. To illustrate, given that agreeable individuals are usually caring and kind, they may view their social environments more positively and may demonstrate prosocial behaviours toward others (Hughes et al., 2023). In the current case, these factors may have supported the student with DS to satisfy her need for relatedness by enabling her to develop positive relationships and meaningful connections with others. In a related manner, other researchers (Næss et al., 2016) found that prosocial behaviour represented an area of relative strength for children with DS. The authors concluded that children with DS may demonstrate care and empathy toward others which may help to enhance their functioning in social contexts (Næss et al., 2016).

3.8 Cross Case Discussion

In this section, the cross-case discussion of findings is presented. As recommended by Yin (2018), a cross-case synthesis was conducted to analyse the findings in this multiple-case study. This required the researcher to first identify and interpret within-case patterns, and then examine

whether replicative relationships, literal or theoretical, existed across the case studies (Yin, 2018). In line with recommendations for case study research, the theoretical propositions, derived from BPNT, were used as the basis for analytic generalisation (Yin, 2018). The findings from the two cases in relation to students' need experiences are discussed.

3.8.1 Students' Experiences of the Basic Psychological Needs: Cross-Case Discussion

3.8.1.1 Need Satisfaction and Need Frustration. One of the core assumptions of BPNT is that basic psychological need satisfaction is *essential* for optimal development and well-being, whereas need frustration contributes to maladaptive functioning and ill-being (Ryan & Deci, 2017). Analysis of data from both cases yielded findings which supported this proposition. At the individual need level, findings from both cases indicated that, for students with DS, opportunities to make choices and experience a sense of independence (autonomy satisfaction), to experience success and competence (competence satisfaction), and to develop positive and close relationships in school (relatedness satisfaction) were associated with positive affect and engagement. Relatedly, previous empirical studies have demonstrated positive associations between students' perceived autonomy support and engagement (Patall et al., 2018); students' competence satisfaction and positive affect (Tian et al., 2014); and students' need satisfaction and engagement (Conesa et al., 2022). In contrast, findings from Case 1 indicated that, for the student with DS, experiences of autonomy frustration were associated with disengagement and negative affect. These findings are consistent with previous research which has demonstrated significant negative correlations between autonomy thwarting and engagement and emotional well-being (Howard et al., 2024).

In line with BPNT, the experiences of students with DS in relation to autonomy, competence, and relatedness may be understood using the dual-process model (Jang et al., 2016; Vansteenkiste & Ryan, 2013). To illustrate, in relation to autonomy, need-supportive teaching facilitated autonomy satisfaction and contributed to positive affect and engagement for both students, thus enabling students to experience the 'bright' pathway of students' functioning and motivation (Jang et al., 2016; Vansteenkiste et al., 2023). Contrastingly, in Case 1, autonomy-thwarting teaching resulted in autonomy frustration and subsequent feelings of negative affect and disengagement for the student, thus activating the 'dark' pathway toward maladaptive functioning (Jang et al., 2016; Vansteenkiste et al., 2023). In relation to competence and relatedness, the use of contextual need supports within the mainstream setting promoted students' experiences of need

satisfaction. Thus, in line with the dual-process model (Vansteenkiste & Ryan, 2013), the students experienced favourable outcomes such as feelings of happiness, enjoyment, and interest. The above findings are consistent with those of other studies (e.g., Jang et al., 2016; Haerens et al., 2015) which found that autonomy-supportive teaching enhanced student engagement, whereas controlling teaching contributed to student disengagement.

3.8.1.2 Nuances of Students' Need Experiences. Although the findings aligned with the aforementioned proposition of BPNT, data from both cases also shed important light on the nuances of the theory regarding the need experiences of students with DS in the mainstream setting.

Firstly, in Case 1, findings indicated that the student with DS may have experienced competence dissatisfaction (Bartholomew et al., 2011b). Arising from challenges pertaining to the accessibility of the mainstream curriculum, findings suggested that the student's need for competence may have been unfulfilled. However, as opposed to actively thwarting the student's need, it appears more likely that the school staff may have indirectly or passively inhibited the student from experiencing competence satisfaction (i.e., competence dissatisfaction). Consistent with similar studies exploring students' experiences of autonomy and need unfulfillment (e.g., Cheon et al., 2019; Huyghebaert-Zouaghi et al., 2024), findings suggested that the student's experience of need dissatisfaction contributed to disengagement. It is interesting to note that these concerns did not arise in the second case. There may be several explanations for this finding. While the cases were similar in terms of composition, there may be other contextual factors which could explain the differences in students' need experiences. Examples might include staff training in relation to inclusive teaching practices or whole-school approaches to supporting students with DS in the mainstream setting.

Secondly, findings in Case 2 highlighted the importance of structure for supporting the student's need satisfaction. Specifically, the findings illuminated the significance of supplementing the provision of choice with some degree of structure (Aelterman & Vansteenkiste, 2023). In line with the circumplex model (Aelterman et al., 2019), the findings shed light on the potential usefulness of using a structured 'participative' approach to support need satisfaction for students with DS.

Thirdly, findings from both cases shed light on the particular mechanisms through which students with DS may experience relatedness satisfaction in the mainstream setting. On the one hand, findings from Case 1 highlighted the reciprocal nature of relatedness, and suggested that the student's experience of relatedness satisfaction may be explained in the context of 'faceted approach' (Vansteenkiste et al., 2020). As illustrated in Case 1, the student's concern for the safety and well-being of peers may demonstrate the 'giving' facet, whereas the willingness of peers to accept and assist the student with DS may represent the 'receiving' facet (Vansteenkiste et al., 2019).

Alternatively, findings from Case 2 highlighted the potential role of the student's personality traits on her experiences of relatedness satisfaction (Prentice et al., 2019). Participants' responses suggested that the student with DS demonstrated qualities associated with agreeableness such as kindness, empathy, and prosocial behaviour (Blake et al., 2022). Thus, agreeableness may have influenced the manner in which the student with DS viewed and engaged with her social context (Hughes et al., 2023). Being agreeable may have enhanced the student's perceptions of others, and may have supported her in developing positive and close relationships with peers (Hughes et al., 2023; Prentice et al., 2023). Similar to Case 2, findings from Case 1 indicated that the student with DS was affectionate, kind, and caring. Thus, the potential role of agreeableness in supporting relatedness satisfaction may apply to both cases.

3.8.1.3 Need-Supportive and Need-Thwarting Teaching. Across both cases, elements of need-supportive and need-thwarting teaching were demonstrated in the mainstream setting. Characteristics of autonomy-supportive teaching were evident in both cases. These included offering choices and facilitating students' learning preferences (Ahmadi et al., 2023). With regard to the circumplex model (Aelterman et al., 2019), aspects of the 'attuning' teaching style were demonstrated in Case 1. These included considering the student's perspective, accepting the student's expression of negative affect, and enabling the student to work at their own pace (Aelterman et al., 2019). On the other hand, findings in Case 2 related to the 'participative' teaching style. More specifically, the teacher's combined use of choice and structure reflected a structured participative approach (Aelterman & Vansteenkiste, 2023). The 'attuning' and 'participative' teaching styles are both associated with a high level of need support (Aelterman & Vansteenkiste, 2023).

Competence-supportive teaching practices were demonstrated in both cases. In particular, within Case 2, staff used certain approaches which are characteristic of competence-supportive teaching. These included aligning instruction with the student's strengths and acknowledging the student's efforts and achievements (Ahmadi et al., 2023; Howard et al., 2024; Wehmeyer, 2023). Moreover, findings highlighted how differentiation could be utilised as a competence-supportive practice to enable the student with DS to experience success. Across both cases, findings indicated that the students with DS were accepted and included within the school environment and that members of the school community demonstrated warmth and affection toward the students. These behavioural tendencies reflect elements of relatedness-supportive teaching (Ahmadi et al., 2023).

Conversely, strategies associated with need-thwarting teaching were referenced in both cases. In the first case, staff alluded to the potential impact of autonomy-thwarting teaching, such as the use of commands on the student's behaviour in the mainstream setting (Ahmadi et al., 2023; Reeve & Cheon, 2021). Findings indicated that the student with DS was likely to engage in a compensatory behaviour, namely, oppositional defiance, in response to directive language (Vansteenkiste & Ryan, 2013). Additionally, across both cases, reward strategies were employed in the mainstream setting. Notably, school staff in Case 2 indicated that contingent rewards were utilised to reinforce the student's standard of work and behaviour, thus reflecting an example of competence-thwarting teaching (Howard et al., 2024).

Interestingly, in contrast to Case 2, staff in Case 1 emphasised the challenges associated with supporting the student's need for competence in the mainstream setting. Participants outlined concerns relating to the accessibility and relevance of the mainstream curriculum, the student's reliance on adult support, and the student's awareness of her learning differences. As noted above, findings indicated that the student's need for competence may have been unfulfilled, thus giving rise to an experience of need dissatisfaction (Bartholomew et al., 2011b; Vansteenkiste & Ryan, 2013). Although elements of need-supportive teaching were evident in the case (i.e., student was working at her own pace and at her own level) (Ahmadi et al., 2023), findings highlighted a possible absence of the pedagogical practices required to enable the student to feel competent, optimally challenged, and capable of achieving her goals.

3.9 Implications of the Findings of the Current Study

The findings of the current study give rise to several implications in relation to knowledge and understanding, practice, policy, and research. In keeping with Lundy's (2007) *Model of Participation*, the fourth condition of *influence* was considered when devising the implications for future practice. The implications are summarised below and are expanded upon in Chapter 4.

Knowledge and Understanding of the Topic

- The study shed light on the nuances of BPNT regarding the experiences of students with DS in mainstream settings. The findings highlighted the experience of competence dissatisfaction which may arise when students with DS are indirectly prevented from fulfilling their need for competence by socialising agents (e.g., school staff) (Bartholomew et al., 2011b; Vansteenkiste & Ryan, 2013). Findings illuminated the potential merit in the adoption of a *structured participative approach* (Aelterman & Vansteenkiste, 2023) by teachers to support students' need satisfaction. Further, the findings highlighted the mechanisms through which students with DS may experience relatedness satisfaction in the mainstream setting.
- The study contributes to literature on the topic of student voice (e.g., Lewis-Dagnell, 2023; Sewell, 2020). That is, the research demonstrated how adapted PCP techniques could be applied to Lundy's (2007) *Model of Participation* to elicit and act upon students' views. Additionally, the study showed how Hart's (1992) *Ladder of Participation* could serve as a framework for promoting students' meaningful involvement within research. These approaches could be replicated and extended by educational professionals and researchers to promote high-quality student participation within research and practice.

Educational Psychology Practice

- The findings have implications for educational psychology practice. The insights gleaned from the study may support Educational Psychologists (EPs) in developing some of the core professional competencies for educational psychology (British Psychological Society, [BPS], 2022). In terms of Support and Development Work (NEPS, n.d.), EPs would be well-positioned to promote the use of evidence-informed approaches, such as need-supportive teaching, in mainstream schools. In terms of

casework, the findings may support EPs in utilising adapted PCP techniques to elicit the voices of students with DS and in using person-centred planning approaches. Further, the study sheds light on how these approaches may be employed in line with Lundy's (2007) *Model of Participation* and Hart's (1992) *Ladder of Participation* to ensure that students' views are elicited, embraced, and acted upon.

School Practice

- Regarding school practice, the findings highlight how elements of need-supportive teaching (e.g., Ahmadi et al., 2024; Reeve & Cheon, 2021) and differentiated learning approaches, such as the UDL approach (Meyer & Rose, 2006; Meyer et al., 2014), may be utilised to promote need satisfaction for students with DS in mainstream settings. The findings emphasise the importance of eliciting and embracing the views of students with DS in school settings. In this regard, the study highlights how Lundy's (2007) *Model of Participation* may be used to guide school staff in promoting meaningful student voice.

Policy and Curriculum

- In terms of educational policy, the findings may help to inform and guide school staff in promoting and realising the principles and key competencies of the recently published *Primary Curriculum Framework* (NCCA, 2023). Additionally, the findings of the current study align with elements of *Looking at Our Schools 2022* (Department of Education, 2024) and may have relevance for the implementation of the quality framework within primary schools. Furthermore, the research procedures used in the current study may support policy-makers and educators in implementing some of the key actions outlined with the *Participation of Children and Young People in Decision-Making: Action Plan 2024-2028* (DCEDIY, 2024).

3.10 Strengths and Limitations of the Current Study

Given that the study employed a case study methodology, the strengths and limitations of the current study are considered based on Yin's (2018) guidance on the characteristics of an exemplary case study. The strengths and limitations are identified in Table 3.22 below and are

described in Chapter 4. The main limitations of the study are summarised below and are expanded upon in Chapter 4.

The current study utilised deductive approaches to analyse the data. These included pattern-matching (Yin, 2018) and the use of a theoretical framework to guide the process of RTA (Braun & Clarke, 2021). The inclusion of these approaches gave rise to some limitations, particularly when exploring the students' subjective worldviews and the data derived from the PCP techniques. Mertz and Anfara (2006) argue that the use of theory within research can reveal and conceal knowledge and meaning. In the current study, it is acknowledged that the use of deductive approaches may have de-emphasised themes and aspects of the dataset that did not align with BPNT (Deci & Ryan, 2000; Ryan & Deci, 2002). Thus, the theoretical framework may have concealed other relevant findings about the experiences of students with DS within mainstream settings. Importantly, Mertz and Anfara (2006) propose that researchers should "give serious thought to what is being concealed" (p. 193). Accordingly, within the current study, due consideration was given to data and themes which did not fit within the theoretical framework. As outlined in Table 3.22 below, data were explored using alternative theoretical perspectives and rival propositions were examined (Yin, 2018). Further, as recommended for case study research, an independent coder was recruited to review the codes and themes derived from the analytic techniques (Merriam, 2009; Yin, 2018).

Within the current study, each case comprised a student with DS, their classmates, class teacher, and SNA. The student's support teacher was not included within the case. Furthermore, a classroom observation was not conducted as part of the data collection process. The omission of a classroom observation and the support teacher's perspective may represent potential limitations within the current study, As outlined in Table 3.22 below, these limitations pertain to Yin's (2018) second criterion which states that the case study should be 'complete'. Finally, a limitation regarding the data analytic process may be that 'participant feedback' (King & Brooks, 2018) was not incorporated into the case study design. Thus, participants were not given the opportunity to review the researcher's interpretations of the data. Future studies involving PCP approaches may consider the use of techniques such as 'member reflections' (Tracy, 2010) or 'participant feedback' (King & Brooks, 2018) to enhance the quality of the research.

Table 3.22

Summarised Critical Appraisal of the Current Study

Criterion	Strengths	Limitations
The case study must be significant.	• Exploring an identified research gap • Extending the knowledge base by using PCP techniques in the context of Lundy's (2007) model to explore the experiences of students with DS • Significance for educational psychology practice, school practice, and educational policy	• Few studies included in systematic review based on SDT
The case study must be 'complete'.	• Specific inclusion criteria established to identify case boundaries • Case study protocol developed to inform data collection process • All relevant evidence presented in full case reports as appendices • Sufficient time allocated to the data collection process	• Student's support teacher not included in the case • Difficulty in determining contextual factors outside the case boundary • Classroom observation not conducted • Student's cognitive ability level not included as an inclusion criterion
The case study must consider alternative perspectives.	• Data considered from alternative theoretical perspectives • Use of independent coder to validate codes/themes and explore alternative perspectives	• Use of deductive approaches may have de-emphasised themes and aspects of the dataset that did not align with BPNT
The case study must display sufficient evidence.	• Chain of evidence maintained by researcher • Case study protocol used to enhance reliability • Full case reports served as 'databases' - included additional evidence and outlined how data analytic techniques were applied • Reflexive journaling and audit trail completed by researcher	• Absence of classroom observation and support teacher's perspective • Limited guidance available to researcher in relation to scoring and interpreting the student questionnaire • Absence of a measure of intrinsic motivation • Participant feedback not included in the study

The case study must be composed in an engaging manner.	• Findings from both cases clearly presented in two separate case reports • Illustrative quotes and photographs used to support findings	• Some additional quotes presented in tables due to word count limitations

3.11 Directions for Future Research

Arising from the limitations outlined in Table 3.22, future research is needed to further advance knowledge about the experiences of students with DS in terms of basic psychological need satisfaction. Specific directions for future research are presented in Section 4.5 and include the following: (1) Incorporating the perspectives of parents to explore the opportunities provided at home and school for students with DS in terms of need satisfaction; (2) Exploring the views of peers of students with DS in relation to need satisfaction and friendships in mainstream settings; (3) Including a measure of need frustration to explore students' need experiences in mainstream classrooms; and (4) Conducting a larger-scale research project to incorporate the perspectives of younger students with DS.

3.12 Conclusion

The current study sought to address an identified research gap by exploring the experiences of students with DS in relation to basic psychological need satisfaction in mainstream settings. Guided by the constructivist research paradigm, the study adopted an explanatory case study design. Descriptive analysis, pattern-matching, and RTA were used to analyse the data. Within-case patterns were first explored. This was followed by a cross-case synthesis of findings. Across both cases, students' perceptions of need satisfaction were associated with feelings of enjoyment and engagement in school. Need frustration was associated with disengagement and negative affect. While the study yields pertinent findings in relation to the experiences of students with DS in mainstream settings, the research is subject to a number of limitations. The strengths and limitations of the study will be expanded upon in the following chapter. In addition, Chapter 4 will present a more detailed overview of the implications of the findings for research, policy, and practice.

4 Chapter 4: Critical Review

4.1 Overview

The final chapter provides a critical reflection on the research project. The first section presents a reflection on the epistemological stance adopted by the researcher. Thereafter, the strengths and limitations of the research are expanded upon from the empirical paper. This critical appraisal is guided by Yin's (2018) guidance on the characteristics of an exemplary case study. The final sections of the chapter present a more detailed overview of the implications of the findings for policy and practice, and directions for future research.

4.2 Research Paradigm

A research paradigm refers to a researcher's worldview (Mackenzie & Knipe, 2006). As noted by Mertens (2015), a research paradigm encompasses philosophical assumptions that shape the researcher's thinking and actions. A research paradigm reflects the beliefs and principles that guide how a researcher sees and interprets the world (Kivunja & Kuyini, 2017). Importantly, while case study research can offer openness and flexibility in terms of its philosophical positions, researchers are required to demonstrate coherence between their research paradigm, study design, and research methods (Denzin & Lincoln, 2000; Luck et al., 2006).

The current study was guided by the constructivist research paradigm (Guba & Lincoln, 1994). This paradigm is defined as transactional and subjective in its epistemological stance (Guba & Lincoln, 1994). One of the core assumptions underpinning this paradigm is that reality is socially constructed by the researcher and participant within the research process (Schwandt, 2000). (Mertens, 2015). Reflecting its subjective nature, the constructivist paradigm highlights that "research is a product of the values of researchers and cannot be independent of them" (Mertens, 2015, p. 65). In line with recommendations for rigorous case study research (e.g., Denzin & Lincoln, 2011), the following sections will outline how the constructivist paradigm aligned with the research design and methods used in the current study. To this end, the four interrelated components of a research paradigm will be considered, namely, *axiology*, *ontology*, *epistemology*, and *methodology* (Guba & Lincoln, 2005).

4.2.1 Axiology

Axiology refers to the ethical nature of behaviour (Mertens, 2015). With regard to the constructivist paradigm, several criteria have been identified for promoting ethical practice within qualitative research. These include trustworthiness, authenticity, reflexivity, rapport, and reciprocity (Guba & Lincoln, 1989; Lincoln, 2009).

In the current study, the notion of reflexivity formed an integral part within the research process. Acknowledging the potential influence of their prior knowledge and experiences on their interpretations of the data, the researcher adopted a reflexive stance throughout the data collection and analytic processes. The researcher used a diary throughout all stages of the research process to reflect on the impact of their positionality within the study. Given that the study predominantly utilised a deductive orientation to analysing the data, the researcher engaged in reflexivity to reflect upon the impact of their theoretical assumptions on their construction of knowledge. The use of reflexive thematic analysis (RTA) (Braun & Clarke, 2021) supported the researcher's "reflective and thoughtful engagement with their data … and the analytic process" (Braun & Clarke, 2019, p. 594). The use of RTA (Braun & Clarke, 2021) aligned with the constructivist paradigm by acknowledging that the construction of knowledge is inherently subjective and situated. In line recommendations for RTA (Braun & Clarke, 2021), the researcher composed reflections throughout the analytic process. Thus, RTA provided the researcher with a structured and explicit framework for practising reflexivity and for acknowledging how the analysis was influenced by their pre-existing theoretical constructs.

The issue of building rapport with participants with ID raised some potential ethical tensions. To eliminate potential power differences that might have arisen, the researcher adopted the principles of fairness and caring throughout all stages of the research process (Mertens, 2015). To illustrate, the researcher utilised approaches based on PCP (Kelly, 1955). These tasks were participant-led and they enabled the researcher to use the language suggested by participants (Burr et al., 2014). The researcher invited the students to make decisions about how to complete the PCP tasks and respected their preferences in relation to breaks. These factors helped to enhance rapport and collaboration between the researcher and participant. Further, the researcher adapted measures to suit the participants' level of understanding. In particular, visual supports and concrete materials were used to ensure that students with DS had the opportunity to express their views.

4.2.2 Ontology

Ontology refers to the nature of reality (Mertens, 2015). Within the constructivist paradigm, it is assumed that reality is socially constructed (Mertens, 2015). Guba and Lincoln (1994) describe realities as "intangible mental constructions, socially and experientially based, local and specific in nature" (p. 110). Importantly, the constructivist paradigm assumes that these constructions, and their associated realities, may be developed and adapted, as the researcher becomes more informed (Guba & Lincoln, 1994). Furthermore, as opposed to discovering an objective reality, the constructivist paradigm seeks to uncover the multiple interpretations and social constructions of knowledge (Mertens, 2015).

The ontological stance associated with the constructivist paradigm had important implications for the current study. During the data collection process, the researcher allowed the concepts of interest pertaining to autonomy, competence, and relatedness to emerge based on the participants' constructions. When completing the PCP techniques, the students with DS were invited to build or draw their models or pictures before being asked questions by the researcher. The open-ended, collaborative, and exploratory nature of the PCP techniques enabled the researcher to explore the constructs suggested by the students and to subsume the students' subjective worldview (Burr et al., 2014).

Given that constructivism rejects the notion of an objective reality (Mertens, 2015), specific steps were followed by the researcher to ensure that the pattern-matching logic (Yin, 2018) and the deductive orientation used within RTA (Braun & Clarke, 2021) aligned with the constructivist paradigm. As noted above, throughout the data analytic process, the researcher engaged in reflexivity to ensure that they considered the impact of their theoretical knowledge on their constructions of knowledge (Braun & Clarke, 2019). When conducting pattern-matching, the researcher was open to, and considerate of, data that did not fit within the coding template. Within both analytic techniques, the pre-existing theoretical assumptions provided the interpretive lens through which the researcher analysed and interrogated the data. Importantly however, rival propositions and alternative theoretical perspectives were considered when analysing the data (Yin, 2018). Furthermore, as recommended for different case study approaches (e.g., Merriam, 1998; Yin, 2018), the researcher recruited an independent peer to review the codes and themes. Following the peer review, the codes and themes were revised.

Importantly, while the RTA process predominantly utilised a deductive orientation, elements of an inductive orientation were also used within the study. To illustrate, in line with the underpinning theoretical framework, the researcher approached the data seeking to explore autonomy, competence, and relatedness. However, when exploring the experiences of students with DS in relation to each of the three needs, the coding and theme development were guided by the data. As noted by Braun and Clarke (2021), RTA can incorporate elements of both deductive and inductive orientations. Indeed, these authors argue that deductive and inductive approaches "reflect points on a spectrum … rather than binary choices" (Braun & Clarke, 2021, p. 9).

4.2.3 Epistemology

The concept of epistemology refers to the nature of knowledge and focuses on how individuals come to know something (Cooksey & McDonald, 2011; Mertens, 2015). In terms of the relationship between the knower and would-be know, the constructivist paradigm proposes that there is an interactive link between the researcher and participant (Mertens, 2015). Knowledge and reality are created through interactions between the investigator and respondents (Guba & Lincoln, 1994). Thus, interactive methods of data collection were employed in the current study. These included the use of PCP tasks, which incorporated model-making or drawing activities, follow-up discussions, and semi-structured interviews.

The epistemological stance of the constructivist paradigm is described as transactional and subjective (Guba & Lincoln, 1994). Thus, a constructivist stance emphasises researcher reflexivity and transparency (Mills et al., 2006). As outlined above, researcher reflexivity was exemplified throughout the research process. Furthermore, the researcher was transparent and explicit about their prior experiences and theoretical knowledge. The former was documented in the researcher's reflexivity statement while the latter was outlined in the theoretical propositions.

In contrast to objectivity, the constructivist paradigm seeks to promote confirmability (Mertens, 2015). Accordingly, in the current study, data was collected from multiple sources and stakeholders to enhance the credibility of the findings (Stake, 2006). The use of multiple data collection methods is recommended within different case study approaches (e.g., Merriam, 1998; Stake, 1995; Yin, 2018). This process refers to the concept of triangulation (Stake, 1995). The use of triangulation enabled the researcher to examine patterns within and across different data sources, thus creating a "rich, thick description of the phenomenon under study" (Merriam, 2009,

p. 43). In line with the constructivist paradigm, the researcher triangulated data from different sources to construct a more informed and sophisticated understanding and interpretation of the phenomenon of interest. Relatedly, Merriam (1998) purports that the case study should "provide the reader with a depiction in enough detail to show that the author's conclusions 'make sense'" (p. 199). Therefore, as recommended for case study research, the researcher maintained a chain of evidence (Yin, 2018) and developed an audit trail (Merriam, 1998). Further, as documented in the case reports, quotations and photographs were included to support the researcher's interpretations.

4.2.4 Methodology

Methodology refers to the approach adopted by the researcher to obtain the desired knowledge (Guba & Lincoln, 2005). Within the constructivist paradigm, qualitative methods are predominantly used by researchers (Mertens, 2015). The current study employed an explanatory case study design (Yin, 2018). This approach enabled the researcher to explore a real-life contemporary phenomenon within a bounded system (Creswell, 2013; Yin, 2018). As recommended by Mertens (2015), contextual information was provided about the participants and the setting in which they were studied. This anonymised information was presented at the beginning of each case report.

As noted by Mertens (2015), the research methods used by the researcher should align with the core assumption of the constructivist paradigm, namely, that reality is socially constructed. In the case of the constructivist paradigm, it is assumed that research can only be carried out by facilitating interaction between the researcher and participants (Guba & Lincoln, 1994). Accordingly, in the current study, qualitative research methods were used to explore the experiences of students with DS in relation to need satisfaction. In keeping with the constructivist paradigm, the researcher included PCP (Kelly, 1955) techniques as sources of data. These exploratory and child-led approaches, which are grounded in constructivism, enabled the researcher to explore the subjective worldview of the students with DS (Burr et al., 2014).

4.3 Critical Appraisal of the Research

4.3.1 Overview

As outlined above, the current study adopted a multiple-case study design. Concerning the critical appraisal of research, Yin (2018) describes five characteristics of an exemplary case study.

Thus, the strengths and limitations of the current study will be reviewed in light of these five characteristics.

4.3.2 Criterion 1: The Case Study Must Be Significant.

Yin (2018) proposes that an exemplary case study explores an issue that is of national importance. The significance of the topic may relate to theory, policy, or practice. The current study sought to examine an identified research gap by exploring how students with DS experience basic psychological need satisfaction in mainstream settings. The concepts of self-determination and need satisfaction are pertinent topics in educational policy and research. Findings from a systematic review of literature highlighted the potential benefits associated with contexts that support self-determination and need satisfaction for students and individuals with ID (Behzadnia et al., 2022; Emond Pelletier & Joussemet, 2017; Frielink et al., 2018). However, systematic review findings revealed a paucity of research exploring the unique experiences of students with DS in relation to self-determination and need satisfaction. Moreover, few studies included in the systematic review were based upon SDT. Other studies adopted alternative theoretical frameworks such as the Functional Theory of Self-Determination (Wehmeyer, 1999) and Causal Agency Theory (Shogren et al., 2015) to explore the concept of self-determination among individuals with ID. It should be noted that the inclusion of studies based on different theories of self-determination represents a potential limitation with the systematic review of literature.

As a core sub-theory of SDT (Deci & Ryan, 1985; Ryan & Deci, 2017), BPNT (Deci & Ryan, 2000; Ryan & Deci, 2017) illuminates the necessity of psychological need satisfaction for students' well-being and optimal functioning, and highlights the detriments of need frustration on students' motivation and engagement in school. Furthermore, the theory explains how educational contexts may support or thwart students' inherent needs for autonomy, competence, and relatedness (Ryan & Deci, 2017). However, to date, little is known about the perceptions of students with DS in relation to basic psychological need satisfaction in mainstream schools. Thus, the study aimed to extend knowledge by utilising BPNT as the theoretical framework for exploring the unique experiences of students with DS in mainstream class settings. The study sought to enhance the research base by eliciting the views of students with DS regarding their educational experiences using techniques based upon PCP (Kelly, 1955). Further, the study aimed to advance the use of PCP techniques as tools for promoting student voice by applying the approaches to

Lundy's (2007) *Model of Participation*. In doing so, the current study sought to make a significant contribution to practice and policy in the area of educational psychology.

4.3.3 Criterion 2: The Case Study Must Be 'Complete'.

Yin (2018) proposes that an exemplary case study can demonstrate completeness in at least three different ways. These include identifying the boundaries of a case, collecting the relevant data, and removing artifactual conditions. In the current study, the researcher established specific criteria to determine the boundaries of the case. These inclusion criteria were used to recruit participants for the study.

In the study, the researcher sought to ensure that relevant data were gathered from participants. The data collection process was informed by the case study protocol. As recommended by Yin (2018), all relevant evidence pertaining to both parts of the research question was documented in the full case reports which were included as appendices. To eliminate the potential impact of artifactual factors, sufficient time was allocated to the data collection process. The PCP tasks were carried out over a number of sessions with the students with DS. This enabled the researcher to complete the techniques in a manner that suited the student's preferences.

On the other hand, some limitations were identified in relation to the second criterion. Firstly, the student's support teacher was not included in the case. Thus, it is possible that some relevant data pertaining to the student's experiences in relation to need satisfaction may have been excluded from the study. Secondly, challenges arose in determining the contextual factors that remained outside the boundary of the case. Examples of these factors include whole-school approaches to supporting students with AEN and attitudes toward inclusion within the school. These factors may have influenced the experiences of students with DS in the mainstream setting. Thirdly, although previous researchers (e.g., Qian et al., 2022) proposed the use of observational methods to explore self-determination among students with AEN, for ethical reasons, a classroom observation was not conducted in the current study. Likewise, for ethical reasons, the researcher decided not to include the student's level of cognitive ability as an inclusion criterion for the study. However, the inclusion of this information may have provided some useful insights when exploring differences in findings between cases and considering the implications of the study.

4.3.4 Criterion 3: The Case Study Must Consider Alternative Perspectives.

An exemplary case study must consider rival propositions and alternative perspectives (Yin, 2018). The evidence gathered during the data collection process should be examined from different viewpoints (Yin, 2018). In the current study, the researcher drew on the assumptions of alternative, yet related, theoretical perspectives. To illustrate, findings regarding the students' opportunities of making choices and experiencing a sense of volition were explored in the context of Choice Theory (Glasser, 1998). The pattern of data supported the theoretical assumptions of BPNT and could also be understood through the lens of Choice Theory (Glasser, 1998). In Case 1, findings in relation to the student's experience of relatedness were explored using Relationship Motivation Theory (Ryan & Deci, 2017).

Pattern-matching (Yin, 2018) and RTA (Braun & Clarke, 2021) were used to analyse the data in the study. RTA (Braun & Clarke, 2021) used a predominantly deductive orientation to explore the data. Alongside pattern-matching (Yin, 2018), the application of this approach gave rise to certain limitations within the study. For example, when analysing the data derived from the PCP techniques, the deductive approaches may have de-emphasised themes and elements of the dataset that did not align with the theoretical framework. It should be noted, however, that the RTA process incorporated some elements of an inductive orientation (Braun & Clarke, 2021). That is, when exploring the experiences of students with DS in relation to the three psychological constructs (i.e., autonomy, competence, and relatedness), the analysis was guided by the data gathered from the PCP techniques as opposed to the theoretical propositions.

To preserve the richness of the data, a number of steps were followed by the researcher. Throughout the analytic process, due consideration was given to data and themes that did not fit within the pre-existing theoretical framework. As recommended for case study research (Merriam, 2009; Yin, 2018), an independent coder was recruited to review the codes and themes. This supported the researcher in exploring alternative perspectives and potential rival propositions, and in validating the codes and themes identified. Finally, when presenting the findings from the PCP techniques, direct quotes and photographs were included in the case reports to support the researcher's interpretations.

4.3.5 Criterion 4: The Case Study Must Display Sufficient Evidence.

According to Yin (2018), an exemplary case study presents the most relevant evidence in a judicious and effective manner. Within multiple-case studies, the report should demonstrate that the single-case studies have been treated equitably and that cross-case conclusions have considered the findings of all cases (Yin, 2018).

As recommended by Yin (2018), the researcher in the current study sought to maintain a chain of evidence. Certain approaches were followed to ensure that the evidence presented in the findings of the report was derived from data gathered during the data collection process. In the study, a case protocol was used to enhance reliability. The protocol outlined the data collection procedures and specific questions which were used to gather data. The evidence gathered during the data collection process was presented in the full case reports which were included as appendices. These extended reports served as databases and documented how the analytic techniques were applied to the data. The specific codes utilised to guide the pattern-matching technique were illustrated. All relevant quotes from participants pertaining to the themes and sub-themes were included in these databases. The case reports in the thesis feature extracts of the evidence presented in the databases (Yin, 2018).

To ensure that the study yielded sufficient evidence, insights were gathered from different individuals. This enabled the researcher to triangulate data from multiple sources. As noted above, for ethical reasons, the researcher did not conduct a classroom observation. This, alongside the absence of the support teacher's perspective, represents a limitation in relation to Yin's (2018) fourth criterion. Nonetheless, relevant data was gathered from participants using a student questionnaire, adapted PCP techniques, and semi-structured interviews. The strengths and limitations associated with each measure will be briefly discussed.

4.3.5.1 Student Questionnaire. In the current study, the perceived classroom climate for basic psychological need satisfaction was explored using an adapted version of the *Basic Psychological Needs in the Classroom Scale* (Conesa & Duñabeitia, 2021). The original scale included 17 items which measured perceived need satisfaction in relation to autonomy, competence, relatedness, and novelty. This scale was validated as a suitable measure for 8-13-years-olds (Conesa & Duñabeitia, 2021). The novelty subscale was not included in the current study. Accordingly, the adapted scale contained 12 items with four items to measure each need.

As part of the pilot study, the scale was piloted on a sample of 23 students. Some minor revisions were made to the language used in certain items to mitigate potential misunderstandings for students. Although the scale yielded pertinent findings, it was subject to a number of limitations. Firstly, the scale solely measured the satisfaction, not the frustration, of students' basic psychological needs. This is notable given that need satisfaction and frustration are considered to represent interrelated, yet distinct, constructs (Vansteenkiste & Ryan, 2013).

Secondly, limited guidance was provided about scoring and interpreting the measure. Thus, the researcher followed approaches used to interpret scores from similar scales such as the *Basic Psychological Needs Scale* (Gagné, 2003). Previous researchers have scored the measure by calculating a composite score for each of the three subscales (e.g., Johnston & Finney, 2010) and a total score of need satisfaction (e.g., Meyer et al., 2007). As suggested by Gagné (2003), composite scores were obtained by averaging participants' scores for the relevant items for the subscales and overall scale. Descriptive analysis was used to explore the questionnaire data. To interpret the scores, the researcher used an approach recommended for Likert scale data (Alkharusi, 2022). A scale of class intervals was developed for interpreting the composite scores derived from the three subscales and overall scale. Higher scores indicated higher need satisfaction (Cromhout et al., 2018). Alternatively, cut-off scores could have been calculated to determine perceived need satisfaction. However, this binary approach would have contradicted the assumptions of SDT. These include the distinction between need satisfaction and need frustration and the notion that motivation lies on a continuum of self-determination (Ryan & Deci, 2000). Thus, by considering participants' perceptions of need satisfaction in terms of levels ranging from low to high, the approach used in the study aligned with the assumptions of SDT.

Finally, the study did not include a measure of well-being. Therefore, it was not possible to explore correlations between students' perceived need satisfaction and well-being. Although the questionnaire data were not intended to be used for comparative purposes, the researcher was interested in exploring the perceptions of the student with DS in the context of the perceived classroom climate for need satisfaction. However, this exploration was limited by the omission of a sub-scale measuring well-being among peers.

4.3.5.2 Personal Construct Psychology Techniques. In terms of strengths, the adapted PCP tasks provided an engaging and alternative approach for exploring issues relating to

students' experiences in school (Burr et al., 2014). In line with Lundy's (2007) rights-based model, the techniques aligned with the four essential elements for promoting student participation. Using adapted versions of the PCP approaches such as the *Salmon Line Technique* (Salmon, 1988) gave rise to some limitations. PCP (Kelly, 1955) posits that individuals develop personal theories, termed constructs, based on their experiences. However, in the current study, supplied constructs were used when completing the Salmon Line scales with students. That is, visual images were presented to represent each bipolar construct. These were used to explore the students' perceptions in relation to autonomy, competence, and relatedness. The researcher intended to elicit students' descriptions of each visual image and to use the language suggested by the student. However, in some instances, the researcher described the image to reflect the intended constructs. While this approach enabled the researcher to explore the student's perceptions of need satisfaction, it contradicted the principles of PCP.

4.3.5.3 Semi-Structured Interviews. The class teacher and SNA were invited to partake in a semi-structured interview. This enabled the researcher to gather relevant data about the opportunities provided for students with DS in the mainstream setting. The questions were designed to explore students' experiences relating to autonomy, competence, and relatedness. The findings facilitated the triangulation of data from different sources. RTA was used to analyse the data from the semi-structured interviews. This approach encouraged the researcher to reflect on their assumptions and expectations throughout the research process. These elements inevitably shaped and informed the research in the current study (Braun & Clarke, 2021). However, certain strategies were implemented to enhance the quality of the research. These approaches included reflexive journaling, discussing the data and analysis, and developing an audit trail (Braun & Clarke, 2021). The audit trail documented a list of coded items, initial codes and themes, revised themes, and thematic maps. A sample of the data included in the audit trail is illustrated in Appendix BB.

One limitation in terms of the data analytic process may be that participants were not afforded the opportunity to review the researcher's interpretations of the findings. Within qualitative research, member checking (Smith & McGannon, 2018) is recommended as a strategy for promoting quality research. However, Braun and Clarke (2021) advise that this approach should not be used to review data that has been analysed using sematic and latent codes. Given

that the current study incorporated both types of codes, the use of member checking would not have been appropriate. Alternatively, Braun and Clarke (2021) propose that other techniques such as 'participant feedback' (King & Brooks, 2018) or 'member reflections' (Tracy (2010) may be more consistent with the assumptions of RTA. It is therefore noted as a limitation that the inclusion of participant feedback was not considered by the researcher when designing the case study.

4.3.6 Criterion 5: The Case Study Must Be Composed in an Engaging Manner.

Yin (2018) proposes that an exemplary case report should be written with clarity in a style that is engaging and enticing. In the current study, the findings from both cases were clearly presented in two separate case reports. As recommended by Braun and Clarke (2021), the researcher sought to demonstrate an appropriate balance between the analytic narrative and data extracts within the reports. Thus, illustrative quotes and photographs were included to support the findings in both case reports. Due to the limited word count, some additional quotes were presented in tables. This may have interrupted the flow of the reports for potential readers.

4.4 Implications of the Findings

The aim of the current study was to explore the experiences of students with DS in relation to basic psychological need satisfaction in mainstream settings. The unique contribution of the findings for knowledge, practice, and policy will be discussed in the following sections. As outlined in the previous chapter, the research procedures were conducted in line with Lundy's (2007) *Model of Participation*. The final condition, *influence*, was addressed by the research in the current section when considering the implications of the findings. In particular, implications for school practice were established based on the research findings from the PCP techniques.

4.4.1 Implications for Understanding and Knowledge of the Topic

4.4.1.1 Basic Psychological Needs Theory and Students with Down Syndrome.

In response to an identified research gap, the current study sought to advance knowledge about the basic psychological need experiences of students with DS in mainstream settings. In line with the recommendations for case study research (Yin, 2018), the researcher sought to achieve analytic generalisation by corroborating and advancing the theory upon which the study was based. Importantly, the study sought to extend understanding of BPNT by illuminating the nuances of the theory in relation to the experiences of students with DS in the mainstream setting. In particular,

the findings enhance understanding about need-supportive practices within the mainstream context for students with DS.

Firstly, the findings from the first case shed light on the experience of competence dissatisfaction which may arise in the mainstream setting when socialising agents (e.g., teachers) indirectly prevent a student from fulfilling their need for competence (Bartholomew et al., 2011b; Vansteenkiste & Ryan, 2013). Notably, with regard to supporting competence satisfaction for students with DS, potential barriers were cited by school staff. These included the inaccessibility of the mainstream curriculum, the suitability of the mainstream setting, and the student's reliance on adult support. Contrastingly, findings from the second case suggested that differentiation may be used as a competence-supportive practice for students with DS in the mainstream setting. The Universal Design for Learning approach (UDL) (Meyer & Rose, 2006; Meyer et al., 2014) offers promising vision in this regard. This approach will be discussed in more detail in Section 4.4.3.2 in the context of need-supportive teaching.

Secondly, in terms of supporting need satisfaction for students with DS, the findings of the study shed light on the potential importance of complementing the provision of choice with an element of structure. Accordingly, the findings extend the circumplex model (Aelterman et al., 2019) by highlighting the potential usefulness of a structured 'participative' approach (Aelterman & Vansteenkiste, 2023) for students with DS in mainstream settings. Finally, for students with DS, the study underscored the potential connection between personality traits and experiences of relatedness satisfaction (Prentice et al., 2019). For these students, qualities associated with agreeableness may play a role in supporting relatedness satisfaction in the mainstream setting (Hughes et al., 2023; Prentice et al., 2019). For individuals with DS, empathetic behaviour can represent an area of relative strength (Kasari et al., 2003) and they are often perceived as affectionate and sociable (Fidler et al., 2008). Moreover, the findings of the study shed light on the reciprocal nature of relatedness satisfaction (Vansteenkiste et al., 2020). Accordingly, for students with DS, experiences of relatedness in the mainstream setting may be nurtured using a 'faceted approach' that incorporates both a 'giving' and a 'receiving' element (Vansteenkiste et al., 2020).

4.4.1.2 Personal Construct Psychology and Models of Participation. The study contributes to the growing body of literature regarding the concept of student voice (e.g., Lewis-Dagnell et al., 2023; Lundy, 2007; Sewell, 2020). The study makes an original contribution to the

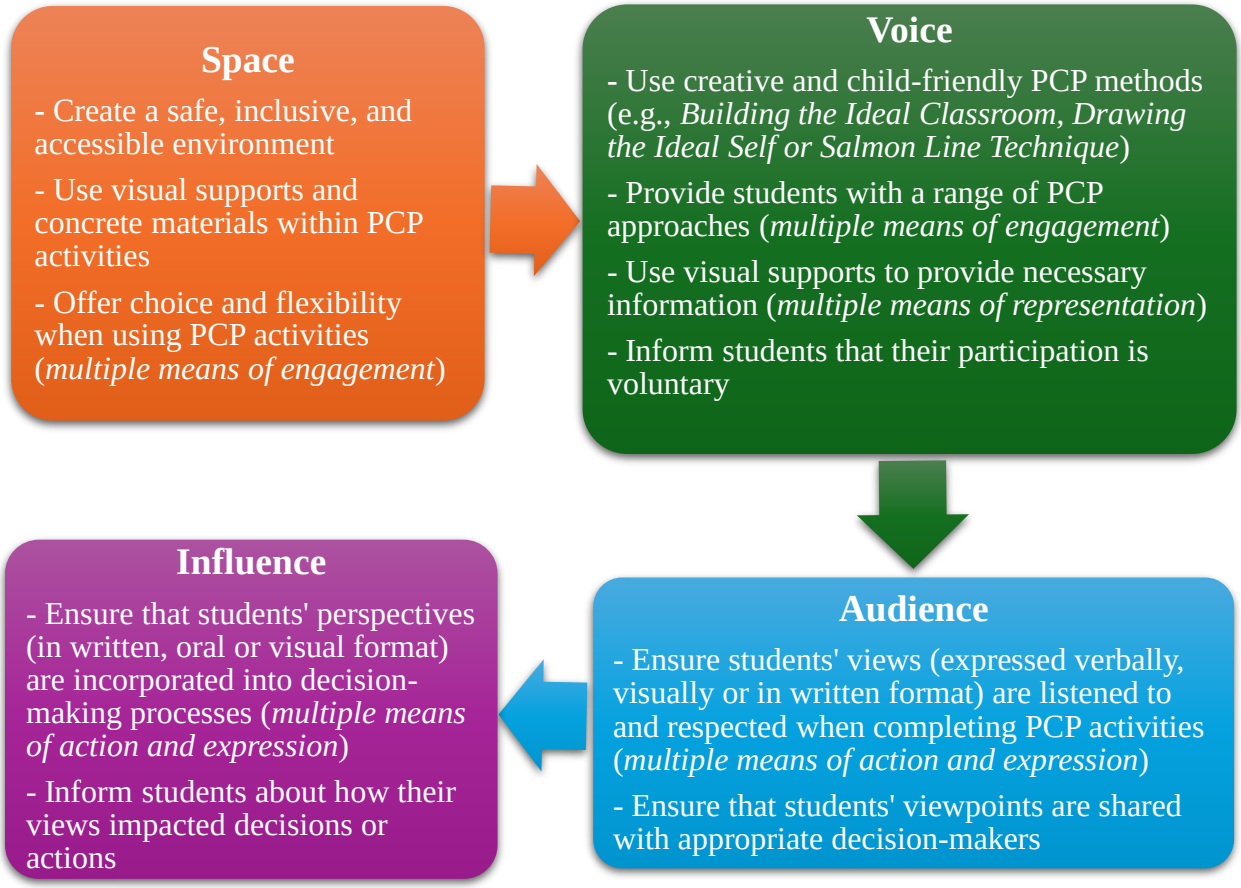
research base by utilising techniques based upon PCP (Kelly, 1955) in line with Lundy's (2007) *Model of Participation* to elicit the voices of students with DS. This is notable given that previous researchers (e.g., Griffin, 2024; Sewell, 2020) have positioned PCP as a suitable theory and method for promoting students' meaningful involvement. To the best of the researcher's knowledge, this is the first study to combine PCP and Lundy's (2007) rights-based model within the research process. Importantly, the study demonstrated how adapted PCP approaches could be used to facilitate the necessary conditions for meaningful student voice (i.e., space, voice, audience, and influence).

In seeking to enhance students' participation in the research process, the researcher also considered Hart's (1992) *Ladder of Participation.* The researcher sought to ensure that students' involvement moved beyond *tokenistic participation* (Hart, 1992) such that students' views were taken seriously (Lundy, 2018). To this end, the students' involvement within the study aligned with the following rungs of Hart's (1992) metaphorical ladder, *consulted and informed* and *assigned but informed.* Furthermore, the study demonstrated how PCP techniques could incorporate elements of the UDL approach (Meyer & Rose, 2006; Meyer et al., 2014) to promote students' autonomy within the research process.

Taken together, the research demonstrates how PCP (Kelly, 1955) can be applied to Lundy's (2007) *Model of Participation* to promote students' meaningful participation in research. Moreover, as illustrated in Figure 4.1, the framework used in the current study could be further developed for use among professionals within educational settings and within educational psychology practice. Within these contexts, there may be scope for incorporating higher levels of student involvement using Hart's (1992) *Ladder of Participation.*

Figure 4.1

Framework for applying PCP (Kelly, 1955) to Lundy's (2007) Model of Participation with reference to the UDL Approach



4.4.2 Implications for Educational Psychology Practice

4.4.2.1 Advocacy and Training in Need-Supportive Teaching. Educational psychology practice is broadly concerned with supporting the learning, behaviour, social, and emotional development of CYP with AEN (National Educational Psychological Service; NEPS, n.d.). A core aspect of the work of EPs involves applying psychological theory in educational contexts (Kelly et al., 2017). EPs are required to "demonstrate knowledge and application of pedagogic practices and their conceptual and evidential bases" (British Psychological Society [BPS], 2022). Accordingly, the findings from the study, namely, the concept of need-supportive teaching may have relevance for educational psychology practice. This evidence-informed approach draws on psychological theory and research. EPs working with students with DS in mainstream schools would be well-placed to advocate for the implementation of evidence-informed approaches, such as need-supportive teaching, to promote students' well-being and engagement. At a systems level, this might involve EPs facilitating Support and Development

Work (NEPS, n.d.) within schools to provide teachers with the knowledge and skills needed to support students' need satisfaction.

4.4.2.2 Eliciting Student Voice in Casework using Adapted PCP Techniques.

Eliciting and representing the views of CYP is a key aspect of the role of EPs (Smillie & Newton, 2020). The current study adds to the existing body of research regarding the use of student voice within educational psychology practice. Within the study, adapted PCP techniques were used in line with Lundy's (2007) *Model of Participation* to enable students with DS to express their viewpoints about their experiences in school. Smillie and Newton (2020) found that PCP approaches were among the most common used by EPs to elicit the views of CYP. According to Smilie and Newton (2020), examples of PCP approaches used by EPs include the *Ideal Self* (Moran, 2001), *Laddering* (Hinkle, 1965), and the *Salmon Line Technique* (Salmon, 1988). The use of a multi-model approach encompassing a range of tools is recommended for eliciting the views of students with AEN (Lewis-Dagnell et al., 2023; Lundy, 2007). EPs are well-positioned to incorporate the child's voice within casework. Thus, the study provides insights into suitable PCP approaches that could be used by EPs to elicit the views of students with DS about their schooling experiences, particularly in relation to need satisfaction. Moreover, as illustrated in Section 4.4.1.2, the study demonstrates how the tools may be applied to Lundy's (2007) model to promote students' meaningful involvement within casework.

4.4.2.3 Promoting Autonomy using Person-Centred Planning.

Consultation represents another core component of educational psychology practice (BPS, 2022). As professionals, EPs are required to be adept at utilising person-centred approaches to ensure that CYP are included within consultations and are involved in decision-making and planning (BPS, 2022). The current study shed light on the perspectives of students with DS in relation to autonomy, and findings indicated that students with DS had a preference for making decisions and choices about aspects of their schooling. For students with DS, opportunities to experience a sense of independence and choice were associated with feelings of happiness, enjoyment, and interest in school. In terms of casework, EPs are well-placed to involve students with DS in decision-making and planning processes through the use of person-centred approaches. Examples of these techniques include *Planning Alternative Tomorrows with Hope* (Pearpoint et al., 1993) and *Making Action Plans* (Forest et al., 1996). Furthermore, the use of person-centred planning tools

such as relationship circles and one-page profiles may enable EPs to promote the involvement of students with DS within casework. In line with Hart's (1992) *Ladder of Participation,* EPs may incorporate person-centred approaches to nurture students' autonomy over time by enabling them to progress from lower levels of involvement toward increased levels of participation.

4.4.3 Implications for School Practice

4.4.3.1 Supporting Need Satisfaction in Schools. The current study shed light on the concept of need-supportive teaching. In contrast to need-thwarting teaching, need-supportive practices support students' need satisfaction, thus promoting positive outcomes such as engagement and optimal forms of motivation (Conesa et al., 2022; Jang et al., 2016; Vasconcellos et al., 2020). With regard to students with DS, examples of need-supportive and need-thwarting teaching were demonstrated in both cases. These findings bear relevance for teachers and SNAs working with students with DS in mainstream class settings. As such, in terms of need-supportive practices, the study highlighted the importance of the following strategies: facilitating students' learning preferences; respecting students' interests; aligning instruction with the students' strengths; and demonstrating warmth and affection toward students. These practices are consistent with previous research (e.g., Ahmadi et al., 2023; Reeve & Cheon, 2021). In addition to the aforementioned strategies, the findings highlight the potential significance of providing choice with an element of structure for students with DS. In line with the circumplex model (Aelterman et al., 2019), the use of a structured *participative approach* may be useful for teachers and SNAs in this regard (Aelterman & Vansteenkiste, 2023).

4.4.3.2 Promoting Competence Satisfaction in Schools. Relatedly, in terms of competence satisfaction, findings indicated that specific supports were utilised by school staff to enable students with DS to experience success in school. Staff in the second case referred to the student's participation in differentiated learning activities, both at an individual and whole-class level. In contrast, staff within the first case described some of the potential challenges associated with supporting the student's need for competence. Staff referenced the complexity and inaccessibility of the mainstream curriculum and the student's reliance on adult support. These findings bear particular relevance for teachers of students with DS in mainstream settings. Specifically, the findings highlight possible implications for school practice regarding the use of differentiated learning approaches. In this regard, the UDL approach (Meyer & Rose, 2006; Meyer

et al., 2014) may offer teachers a useful and practical framework for supporting students' need satisfaction. It should be noted that elements of the UDL approach were incorporated into the research methods used in the current study,

The UDL framework aims to ensure that teachers design inclusive educational experiences for *all* learners from the outset as opposed to designing learning experiences for neurotypical learners and adapting content to suit the needs of students with AEN (Sewell et al., 2022). In terms of need-supportive teaching, the UDL Guidelines (CAST, 2020; 2024) may support teachers in designing and delivering educational experiences to promote need satisfaction for students with DS. For example, elements of the UDL Guidelines (CAST, 2020) align with the need for competence. These include providing options for perception, comprehension, expression, and communication. Moreover, aspects of the framework may guide teachers in promoting students' need for autonomy. To this end, the Guidelines (CAST, 2020) recommend that teachers provide opportunities to promote students' choice and autonomy; enable students to set learning goals; and seek to ensure that students' learning experiences are relevant and valuable.

4.4.3.3 Eliciting Student Voice in the Classroom. Within the current study, students with DS articulated their experiences about different aspects of schooling and their preferences in relation to same. In both cases, students with DS indicated a preference for making choices about learning tasks, finding schoolwork easy, and being part of the group in school. In terms of school practice, these findings underscore the importance of considering the views of students with DS when devising *Student Support Plans* (DES, 2007). Similarly, due consideration should be afforded to the preferences of students with DS regarding the provision of adult support. In the study, students with DS articulated a preference for working independently as opposed to being supported by an adult. Importantly, the NCSE (2018) proposes that schools should focus on developing students' independence over time, and that SNA support should be provided "to maximise the student's achievement of independence in line with their age and ability" (p. 24).

As outlined in Section 4.4.1.2, Lundy's (2007) *Model of Participation* may provide school staff with a useful framework for promoting the voice of students with DS in mainstream settings. In a related manner, PCP approaches, such as those used within the current study, may provide engaging methods of eliciting the students' viewpoints in relation to their learning experiences.

However, the above suggestions would require that school staff receive appropriate training and support in relation to PCP and/or eliciting student voice (Griffin, 2024).

4.4.4 Implications for Policy and Curriculum

The *Primary Curriculum Framework* (NCCA, 2023) outlines the Department of Education's vision for a redeveloped curriculum in primary and special schools. The findings of the current study align with components of the Framework, and may have relevance for the implementation of the redeveloped curriculum within primary schools. Within the study, students with DS demonstrated interest in and enjoyment of the Arts subjects. In contrast to core subjects, the findings indicated that students with DS usually participated in Art and Music lessons in the mainstream setting. In respect of these findings, the introduction of curriculum areas, such as Arts Education, and flexible time allocations within the new Framework may offer teachers more autonomy and agency in facilitating rich learning experiences for students with DS based on their interests and strengths.

The findings of the study support some of the principles of teaching and learning underpinning the Framework. In line with the study's findings, these include the importance of using evidence-based approaches to nurture children's engagement in and ownership of learning (principle of pedagogy); enabling children to act independently and to make choices about their learning (principle of engagement and participation); and promoting caring relationships with the school community to support children's engagement and motivation (principle of relationships). Specifically in relation to students with DS, the findings of the study may help to guide schools in realising the principles and key competencies of the redeveloped curriculum.

In a related manner, the findings of the study align with elements of *Looking at Our Schools 2022: A Quality Framework for Primary Schools and Special Schools* (Department of Education, 2024). In this regard, the use of need-supportive practices may support schools in implementing effective teaching and learning approaches. Specifically, the findings of the study pertain to the following standards: *pupils enjoy learning, are motivated to learn and expect to achieve as learners; pupils grow as learners through respectful interactions and experiences that are challenging and supportive;* and pupils *develop a sense of ownership of and responsibility for their learning* (Department of Education, 2024, p. 27-28). Through the provision of Support and Development Work (NEPS, n.d.), EPs working within the education system would be well-placed

to support schools in utilising need-supportive teaching practices to achieve the standards set out in the framework. Similarly, EPs could play a role in supporting schools to implement the principles of teaching and learning upon which the *Primary Curriculum Framework* (NCCA, 2023) is based.

Within the current study, adapted PCP techniques were used in line with Lundy's (2007) *Model of Participation* to enable students with DS to articulate their views about their experiences and preferences in school. Notably, these approaches bear relevance for the implementation of two key action areas outlined in the *Participation of Children and Young People in Decision-Making: Action Plan* (DCEDIY, 2024). These include the promotion of student voice within the education system and the development of "participation structures that are inclusive, accessible, and safe for all" (DCEDIY, 2024, p. 15). The current study demonstrated how Lundy's (2007) four conditions of *space, voice, audience, and influence* may be fulfilled using PCP techniques. Thus, in line with the Action Plan, (DCEDIY, 2024), these flexible and child-friendly approaches may enable policy-makers and educators to provide a safe and inclusive environment for students with DS to freely express their views about matters affecting them in school.

4.5 Directions for Future Research

While the current study elicited the perspectives of the student with DS, class teacher, and SNA, it did not incorporate the views of other stakeholders such as special education teachers and parents. In terms of parental support, Mumbardó-Adam et al. (2017) found that opportunities provided in the home environment to engage in self-determined behaviours influenced volitional actions development for students with ID. However, in contrast to typically developing peers, Mumbardó-Adam et al. (2017) found that students with ID reported fewer opportunities to engage in self-determined behaviours at home. Other researchers (e.g., Behzadnia et al., 2022) articulate the need to examine the effect of parents' need-supportive or need-thwarting behaviours on the experiences and outcomes of students with ID. Thus, future studies should incorporate the perspectives of parents with a view to extending knowledge about the opportunities provided at home and school for students with DS, and to explore ways of coordinating self-determination supports across both settings.

Although the current study explored the perceptions of students with DS, the researcher did not elicit the perspectives of classmates about topics such as friendship or relationship

development in school. While data from the students with DS and school staff suggested that students with DS formed positive relationships with peers, the researcher did not explore the views of classmates concerning the reciprocity of these relationships. Within the first case, school staff highlighted the willingness of peers to accept, assist, and include the student with DS in school. Interestingly, school staff also indicated that the student's peers played games that the student with DS wanted to play as opposed to activities in which they were interested. Given the potential significance of mutual autonomy support for high-quality relationships (Ryan & Deci, 2017; Ryan & Vansteenkiste, 2023*),* further research is needed to explore the perspectives of peers of students with DS regarding friendships and need satisfaction in mainstream settings.

Furthermore, the current study did not include a tool to measure students' need frustration. The scale used in the study solely measured students' experiences of need satisfaction in school. This is notable given that BPNT (Deci & Ryan, 2000; Ryan & Deci, 2002) considers both need satisfaction and need frustration. Further, the aim of the study was to explore the experiences of students with DS in relation to basic psychological need satisfaction. In keeping with the dual-process model (Vansteenkiste & Ryan, 2013), future research should consider exploring the need experiences of students in Irish mainstream classrooms in terms of both need satisfaction and need frustration. Moreover, to extend the findings of the current study, future work should compare the experiences of students with and without DS in this regard.

Future research should be undertaken on a larger scale to facilitate a broader understanding of the schooling experiences of students with DS. The current study utilised a multiple-case study design and involved two cases. Future research should be carried out on a larger scale to incorporate the perspectives of younger students with DS in relation to need satisfaction. This research might involve the use of alternative methodologies to elicit the perspectives of young children with DS. In addition to PCP techniques, other approaches such as the *Mosaic Approach* (Clark & Moss, 2001) may be useful for eliciting the views of children with DS within the context of Lundy's (2007) *Model of Participation*. Additionally, future longitudinal research would enable researchers to explore need satisfaction as students with DS progress through primary school. The recent introduction of the *Primary Curriculum Framework* (NCCA, 2023) would make this a timely and valuable research endeavour for educators and policy-makers.

4.6 Impact Statement

Underpinned by BPNT (Deci & Ryan, 2000; Ryan & Deci, 2002), the current study sought to address an identified research gap by exploring how students with DS experience basic psychological need satisfaction in mainstream class settings. The study yielded pertinent findings which bear relevance for practice, policy, and research in the field of educational psychology. To enhance the impact of the study, and to fulfil the fourth condition of Lundy's (2007) *Model of Participation*, it is intended that the research will be disseminated with professionals and researchers in the areas of education and psychology.

Regarding school practice, the findings of the current study shed light on pedagogical approaches and aspects of a teacher's teaching style that may be associated with need satisfaction and need frustration in school. To disseminate the findings of the study, the researcher has provided feedback to CAST on the proposed updates for the UDL 3.0 Guidelines (CAST, 2024). This feedback focused on how the UDL Guidelines could further support students' need satisfaction in mainstream settings. The researcher intends to promote the impact of the study by sharing the findings with educators and researchers at prospective conferences such as the Irish National Teachers' Organisation's Education Conference.

In terms of educational psychology practice, the findings may support EPs in developing and demonstrating some of the core professional competences for educational psychology (BPS, 2022). These include providing training in need-supportive teaching, utilising person-centred planning approaches as part of consultation, and eliciting student voice within casework. Thus far, the current research has been shared with practising psychologists at a Health Service Executive (HSE) Research Symposium for Psychologists in the HSE/South East Community Healthcare. Moving forward, the researcher intends to disseminate the research findings with practising EPs at conferences pertaining to educational psychology including the Psychological Society of Ireland's Annual Conference. In addition, the researcher aims to publish the empirical paper within a relevant journal article in the field of educational psychology. Finally, the findings of the current study have been presented to current trainee Educational and Child Psychologists on the Professional Doctorate in Educational and Child Psychology in Mary Immaculate College at a Research Summer School.

In relation to educational policy, the findings of the current study may help to guide and support schools in promoting the principles and key competencies of the recently published

Primary Curriculum Framework (NCCA, 2023). Given the relevance of the findings for the implementation of the redeveloped curriculum, the researcher intends to submit a written proposal to the NCCA as part of the public consultation on the Draft Primary Curriculum Framework Specifications.

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Appendices

Appendix A: Abstract Screened (Phase One)

Reference	Reason for Exclusion (as per exclusion criteria)
Akkerman, A., Kef, S., & Meininger, H. P. (2018). Job satisfaction of people with intellectual disabilities: the role of basic psychological need fulfillment and workplace participation. *Disability & Rehabilitation*, *40*(10), 1192–1199. https://doi.org/10.1080/09638288.2017.1294205	6
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Mumbardó-Adam, C., Guàrdia-Olmos, J., Adam-Alcocer, A. L., Carbó-Carreté, M., Balcells-Balcells, A., Giné, C., & Shogren, K. A. (2017). Self-Determination, Intellectual Disability, and Context: A Meta-Analytic Study. *Intellectual & Developmental Disabilities, 55*(5), 303–314. https://doi.org/10.1352/1934-9556-55.5.303	2
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Shogren, K. A., Plotner, A. J., Palmer, S. B., Wehmeyer, M. L., & Youngshil Paek. (2014). Impact of the Self-Determined Learning Model of Instruction on Teacher Perceptions of Student Capacity and Opportunity for Self-Determination. *Education & Training in Autism & Developmental Disabilities*, *49*(3), 440–448.	3 + 4
Shogren, K. A., & Shaw, L. A. (2016). The Role of Autonomy, Self-Realization, and Psychological Empowerment in Predicting Outcomes for Youth with Disabilities. *Remedial and Special Education*, *37*(1), 55–62. https://doi.org/10.1177/0741932515585003	6
Shogren, K. A., Burke, K. M., Anderson, M. H., Antosh, A. A., Wehmeyer, M. L., LaPlante, T., & Shaw, L. A. (2018). Evaluating the Differential Impact of Interventions to Promote Self-Determination and Goal Attainment for Transition-Age Youth with Intellectual Disability. *Research & Practice for Persons with Severe Disabilities*, *43*(3), 165–180. https://doi.org/10.1177/1540796918779775	6
Shogren, K. A., Rifenbark, G. G., & Hagiwara, M. (2021). Self-Determination Assessment in Adults With and Without Intellectual Disability. *Intellectual & Developmental Disabilities*, *59*(1), 55–69. https://doi.org/10.1352/1934-9556-59.1.55	6
Stefánsdóttir, G., Björnsdóttir, K., & Stefánsdóttir, Á. (2018). Autonomy and People with Intellectual Disabilities Who Require More Intensive Support. *Scandinavian Journal of Disability Research*, *20*(1), 162–171. https://doi.org/10.16993/sjdr.21	3
Taylor, W. D., Cobigo, V., & Ouellette-Kuntz, H. (2019). A Family Systems Perspective on Supporting Self-Determination in Young Adults with Intellectual and Developmental Disabilities. *Journal of Applied Research in Intellectual Disabilities*, *32*(5), 1116–1128. https://doi.org/10.1111/jar.12601	3
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Vicente Sánchez, E., Coma-Roselló, T., Mumbardó-Adam, C., & Simó-Pinatella, D. (2022). Self-determination and people with intellectual disability: a construct analysis from a professional perspective. *International Journal of Disability, Development & Education, 69*(3), 822–836. https://doi.org/10.1080/1034912X.2020.1735625	3
Wehmeyer, M., & Schwartz, M. (1997). Self-Determination and Positive Adult Outcomes: A Follow-Up Study of Youth with Mental Retardation or Learning Disabilities. *Exceptional Children, 63*(2), 245–255.	6
Wehmeyer, M. L. (2001). Self-Determination and Mental Retardation. *International Review of Research in Mental Retardation, 24*(1), 1–48.	5
Wehmeyer, M. L. (2005). Self-Determination and Individuals with Severe Disabilities: Re-examining Meanings and Misinterpretations. *Research & Practice for Persons with Severe Disabilities, 30*(3), 113–120.	5
Wehmeyer, M. L., Palmer, S. B., Shogren, K., Williams-Diehm, K., & Soukup, J. H. (2013). Establishing a Causal Relationship between Intervention to Promote Self-Determination and Enhanced Student Self-Determination. *Journal of Special Education, 46*(4), 195–210. https://doi.org/10.1177/0022466910392377	6
Wehmeyer, M. L. (2020). The Importance of Self-Determination to the Quality of Life of People with Intellectual Disability: A Perspective. *International Journal of Environmental Research and Public Health, 17*(19). https://doi.org/10.3390/ijerph17197121	5
Williams, V., & Porter, S. (2017). The Meaning of "choice and control" for People with Intellectual Disabilities who are Planning their Social Care and Support. *Journal of Applied Research in Intellectual Disabilities, 30*(1), 97–108. https://doi.org/10.1111/jar.12222	6
Wood, W. M., Fowler, C. H., & Uphold, N. (2005). A Review of Self-Determination Interventions with Individuals with Severe Disabilities. *Research & Practice for Persons with Severe Disabilities, 30*(3), 121–146.	6
Zeng, W., Ju, S., & Zhang, D. (2022). The Relationships Among Parent Involvement, Student Self-Determination, and Postsecondary Education Enrollment for Students With Learning Disabilities. *Journal of Disability Policy Studies*, 1. https://doi.org/10.1177/10442073221130748	6

Zhang, D., & Benz, M. R. (2006). Enhancing Self-Determination of Culturally Diverse Students With Disabilities: Current Status and Future Directions. *Focus on Exceptional Children, 38*(9), 1–12. 5

Appendix B: Full Text Screened (Phase One)

Reference	Reason for Exclusion
Carey, E. (2021). Aligning with the flow of control: A grounded theory study of choice and autonomy in decision-making practices of people with intellectual disabilities. *International Journal of Qualitative Studies on Health & Well-Being, 16*(1), 1–17. https://doi.org/10.1080/17482631.2020.1857053	Measures
Cavendish, W., Connor, D. J., & Perez, D. (2020). Choice, Support, Opportunity: Profiles of Self-Determination in High School Students with Learning Disabilities. *Learning Disabilities: A Multidisciplinary Journal, 25*(2), 16–27. https://doi.org/10.18666/LDMJ-2020-V25-I2-10312	Setting
Chou, Y.-C., Wehmeyer, M. L., Palmer, S. B., & Lee, J. (2017). Comparisons of Self-Determination Among Students With Autism, Intellectual Disability, and Learning Disabilities: A Multivariate Analysis. *Focus on Autism & Other Developmental Disabilities, 32*(2), 124–132. https://doi.org/10.1177/1088357615625059	Participants
Cristea, M., & Gherguț, A. (2021). The effect of evidence-based practices to enhance self-determination in students with intellectual disabilities: a systematic literature review. *Psychology Series, 30*, 129–152.	Setting
Cudré-Mauroux, A., Piérart, G., & Vaucher, C. (2019). The Importance of the Relational Needs of People with Learning Disabilities in the Promotion of Self-Determination. *British Journal of Learning Disabilities, 47*(3), 174–180. https://doi.org/10.1111/bld.12268	Measures
Deniz, F. K. (2023). Cognitive Autonomy for Students With Learning Disabilities. *Intervention in School & Clinic, 58*(5), 371–377. https://doi.org/10.1177/10534512221114419	Measures

Duvdevany, I., Ben-Zur, H., & Ambar, A. (2002). Self-determination and mental retardation: is there an association with living arrangement and lifestyle satisfaction? *Mental Retardation, 40*(5), 379–389. https://doi.org/10.1352/0047-6765(2002)040<0379:SDAMRI>2.0.CO;2	Measures
Field, S. (1996). Self-Determination Instructional Strategies for Youth with Learning Disabilities. *Journal of Learning Disabilities, 29*(1), 40–52.	Measures
Field, S., Sarver, M. D., & Shaw, S. F. (2003). Self-Determination: A Key to Success in Postsecondary Education for Students with Learning Disabilities. *Remedial & Special Education, 24*(6), 339–349. https://doi.org/10.1177/07419325030240060501	Setting
Fisher, M. H., Athamanah, L. S., Sung, C., & Josol, C. K. (2020). Applying the self-determination theory to develop a school-to-work peer mentoring programme to promote social inclusion. *Journal of Applied Research in Intellectual Disabilities, 33*(2), 296–309. https://doi.org/10.1111/jar.12673	Measures
Frielink, N., Schuengel, C., & Embregts, P. J. C. M. (2021). Evaluating the self-determination continuum towards seeking support among people with mild to borderline intellectual disabilities. *Journal of Intellectual Disability Research, 65*(4), 348–360. https://doi.org/10.1111/jir.12819	Measures
Frielink, N., Schuengel, C., & Embregts, P. J. C. M. (2018). Autonomy support in people with mild-to-borderline intellectual disability: Testing the Health Care Climate Questionnaire-Intellectual Disability. *Journal of Applied Research in Intellectual Disabilities, 31*(1), 159–163. https://doi.org/10.1111/jar.12371	Measures
Garrels, V., & Palmer, S. B. (2020). Student-directed learning: A catalyst for academic achievement and self-determination for students with intellectual disability. *Journal of Intellectual Disabilities: JOID, 24*(4), 459–473. https://doi.org/10.1177/1744629519840526	Setting
Hughes, C., Cosgriff, J. C., Agran, M., & Washington, B. H. (2013). Student Self-Determination: A Preliminary Investigation of the Role of Participation in Inclusive Settings. *Education & Training in Autism & Developmental Disabilities, 48*(1), 3–17.	Setting

Mason, P., Timms, K., Hayburn, T., & Watters, C. (2013). How Do People Described as having a Learning Disability Make Sense of Friendship? *Journal of Applied Research in Intellectual Disabilities*, *26*(2), 108–118. https://doi.org/10.1111/jar.12001	Measures
Mill, A., Mayes, R., & McConnell, D. (2010). Negotiating autonomy within the family: the experiences of young adults with intellectual disabilities. *British Journal of Learning Disabilities*, *38*(3), 194–200. https://doi.org/10.1111/j.1468-3156.2009.00575.x	Measures
Morán, L., Gómez, L. E., Balboni, G., Monsalve, A., Verdugo, M. Á., & Rodríguez, M. (2022). Predictors of individual quality of life in young people with Down syndrome. *Rehabilitation Psychology*, *67*(2), 205–214. https://doi.org/10.1037/rep0000443	Measures
Mumbardó-Adam, C., Andrés-Gárriz, C., Sánchez-Pedroche, A., & Balboni, G. (2023). Differences in Self and Proxy Assessments of Self-Determination in Young People with Intellectual Disability: The Role of Personal and Contextual Variables. *Behavioral Sciences*, *13*(2), 156. https://doi.org/10.3390/bs13020156	Setting
Mumbardó-Adam, C., Vicente, E., Simó-Pinatella, D., & Balboni, G. (2023). Understanding How Self-Determination Affects the Quality of Life of Young People with Intellectual Disability. *International Journal of Disability, Development & Education*, 1–19. https://doi.org/10.1080/1034912x.2023.2212619	Participants
Mumbardó, A. C., Shogren, K. A., Guàrdia, olmos, J., & Giné, C. (2017). Contextual Predictors of Self-Determined Actions in Students with and without Intellectual Disability. *Psychology in the Schools*, *54*(2), 183–195. https://doi.org/10.1002/pits.21987	Setting
Nota, L., Ferrari, L., Soresi, S., & Wehmeyer, M. (2007). Self-determination, social abilities and the quality of life of people with intellectual disability. *Journal of Intellectual Disability Research*, *51*(11), 850–865. https://doi.org/10.1111/j.1365-2788.2006.00939.x	Participants
Pallisera, M., Vilà, M., Fullana, J., & Valls, M.-J. (2021). Being in control: Choice and control of support received in supported living. A study based on the narratives of people with intellectual	Measures

disability and support staff. *Journal of Intellectual & Developmental Disability, 46*(2), 164–174. https://doi.org/10.3109/13668250.2020.1802812	
Petner, A. J., & Copeland, S. R. (2015). "You have to care." perceptions of promoting autonomy in support settings for adults with intellectual disability. *British Journal of Learning Disabilities, 43*(1), 38–48. https://doi.org/10.1111/bld.12084	Measures
Rubio, J. A. L., & Kershner, R. (2021). Transition to independent living: Signs of self-determination in the discussions of Mexican students with intellectual disability. *British Journal of Learning Disabilities, 49*(3), 352–364. https://doi.org/10.1111/bld.12398	Measures
Salt, E., & Jahoda, A. (2020). Comparing everyday autonomy and adult identity in young people with and without intellectual disabilities. *Journal of Applied Research in Intellectual Disabilities, 33*(6), 1318–1327. https://doi.org/10.1111/jar.12751	Measures
Sexton, E., O'Donovan, M.-A., Mulryan, N., McCallion, P., & McCarron, M. (2016). Whose quality of life? A comparison of measures of self-determination and emotional wellbeing in research with older adults with and without intellectual disability. *Journal of Intellectual & Developmental Disability, 41*(4), 324–337. https://doi.org/10.3109/13668250.2016.1213377	Measures
Shogren, K. A., Shaw, L. A., Raley, S. K., & Wehmeyer, M. L. (2018). Exploring the Effect of Disability, Race-Ethnicity, and Socioeconomic Status on Scores on the Self-Determination Inventory: Student Report. *Exceptional Children, 85*(1), 10–27. https://doi.org/10.1177/0014402918782150	Setting
Shogren, K. A., Wehmeyer, M. L., Shaw, L. A., Grigal, M., Hart, D., Smith, F. A., & Khamsi, S. (2018). Predictors of Self-Determination in Postsecondary Education for Students with Intellectual and Developmental Disabilities. *Education & Training in Autism & Developmental Disabilities, 53*(2), 146–159.	Setting
Spencer, P., Van Haneghan, J., & Baxter, A. (2021). Exploring social networks, employment and self-determination outcomes of graduates from a postsecondary program for young adults with an	Setting

intellectual disability. *Journal of Vocational Rehabilitation*, *55*(3), 251–270. https://doi.org/10.3233/JVR-211161	
Strater, K. E., & Elfers, E. M. (2019). The Emergence of Self-Determination in Young Adults with Intellectual Disability Participating in Project SEARCH. *AILACTE Journal*, *16*, 45–66.	Setting
Torres, A., Kearney, K. B., Downey, A., & Tedesco, C. (2023). Self-Determination Development Among College Students With Intellectual and Developmental Disabilities: A Longitudinal Study. *Focus on Autism & Other Developmental Disabilities*, *38*(2), 137–143. https://doi.org/10.1177/10883576221133491	Setting
Vaucher, C., Cudré-Mauroux, A., & Piérart, G. (2020). Environmental, Personal, and Relational Barriers and Facilitators to Self-Determination among Adults with Intellectual Disabilities. *Scandinavian Journal of Disability Research*, *22*(1), 97–107. https://doi.org/10.16993/sjdr.624	Participants
Vaucher, C., Cudré-Mauroux, A., & Piérart, G. (2021). Perceptions and Understandings of Self-Determination in the Context of Relationships between People with Intellectual Disabilities and Social Care Professionals. *International Journal of Developmental Disabilities*, *67*(2), 121–130. https://doi.org/10.1080/20473869.2019.1623595	Measures
Vicente, E., Verdugo, M. A., Guillén, V. M., Martínez, M. A., Gómez, L. E., & Ibáñez, A. (2020). Advances in the assessment of self-determination: internal structure of a scale for people with intellectual disabilities aged 11 to 40. *Journal of Intellectual Disability Research*, *64*(9), 700–712. https://doi.org/10.1111/jir.12762	Measures
Vicente, E., Mumbardó-Adam, C., Guillén, V. M., Coma-Roselló, T., Bravo-Álvarez, M.-Á., & Sánchez, S. (2020). Self-Determination in People with Intellectual Disability: The Mediating Role of Opportunities. *International Journal of Environmental Research and Public Health*, *17*(17). https://doi.org/10.3390/ijerph17176201	Measures

Vouyoukas, C., & Tsikouras, C. (2021). The investigation of self-determination of primary school students with indicative profile of learning disabilities and mild intellectual disabilities. *Psychology: The Journal of the Hellenic Psychological Society, 26*(1), 121–134.	Setting
Wehmeyer, M., & Schwartz, M. (1998). The Relationship between Self-Determination and Quality of Life for Adults with Mental Retardation. *Education and Training in Mental Retardation and Developmental Disabilities, 33*(1), 3–12.	Setting
Wehmeyer, M. L., Kelchner, K., & Richards, S. (1996). Essential characteristics of self-determined behavior of individuals with mental retardation. *American Journal on Mental Retardation, 100*(6), 632–642.	Measures
Zeng, W., Ju, S., & Hord, C. (2023). Parental Influences on Student Self-Determination: Perspectives of College Students With Learning Disabilities. *Learning Disability Quarterly, 46*(3), 180–190. https://doi.org/10.1177/07319487221107890	Setting
Zhang, D. (2001). Self-Determination and Inclusion: Are Students with Mild Mental Retardation More Self-Determined in Regular Classrooms? *Education and Training in Mental Retardation and Developmental Disabilities, 36*(4), 357–362.	Setting
Zheng, C., Gaumer Erickson, A., Kingston, N. M., & Noonan, P. M. (2014). The relationship among self-determination, self-concept, and academic achievement for students with learning disabilities. *Journal of Learning Disabilities, 47*(5), 462–474. https://doi.org/10.1177/0022219412469688	Setting

Appendix C: Summaries of Included Studies (Phase One)

Table C.1

Summary of Included Studies (Phase One)

Study	Aims	Research Design	Participants	Location	Methodology	Main Findings
Álvarez-Aguado et al. (2021)	To identify the levels of self-determination of adults with ID over 45 years of age; To identify whether age, gender, place of residence, mental health issues, type of support received and degree of disability are impacting self-determination	Quantitative research design	516 participants with ID Age: 45 – 86 years	Chile	*Ad hoc* scale developed from the Functional Model of Self-Determination	Levels of self-determination of most participants (39.1%) were in the low range; some participants (33.1%) were in the medium range; and some participants (27.7%) were in the high range. Severity of the disability, age, place of residence and type of support were identified as variables associated with levels of self-determination.
Di Maggio et al. (2020)	Examine the future goals of individuals with ID in terms of content and temporal distance; Examine the predictive role of self-determination on the number of future goals	Mixed-method design	96 participants with ID Mild range of ID Age: 25 – 45 years (*M* = 32.05; *SD* = 6.66) 45 male 51 female	Italy	**Qualitative:** • Semi-structured interview • Future goals **Quantitative:** • Self-Determination Questionnaire – Version for Adult with ID (Soresi et al., 2004)	Most frequently cited goals for 5 and 10 years' time related to the satisfaction of needs of autonomy (finding/keeping job; having own home; being financially independent) and relatedness (form family or friendly relationships). Self-determination expression in daily life activities and future decisions positively predict number of future goals for 5 and 10 years' time; elf-determination expression in ideas and feelings positively

						predicts number of future goals for 5 years' time.
Emond Pelletier & Joussemet (2017)	Examine whether autonomy support can promote a sense of autonomy among individuals with a mild ID and enhance their experience when engaging in an important but unpleasant activity.	Experimental design	51 participants with ID 23 male 28 female Mild ID Age: 16 – 61 years (*M* = 35.86, *SD* = 13.6)	Montreal	Random assignment to one of two conditions – with or without autonomy support (AS) Experimental task – problem-solving task Experimental manipulation – all participants completed the same task, with AS or without AS (control group) **Measures:** • Intrinsic Need Satisfaction scale (Forest & Mageau, 2008) to measure satisfaction of the needs of autonomy, competence, and relatedness • Intrinsic Motivation Inventory (McAuley et al., 1989) – 'value/usefulness' subscale	Participants in AS group report greater satisfactions levels of their need for autonomy – medium effect size (Cohen, 1992). No significant difference between the two groups regarding satisfactions levels for the needs for competence or relatedness. Participants in AS group perceived the task as more valuable than control group – medium effect size (Cohen, 1992). Participants in AS group observed to be more engaged during activity than control group – large effect size (Cohen, 1992). Participants in AS group observed to be less anxious during activity than control group – medium effect size (Cohen, 1992).

					• Level of engagement (observed) • Anxiety at beginning and end of activity (observed)	
Frielink et al. (2018)	To examine whether SDT model can explain the links between autonomy support, need satisfaction, autonomous motivation and well-being in individuals with mild-borderline ID.	Quantitative research design	186 participants with ID 110 male 76 female Age: 18 – 84 years (*M* = 40.3, *SD* = 14.9) Mild – borderline ID	Netherlands	**Measures:** • Basic Psychological Need Satisfaction and Frustration Scale-Intellectual Disabilities (Chen et al., 2015) • Self-Regulation Questionnaire-Support (Frielink et al., 2017a) • Health Care Climate Questionnaire-Intellectual Disability (Frielink et al., 2017b) • Satisfaction with Life Scale (Diener et al., 1985) • Cantril's Ladder of Life (Cantril, 1965) • Beck Depression Inventory-II-Dutch	Perceived autonomy support was positively associated with autonomous motivation and satisfaction of need for autonomy, competence, and relatedness. Autonomous motivation and need satisfaction were associated with higher psychological well-being. The association between autonomy support and well-being was statistically mediated by autonomous motivation and need satisfaction. Satisfaction of the need for relatedness was positively associated with autonomous motivation.

					Version (Beck et al., 1996)	
Gaumer Erickson et al. (2015)	To explore the direct relationship between self-determination and academic achievement.	Quantitative research design	480 participants with ID 52% male 48% female Age: 16 – 18 years	United States	The study is based on data from Waves 1 and 2 of the National Longitudinal Transition Study-2. **Measures:** • Woodcock Johnson Research Edition (Woodcock et al., 2007) • Arc Self-Determination Scale (Wehmeyer, 1995)	All three self-determination subscales (autonomy, self-realisation, and empowerment) demonstrated strong correlations with academic achievement. Self-determination found to be strongest predictor of academic achievement (beta = 0.35, *p* = .001).
Landuran et al. (2021)	To compare the cognitive and motor skills of three groups of adults with DS, classified according to their levels of self-determination, with a control group of neurotypical adults.	Correlational design	26 participants Participants with DS: 11 male 7 female Age: 21 – 44 years Control group: 4 male 4 female Age: 24 – 38 years)	France	**Measures:** • Arc's Self-Determination Scale (Wehmeyer et al., 2001) • Weschler Intelligence Scale for Children, Fourth Edition (Wechsler, 2005) • Corsi Block Test (Orsini et al., 1987) • Rivermead Behavioural Memory Test for Children (Wilson et al., 1991)	Significant differences found among three groups of people with DS (less self-determined, relatively self-determined, more self-determined) and adult control in the following areas: language, memory, and motor skills. For people with DS, significant bilateral correlations between self-determination and language, memory, and motor skills. No significant correlations observed between self-determination and IQ for individuals with DS.

					• Five Times Sit to Stand Test (Guralnik et al., 1994) • Timed Up and Go Test (Podsialdo & Richardson, 1991) • Short Physical Performance Battery (Guralnik et al., 2000) • PEBL (Adams, 1952)	
Mumbardó-Adam et al. (2019)	To test an integrative model of self-determination and related contextual factors among young people with and without ID.	Quantitative research design	591 participants 57.4% male 42.6% female Age: 13 – 22 years (*M* = 16.95; *SD* = 2.02) Participants with ID: 342 Mild ID: 34.8% Moderate ID: 43.6% Severe ID: 21.6%	Spain	**Measures:** • Self-Determination Inventory: Student Report (Shogren et al., 2018) (Spanish interim version) • AIR Self-Determination Scale (Wolman et al., 1994)	Opportunities at home found to impact self-determination constructs (volitional actions, agentic actions, and action-controlled beliefs). Opportunities at school found to only directly impact action-control beliefs and indirectly influence agentic actions. Agentic actions impacted by action-control beliefs and volitional actions and action-control beliefs impacted by volitional actions. For young people without ID, opportunities at home not found to impact action-control beliefs.

Westera et al. (2023)	To explore the association between the frustration and satisfaction of basic psychological needs and indicators of mental health problems.	Correlational design	324 adolescents with mild to borderline ID Age: 11.3 – 19.3 (*M* = 15.2; *SD* = 1.53)	Netherlands	**Measures:** • SCARED (Birmaher et al., 1999) • Child Depression Inventory (Kovacs, 1985; Timbremont et al., 2008) • Youth Self Report (Achenbach & Edelbrock, 1987) • Basic Psychological Needs Satisfaction and Frustration Scale – Intellectual Disability (Chen et al., 2015)	The frustration scales for autonomy, competence, and relatedness were all positively and significantly associated with the three indicators of mental health problems: anxiety, depression, and externalising behaviours. Adolescents with higher levels of need frustration demonstrated higher levels of mental health problems. Autonomy and competence satisfaction were negatively and significantly related to anxiety and depression. Relatedness satisfaction was negatively and significantly associated with depression.
Wong & Chow (2021)	To explore goal-setting among adults with mild ID and their (dis)agreements with their significant others; To examine the relationship between their self-determination and personal well-being.	Correlational design	170 participants with mild ID 82 male 99 female Age: 18 – 65 years (*M* = 39.5; *SD* = 11.3)	Hong Kong	**Questionnaire:** • Personal goals • AIR Self-Determination Scale-Chinese Version (Wolman et al., 1994) • Personal Well-being-Intellectual Disability (Cantonese) (Cummins & Lau, 2005) • Decision-making patterns in	When controlling for age, IQ level, gender, marital status, living arrangements, educational level and income, self-determination competencies found to be positively correlated with personal well-being ($r = 0.313$, $p < 0.001$). Most participants reported own personal goals. Goals were diverse and incorporated several domains. Frequency of disagreement between individuals with ID and significant others was found to be low.

		(dis)agreement situations • Demographic information

Appendix D: Weight of Evidence A (Phase One)

Weight of Evidence A (WoE A) explores the methodological quality of a study. The Mixed Methods Appraisal Tool (MMAT) (Hong et al., 2018) was utilised to analyse the methodological quality of the nine studies included in the review. This tool is designed for the appraisal stage of systematic reviews that include quantitative, qualitative, and mixed-method studies. Given that the current review included studies with different designs, the MMAT was deemed appropriate.

The eight studies that employed a quantitative research design (Álvarez-Aguado et al., 2021; Emond Pelletier & Joussemet, 2017; Frielink et al., 2018; Gaumer Erickson et al., 2015; Landuran et al., 2021; Mumbardó-Adam et al., 2019; Wester et al., 2023; Wong & Chow, 2021) were appraised using the quality criteria for quantitative research. The study with a mixed-method design (Di Maggio et al., 2020) was evaluated using the quality criteria for mixed-method research. The quality criteria for each research design are presented in Appendix E.

Each study was assigned a score for each of the five criteria on the appraisal tool, in line with the study's research design. A score of one was assigned if the criteria was met and a score of zero was assigned if the criteria was not met. To calculate the overall WoE A, the total score was computed, with a range of 0-5. Table 1 outlines the scores obtained by each study.

Table 1

WoE A Scoring

Study	Category of Study Design	Criteria 1	Criteria 2	Criteria 3	Criteria 4	Criteria 5	Total Score
Álvarez-Aquado et al. (2021)	Quantitative descriptive	1	1	1	1	1	5
Di Maggio et al. (2020)	Mixed method	1	1	0	0	1	3
Emond Pelletier & Joussemet (2017)	Quantitative randomised controlled trial	0	1	1	1	1	4
Frielink et al. (2018)	Quantitative descriptive	0	1	1	0	1	3
Gaumer Erickson et al. (2015)	Quantitative descriptive	1	0	1	1	1	4
Landuran et al. (2021)	Quantitative descriptive	0	1	1	1	1	4

Mumbardó-Adam et al. (2019)	Quantitative descriptive	1	1	1	1	1	5
Westera et al., 2023	Quantitative descriptive	1	1	1	0	1	4
Wong & Chow (2021)	Quantitative descriptive	0	1	1	1	1	4

As illustrated in Table 2 below, the scores obtained using the coding protocols were converted into WoE A ratings. Table 3 outlines the total WoE A rating obtained by each study.

Table 2

WoE A Scoring Criteria

WoE A Rating	Score
High = 3	Total score of 5 based on the methodological quality criteria
Medium = 2	Total score of 3 – 4 based on the methodological quality criteria
Low = 1	Total score of 0 – 2 based on the methodological quality criteria

Table 3

WoE A Rating

Study	WoE A Rating
Álvarez-Aquado et al. (2021)	3 (High)
Di Maggio et al. (2020)	2 (Medium)
Emond Pelletier & Joussemet (2017)	2 (Medium)
Frielink et al. (2018)	2 (Medium)
Gaumer Erickson et al. (2015)	2 (Medium)
Landuran et al. (2021)	2 (Medium)
Mumbardó-Adam et al. (2019)	3 (High)
Westera et al. (2023)	2 (Medium)
Wong & Chow (2021)	2 (Medium)

Appendix E: Mixed Method Appraisal Tool (Phase One)

Appraisal Tool: Hong, Q. N., Playe, P., Fàbregues, S., Bartlett, G., Boardman, F., Cargo, M., Dagenais, P., Gagnon, M. P., Griffiths, F., Nicolau, B., O'Cathain, A., Rousseau, M. C., & Vedel, I. (2018). The Mixed Methods Appraisal Tool (MMAT) Version 2018. *Education for Information*, *34*(4), 285-291. Retrieved from http://mixedmethodsappraisaltoolpublic.pbworks.com/

Study Reference: Mumbardó, A. C., Guàrdia, O. J., & Giné Giné, C. (2020). An integrative model of self-determination and related contextual variables in adolescents with and without disabilities. *Journal of Applied Research in Intellectual Disabilities, 33*(5), 856–864. https://doi.org/10.1111/jar.12705

Screening Questions (for all types)

S.1. Are there clear research questions?

☒Yes

☐No

☐Unknown/ Unable to code

S.2. Do the collected data allow to address the research questions?

☒Yes

☐No

☐Unknown/ Unable to code

Methodological Quality Criteria

Qualitative

1.1 Is the qualitative approach appropriate to answer the research question?

☐Yes

☐No

☐Unknown/ Unable to code

1.2. Are the qualitative data collection methods adequate to address the research question?

☐Yes

☐No

☐Unknown/ Unable to code

1.3. Are the findings adequately derived from the data?

☐Yes

☐No

☐Unknown/ Unable to code

1.4. Is the interpretation of results sufficiently substantiated by data?

☐Yes

☐No

☐Unknown/ Unable to code

1.5. Is there coherence between qualitative data sources, collection, analysis and interpretation?

☐Yes

☐No

☐Unknown/ Unable to code

Quantitative Randomised Controlled Trials

2.1. Is randomization appropriately performed?

☐Yes

☐No

☐Unknown/ Unable to code

2.2. Are the groups comparable at baseline?

☐Yes

☐No

☐Unknown/ Unable to code

2.3. Are there complete outcome data?

☐Yes

☐No

☐Unknown/ Unable to code

2.4. Are outcome assessors blinded to the intervention provided?

☐Yes

☐No

☐Unknown/ Unable to code

2.5 Did the participants adhere to the assigned intervention?

☐Yes

☐No

☐Unknown/ Unable to code

Quantitative Non-Randomised

3.1. Are the participants representative of the target population?

☐Yes

☐No

☐Unknown/ Unable to code

3.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)?

☐Yes

☐No

☐Unknown/ Unable to code

3.3. Are there complete outcome data?

☐Yes

☐No

☐Unknown/ Unable to code

3.4. Are the confounders accounted for in the design and analysis?

☐Yes

☐No

☐Unknown/ Unable to code

3.5. During the study period, is the intervention administered (or exposure occurred) as intended?

☐Yes

☐No

☐Unknown/ Unable to code

Quantitative Descriptive

4.1. Is the sampling strategy relevant to address the research question?

☒Yes

☐No

☐Unknown/ Unable to code

4.2. Is the sample representative of the target population?

☒Yes

☐No

☐Unknown/ Unable to code

4.3. Are the measurements appropriate?

☒Yes

☐No

☐Unknown/ Unable to code

4.4. Is the risk of nonresponse bias low?

☒Yes

☐No

☐Unknown/ Unable to code

4.5. Is the statistical analysis appropriate to answer the research question?

☒Yes

☐No

☐Unknown/ Unable to code

Mixed Methods

5.1. Is there an adequate rationale for using a mixed methods design to address the research question?

☐Yes

☐No

☐Unknown/ Unable to code

5.2. Are the different components of the study effectively integrated to answer the research question?

☐Yes

☐No

☐Unknown/ Unable to code

5.3. Are the outputs of the integration of qualitative and quantitative components adequately interpreted?

☐Yes

☐No

☐Unknown/ Unable to code

5.4. Are divergences and inconsistencies between quantitative and qualitative results adequately addressed?

☐Yes

☐No

☐Unknown/ Unable to code

5.5. Do the different components of the study adhere to the quality criteria of each tradition of the methods involved?

☐Yes

☐No

☐Unknown/ Unable to code

Appendix F: Weight of Evidence B (Phase One)

WoE B explored the appropriateness of the research design for the review question. Ratings for WoE B were devised in line with the inclusion and exclusion criteria. As outlined in the inclusion criteria, the systematic review only included studies which produced primary empirical data. However, studies with different research designs were included. The first phase of the systematic review sought to gather empirical data to determine explore current knowledge about self-determination among individuals with ID and/or DS. Study designs which provided statistical information about the relationship between self-determination and ID were afforded higher WoE B ratings. Study designs which provided qualitative information about the perspectives or experiences of individuals with ID/DS in relation to self-determination were given lower WoE B ratings.

Table I.1

WoE B Criteria (Phase One)

Rating	Score	Criteria
High	3	Quantitative research methods are used to explore the research question. Standardised assessment tools are used to measure self-determination/need satisfaction. Data is provided about the relationship(s) between self-determination, ID, and other variables. Effect sizes are reported, where appropriate.
Medium	2	Quantitative research methods are used to explore the research question. Data is provided about the relationship(s) between self-determination, ID, and other variables. Non-standardised assessment tools are used to measure self-determination/need satisfaction and/or effect sizes are not reported, where appropriate.
Low	1	Qualitative research methods (e.g., interviews or case study) are used to explore the research question. Data is not provided about the relationship(s) between self-determination, ID, and other variables.

Table 3

WoE B Rating (Phase One)

Study	WoE B Rating
Álvarez-Aquado et al. (2021)	2 (Medium)
Di Maggio et al. (2020)	2 (Medium)

Emond Pelletier & Joussemet (2017)	3 (High)
Frielink et al. (2018)	3 (High)
Gaumer Erickson et al. (2015)	3 (High)
Landuran et al. (2021)	3 (High)
Mumbardó-Adam et al. (2019)	2 (Medium)
Westera et al. (2023)	3 (High)
Wong & Chow (2021)	2 (Medium)

Appendix G: Weight of Evidence C (Phase One)

WoE C evaluated the relevance of the characteristics of each study for providing evidence for the review question. Three criteria were used to assess the relevance of the nine studies. The criteria, associated scorings, and rationales are outlined in Table 1. The overall WoE C score for each study was obtained by calculating the average of the scores attained across each of the three criteria (see Table 2).

Table 1

WoE C Criteria (Phase One)

Criteria	Rating	Rationale
A. Participants	**3 (High)** Participants were individuals with ID/DS and detailed information was provided about their intellectual ability and other demographic information. **2 (Medium)** Participants were individuals with ID/DS and limited information was provided about their intellectual ability and other demographic information. **1 (Low)** Participants included individuals with ID/DS and no information was provided about their intellectual ability. Participants included other stakeholders such as teacher or parents.	This review in exploring current knowledge about self-determination among individuals with ID/DS. Therefore, the review requires the inclusion of studies which recruited individuals with ID/DS as participants.
B. Setting	**3 (High)** The study recruited participants from the general population, i.e., not based in a specific setting such as a residential centre. **2 (Medium)** The study recruited participants attending specific support services on a part-time basis. The study recruited participants from a range of settings.	Phase one of the review is exploring current knowledge about self-determination among individuals with ID/DS within the general population as opposed to specific contexts.

	1 (Low) The study only recruited participants living in residential settings. Sufficient information was not available.	
C. Measures	**3 (High)** The study includes a standardised measure of participants' self-determination. **2 (Medium)** The study includes a non-standardised measure of participants' self-determination. **1 (Low)** The study does not include any measure of participant's self-determination.	The study is exploring self-determination among individuals with ID/DS. Therefore, it is necessary to include a standardised measure of individuals' self-determination.

Table J.2

WoE C Scores (Phase One)

Study	Criteria A	Criteria B	Criteria C	Total
Álvarez-Aquado et al. (2021)	3	2	2	2.3
Di Maggio et al. (2020)	2	1	3	2
Emond Pelletier & Joussemet (2017)	2	2	3	2.3
Frielink et al. (2018)	3	3	3	3
Gaumer Erickson et al. (2015)	1	3	3	2.3
Landuran et al. (2021)	2	2	3	2.3
Mumbardó-Adam et al. (2019)	2	2	3	2.3
Westera et al. (2023)	2	2	3	2.3
Wong & Chow (2021)	3	3	3	3

As illustrated in Table 3 below, the scores obtained using the coding protocols were converted into WoE C ratings. Table 4 outlines the overall WoE C rating obtained by each study.

Table 3

WoE C Scoring Criteria (Phase One)

WoE C Rating	Score
High = 3	Total score of ≥ 2.6
Medium = 2	Total score of 1.6 – 2.5
Low = 1	Total score of < 1.5

Table 4

WoE C Rating (Phase One)

Study	WoE C Rating
Álvarez-Aquado et al. (2021)	2 (Medium)
Di Maggio et al. (2020)	2 (Medium)
Emond Pelletier & Joussemet (2017)	2 (Medium)
Frielink et al. (2018)	3 (High)
Gaumer Erickson et al. (2015)	2 (Medium)
Landuran et al. (2021)	2 (Medium)
Mumbardó-Adam et al. (2019)	2 (Medium)
Westera et al. (2023)	2 (Medium)
Wong & Chow (2021)	3 (High)

Appendix H: Abstract Screened (Phase One)

Reference	Reason for Exclusion (as per exclusion criteria)
Agran, M., Cavin, M., & Wehmeyer, M. (2006). Participation of Students with Moderate to Severe Disabilities in the General Curriculum: The Effects of the Self-Determined Learning Model of Instruction. *Research & Practice for Persons with Severe Disabilities, 31*(3), 230–241.	6
Burke, K. M., Shogren, K. A., & Carlson, S. (2021). Examining Types of Goals Set by Transition-Age Students with Intellectual Disability. *Career Development and Transition for Exceptional Individuals, 44*(3), 135–147. https://doi.org/10.1177/2165143420959055	6
Campbell-Whatley, G. (2006). Why Am I in Special Education and What Can I Do About it?: Helping Students Develop Self-Determination. *Teaching Exceptional Children Plus, 3*(2), 1.	3
Campbell-Whatley, G. D. (2008). Teaching Students about Their Disabilities: Increasing Self-Determination Skills and Self-Concept. *International Journal of Special Education, 23*(2), 137–144.	6
Carrington, S., Lennox, N., O'Callaghan, M., McPherson, L., & Selva, G. (2014). Promoting Self-Determination for Better Health and Wellbeing for Adolescents who have an Intellectual Disability. *Australasian Journal of Special Education, 38*(2), 93–114. https://doi.org/10.1017/jse.2013.16	3
Cook, A. L., Wilczenski, F. L., & Vanderberg, L. (2017). Inclusive Concurrent Enrollment: A Promising Postsecondary Transition Practice for Building Self-Determination among Students with Intellectual Disability. *Journal of the American Academy of Special Education Professionals*, 25–44.	3
Cudré, M. A., Piérart, G., & Vaucher, C. (2019). The importance of the relational needs of people with learning disabilities in the promotion of self-determination. *British Journal of Learning Disabilities, 47*(3), 174–180. https://doi.org/10.1111/bld.12268	4

Daniel, J. R., & Cooc, N. (2018). Teachers' Perceptions of Academic Intrinsic Motivation for Students with Disabilities. *Journal of Special Education, 52*(2), 101–112. https://doi.org/10.1177/0022466918765276	6
Deci, E. L. (Edward L., Hodges, R. M., & Pierson, L. H. (1992). Autonomy and competence as motivational factors in students with learning disabilities and emotional handicaps. *Journal of Learning Disabilities, 25*, 457–471. https://doi.org/10.1177/002221949202500706	6
Dowling, S., Williams, V., Webb, J., Gall, M., & Worrall, D. (2019). Managing relational autonomy in interactions: People with intellectual disabilities. *Journal of Applied Research in Intellectual Disabilities*, *32*(5), 1058–1066. https://doi.org/10.1111/jar.12595	4
Emond Pelletier, J., & Joussemet, M. (2017). The Benefits of Supporting the Autonomy of Individuals with Mild Intellectual Disabilities: An Experimental Study. *Journal of Applied Research in Intellectual Disabilities, 30*(5), 830–846. https://doi.org/10.1111/jar.12274	4
Erickson, A. S. G., Noonan, P. M., Zheng, C., & Brussow, J. A. (2015). The relationship between self-determination and academic achievement for adolescents with intellectual disabilities. *Research in Developmental Disabilities, 36*, 45–54. https://doi.org/10.1016/j.ridd.2014.09.008	4
Farmer, J. L., Allsopp, D. H., & Ferron, J. M. (2015). Impact of The Personal Strengths Program on Self-Determination Levels of College Students With LD and/or ADHD. *Learning Disability Quarterly, 38*(3), 145–159. https://doi.org/10.1177/0731948714526998	3
Field, S. (1996). Self-determination instructional strategies for youth with learning disabilities. *Journal of Learning Disabilities, 29*, 40–52. https://doi.org/10.1177/002221949602900107	3
Finn, D., Getzel, E. E., & McManus, S. (2008). Adapting the self-determined learning model for instruction of college students with disabilities. *Career Development for Exceptional Individuals, 31*(2), 85–93. https://doi.org/10.1177/0885728808318327	6

Fisher, M. H., Athamanah, L. S., Sung, C., & Josol, C. K. (2020). Applying the self-determination theory to develop a school-to-work peer mentoring programme to promote social inclusion. *Journal of Applied Research in Intellectual Disabilities, 33*(2), 296–309. https://doi.org/10.1111/jar.12673	6
Garrels, V. (2017). Goal setting and planning for Norwegian students with and without intellectual disabilities: Wishing upon a star? *European Journal of Special Needs Education, 32*(4), 493–507. https://doi.org/10.1080/08856257.2016.1261487	6
Garrels, V., & Granlund, M. (2018). Measuring self-determination in Norwegian students: adaptation and validation of the AIR Self-Determination Scale. *European Journal of Special Needs Education, 33*(4), 466–480. https://doi.org/10.1080/08856257.2017.1342420	4
Getzel, E. E., & Thoma, C. A. (2006). Voice of Experience: What College Students with Learning Disabilities and Attention Deficit/Hyperactivity Disorders Tell Us Are Important Self-Determination Skills for Success. *Learning Disabilities: A Multidisciplinary Journal, 14*(1), 33–40.	6
Goegan, L. D., & Daniels, L. M. (2022). Online Learning for Students with Learning Disabilities and Their Typical Peers: The Association between Basic Psychological Needs and Outcomes. *Learning Disabilities Research & Practice, 37*(2), 140–150. https://doi.org/10.1111/ldrp.12277	6
Greco, A. (2018). 'In the kitchen and around the table': On the way towards commensal (mutually beneficial) relationships—A project encouraging autonomy in young people with learning disabilities. *Infant Observation, 21*(1), 111–121. https://doi.org/10.1080/13698036.2018.1539340	6
Hoffman, A. M., & Field, S. (1995). Promoting self-determination through effective curriculum development. *Intervention in School & Clinic, 30,* 134–141. https://doi.org/10.1177/105345129503000302	3
Hong, B., Haefner, L., & Slekar, T. (2011). Faculty Attitudes and Knowledge toward Promoting Self-Determination and Self-Directed Learning for College Students with and without Disabilities. *International Journal of Teaching and Learning in Higher Education, 23*(2), 175–185.	3

I-Chen Wu, & Molina, R. M. (2019). Self-Determination of College Students with Learning and Attention Challenges. *Journal of Postsecondary Education & Disability*, *32*(4), 359–375.	3
Iwanaga, K., Chan, F., Tansey, T. N., Hoyt, W. T., & Berven, N. L. (2021). Evaluation of Constructs Based on Self-Determination Theory and Self-Efficacy Theory as Predictors of Vocational Rehabilitation Engagement for People With Physical and Sensory Disabilities. *Rehabilitation Counseling Bulletin*, *64*(3), 131–144. https://doi.org/10.1177/0034355220942301	4
Johnson, M., Spriggs, A. D., Shepley, S. B., Allday, R. A., & Samudre, M. (2019). Video activity schedules to increase independence for students with disabilities. *Journal of Developmental and Physical Disabilities*, *31*(1), 73–88. https://doi.org/10.1007/s10882-018-9631-z	6
Kartasidou, L., Agaliotis, I., & Dimitriadou, I. (2009). Educational Design and Instructional Applications for the Promotion of Self Determination in Individuals with Intellectual Disability: A Pilot Study. *International Journal of Learning*, *16*(10), 317–328. https://doi.org/10.18848/1447-9494/CGP/v16i10/46642	4
Katz, I., & Cohen, R. (2014). Assessing Autonomous Motivation in Students with Cognitive Impairment. Journal of *Intellectual & Developmental Disability*, *39*(4), 323–332. https://doi.org/10.3109/13668250.2014.934791	6
Kilsby MS, & Beyer S. (2002). Enhancing self-determination in job matching in supported employment for people with learning disabilities: an intervention study. *Journal of Vocational Rehabilitation*, *17*(2), 125–135.	4
Kleinert, J. O., Harrison, E., Mills, K. R., Dueppen, B. M., & Trailor, A. M. (2014). Self-determined Goal Selection and Planning by Students with Disabilities across Grade Bands and Disability Categories. *Education & Training in Autism & Developmental Disabilities*, *49*(3), 464–477.	6
Konrad, M., Fowler, C. H., & Walker, A. R. (2007). Effects of Self-Determination Interventions on the Academic Skills of Students with Learning Disabilities. *Learning Disability Quarterly*, *30*(2), 89–113. https://doi.org/10.2307/30035545	6
Lachapelle, Y., Wehmeyer, M. L., Haelewyck, M.-C., Courbois, Y., Keith, K. D., Schalock, R., Verdugo, M. A., & Walsh, P. N. (2005). The Relationship Between Quality of Life and Self-Determination: An International Study. *Journal of Intellectual Disability Research*, *49*(10), 740–744. https://doi.org/10.1111/j.1365-2788.2005.00743.x	4

Lee, S.-H., Palmer, S. B., & Turnbull, A. P. (2006). A Model for Parent-Teacher Collaboration to Promote Self-Determination in Young Children With Disabilities. *Teaching Exceptional Children, 38*(3), 36–41.	3
Lewis, K., & Taymans, J. M. (1992). An Examination of Autonomous Functioning Skills of Adolescents with Learning Disabilities. *Career Development for Exceptional Individuals, 15*(1), 37–46.	4
Lindell, M., Daniels, J., & Michener, M. (2021). The Lived Experience of College Students with Intellectual Disabilities. *Journal of the International Association of Special Education, 21*(1), 34–45.	6
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Shogren, K. A., Kennedy, W., Dowsett, C., Garnier Villarreal, M., & Little, T. D. (2014). Exploring Essential Characteristics of Self-Determination for Diverse Students Using Data from NLTS2. *Career Development and Transition for Exceptional Individuals, 37*(3), 168–176. https://doi.org/10.1177/2165143413486927	3
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Wehmeyer, M. L., & Kelchner, K. (1996). Perceptions of Classroom Environment, Locus of Control and Academic Attribution of Adolescents with and without Cognitive Disabilities. *Career Development for Exceptional Individuals*, *19*(1), 15–30.	6
Wehmeyer, M. L., Shogren, K. A., & Hyojeong Seo. (2015). Promoting the Self-Determination and Goal Attainment of Youth with Learning Disabilities and Behavioral Disorders. *Advances in Learning & Behavioral Disabilities*, *28*, 173–196. https://doi.org/10.1108/S0735-004X20150000028008	4
Zhang, D. (2005). Parent Practices in Facilitating Self-Determination Skills: The Influences of Culture, Socioeconomic Status, and Children's Special Education Status. *Research & Practice for Persons with Severe Disabilities*, *30*(3), 154–162.	4
Zhang, D., & Benz, M. R. (2006). Enhancing Self-Determination of Culturally Diverse Students With Disabilities: Current Status and Future Directions. *Focus on Exceptional Children*, *38*(9), 1–12.	5

Appendix I: Full Text Screened (Phase Two)

Reference	Reason for Exclusion
Carter, E. W., Owens, L., Trainor, A. A., Sun, Y., & Swedeen, B. (2009). Self-Determination Skills and Opportunities of Adolescents with Severe Intellectual and Developmental Disabilities. *American Journal on Intellectual and Developmental Disabilities, 114*(3), 179–192. https://doi.org/10.1352/1944-7558-114.3.179	4. Setting
Cavendish, W., Connor, D. J., & Perez, D. (2020). Choice, Support, Opportunity: Profiles of Self-Determination in High School Students with Learning Disabilities. *Learning Disabilities: A Multidisciplinary Journal,* 25(2), 16–27. https://doi.org/10.18666/LDMJ-2020-V25-I2-10312	3. Participants
Cavendish, W., Connor, D. J., Olander, L., & Hallaran, A. (2020). Preparing for Their Future: Perspectives of High School Students with Learning Disabilities about Transition Planning. *Exceptionality, 28*(5), 349–361. https://doi.org/10.1080/09362835.2019.1625777	3. Participants
Chao, P.-C. (2018). Using Self-Determination of Senior College Students with Disabilities to Predict Their Quality of Life One Year after Graduation. *European Journal of Educational Research, 7*(1), 1–8.	3. Participants
Chao, P.-C., Chou, Y.-C., & Cheng, S.-F. (2019). Self-determination and transition outcomes of youth with disabilities: Findings from the Special Needs Education Longitudinal Study. *Advances in Neurodevelopmental Disorders, 3*(2), 129–137. https://doi.org/10.1007/s41252-019-00105-1	3. Participants
Chou, Y.-C., Wehmeyer, M. L., Palmer, S. B., & Lee, J. (2017). Comparisons of Self-Determination among Students with Autism, Intellectual Disability, and Learning Disabilities: A Multivariate Analysis. *Focus on Autism and Other Developmental Disabilities, 32*(2), 124–132. https://doi.org/10.1177/1088357615625059	6. Measures

Dalun Zhang. (2001). The Effect of Next S.T.E.P. Instruction on the Self-Determination Skills of High School Students with Learning Disabilities. *Career Development for Exceptional Individuals, 24*(2), 121–132. https://doi.org/10.1177/088572880102400203	6. Measures
Deniz, F. K. (2023). Cognitive Autonomy for Students With Learning Disabilities. *Intervention in School & Clinic, 58*(5), 371–377. https://doi.org/10.1177/10534512221114419	5. Data
Field, S., Sarver, M. D., & Shaw, S. F. (2003). Self-Determination: A Key to Success in Postsecondary Education for Students with Learning Disabilities. *Remedial & Special Education, 24*(6), 339–349. https://doi.org/10.1177/07419325030240060501	4. Setting
Garrels, V., & Palmer, S. B. (2020). Student-Directed Learning: A Catalyst for Academic Achievement and Self-Determination for Students with Intellectual Disability. *Journal of Intellectual Disabilities, 24*(4), 459–473. https://doi.org/10.1177/1744629519840526	6. Measures
Gómez-Vela, M., Verdugo Alonso, M. A., Gil, F. G., Corbella, M. B., & Wehmeyer, M. L. (2012). Assessment of the Self-Determination of Spanish Students with Intellectual Disabilities and other Educational Needs. *Education & Training in Autism & Developmental Disabilities, 47*(1), 48–57.	3. Participants
Hughes, C., Cosgriff, J. C., Agran, M., & Washington, B. H. (2013). Student Self-Determination: A Preliminary Investigation of the Role of Participation in Inclusive Settings. *Education & Training in Autism & Developmental Disabilities, 48*(1), 3–17.	6. Measures
Jimenez, B. A., & Warren, S. H. (2023). Building Self-Determination via Student Engaged Formative Assessments for Students with Extensive Support Needs. *Education & Training in Autism & Developmental Disabilities, 58*(1), 48–61.	6. Measures
Kausik, N. H., & Hussain, D. (2020). Self-determination, nurtured heart approach, and motivation: Development and testing of an intervention strategy for students with learning disabilities. *Current Psychology: A Journal for Diverse Perspectives on Diverse Psychological Issues, 39*(4), 1454–1465. https://doi.org/10.1007/s12144-018-9848-0	3. Participants

Lee, S.-H., Wehmeyer, M. L., Palmer, S. B., Soukup, J. H., & Little, T. D. (2008). Self-Determination and Access to the General Education Curriculum. *Journal of Special Education, 42*(2), 91–107. https://doi.org/10.1177/0022466907312354	6. Measures
Lee, S.-H., Hong, J., Yeom, J.-H., & Lee, J. (2019). Perceptions and experiences of self-determination of students and youth with intellectual disabilities in Korea. *Advances in Neurodevelopmental Disorders, 3*(2), 138–151. https://doi.org/10.1007/s41252-019-00099-w	3. Participants
Mason, P., Timms, K., Hayburn, T., & Watters, C. (2013). How Do People Described as having a Learning Disability Make Sense of Friendship? *Journal of Applied Research in Intellectual Disabilities, 26*(2), 108–118. https://doi.org/10.1111/jar.12001	4. Setting
McGuire, J., & McDonnell, J. (2008). Relationships between Recreation and Levels of Self-Determination for Adolescents and Young Adults with Disabilities. *Career Development for Exceptional Individuals, 31*(3), 154–163. https://doi.org/10.1177/0885728808315333	4. Setting
Palmer, S. B., Wehmeyer, M. L., Shogren, K. A., Williams-Diehm, K. L., & Soukup, J. H. (2012). An Evaluation of the "Beyond High School" Model on the Self-Determination of Students with Intellectual Disability. *Career Development and Transition for Exceptional Individuals, 35*(2), 76–84.	4. Setting
Sagen, L. M., & Ytterhus, B. (2014). Self-Determination of Pupils with Intellectual Disabilities in Norwegian Secondary School. *European Journal of Special Needs Education, 29*(3), 344–357. https://doi.org/10.1080/08856257.2014.909174	3. Participants
Scorgie, K., Kildal, L., & Wilgosh, L. (2010). Post-secondary students with disabilities: Issues related to empowerment and self-determination. *Developmental Disabilities Bulletin, 38*(1–2), 133–145.	4. Setting
Sheppard, L., & Unsworth, C. (2011). Developing Skills in Everyday Activities and Self-Determination in Adolescents with Intellectual and Developmental Disabilities. *Remedial and Special Education, 32*(5), 393–405. https://doi.org/10.1177/0741932510362223	4. Setting

Shogren, K. A., & Shaw, L. A. (2016). The Impact of Personal Factors on Self-Determination and Early Adulthood Outcome Constructs in Youth with Disabilities. Grantee Submission.	4. Setting
Shogren, K. A., Burke, K. M., Anderson, M. H., Antosh, A. A., Wehmeyer, M. L., LaPlante, T., & Shaw, L. A. (2018). Evaluating the Differential Impact of Interventions to Promote Self-Determination and Goal Attainment for Transition-Age Youth with Intellectual Disability. *Research & Practice for Persons with Severe Disabilities, 43*(3), 165–180. https://doi.org/10.1177/1540796918779775	4. Setting
Shogren, K. A., Shaw, L. A., Raley, S. K., & Wehmeyer, M. L. (2018). Exploring the Effect of Disability, Race-Ethnicity, and Socioeconomic Status on Scores on the Self-Determination Inventory: Student Report. *Exceptional Children, 85*(1), 10–27. https://doi.org/10.1177/0014402918782150	4. Setting
Shogren, K. A., Wehmeyer, M. L., Shaw, L. A., Grigal, M., Hart, D., Smith, F. A., & Khamsi, S. (2018). Predictors of Self-Determination in Postsecondary Education for Students with Intellectual and Developmental Disabilities. *Education & Training in Autism & Developmental Disabilities, 53*(2), 146–159.	4. Setting
Shogren, K. A., Shaw, L. A., Raley, S. K., & Wehmeyer, M. L. (2018). The Impact of Personal Characteristics on Scores on the Self-Determination Inventory: Student Report in Adolescents with and without Disabilities. *Psychology in the Schools, 55*(9), 1013–1026. https://doi.org/10.1002/pits.22174	6. Measures
Shogren, K. A., Hicks, T. A., Burke, K. M., Antosh, A., LaPlante, T., & Anderson, M. H. (2020). Examining the impact of the SDLMI and Whose Future Is It? Over a two-year period with students with intellectual disability. *American Journal on Intellectual and Developmental Disabilities, 125*(3), 13. https://doi.org/10.1352/1944-7558-125.3.217	4. Setting
Torres, A., Kearney, K. B., Downey, A., & Tedesco, C. (2023). Self-Determination Development Among College Students With Intellectual and Developmental Disabilities: A Longitudinal Study.	4. Setting

Focus on Autism & Other Developmental Disabilities, *38*(2), 137–143. https://doi.org/10.1177/10883576221133491	
Tuckwiller, E. D., Dardick, W. R., & Kutscher, E. L. (2019). A Mixed-Methods Investigation of Mindset, Grit, Optimism, and Self-Determination in Adolescents with Learning Disabilities and Differences. *Learning Disabilities: A Multidisciplinary Journal*, *24*(1), 19–32. https://doi.org/10.18666/LDMJ-2019-V24-I1-8849	6. Measures
Vouyoukas, C., & Tsikouras, C. (2021). The investigation of self-determination of primary school students with indicative profile of learning disabilities and mild intellectual disabilities. *Psychology: The Journal of the Hellenic Psychological Society*, *26*(1), 121–134.	2. Language
Wehmeyer, M. L., Hughes, C., Agran, M., Garner, N., & Yeager, D. (2003). Student-directed learning strategies to promote the progress of students with intellectual disability in inclusive classrooms. *International Journal of Inclusive Education*, *7*(4), 415–428. https://doi.org/10.1080/1360311032000110963	6. Measures
Wehmeyer, M. L., Palmer, S. B., & Soukup, J. H. (2007). Self-Determination and Student Transition Planning Knowledge and Skills: Predicting Involvement. *Exceptionality*, *15*(1), 31–44. https://doi.org/10.1207/s15327035ex1501_4	6. Measures
Zeng, W., Ju, S., & Hord, C. (2023). Parental Influences on Student Self-Determination: Perspectives of College Students With Learning Disabilities. *Learning Disability Quarterly*, *46*(3), 180–190. https://doi.org/10.1177/07319487221107890	4. Setting
Zhang, D. (2001). Self-Determination and Inclusion: Are Students with Mild Mental Retardation More Self-Determined in Regular Classrooms? *Education and Training in Mental Retardation and Developmental Disabilities*, *36*(4), 357–362.	6. Measures
Zheng, C., Gaumer Erickson, A., Kingston, N. M., & Noonan, P. M. (2014). The Relationship among Self-Determination, Self-Concept, and Academic Achievement for Students with Learning	3. Participants

Disabilities. *Journal of Learning Disabilities*, *47*(5), 462–474. https://doi.org/10.1177/0022219412469688

Appendix J: Summaries of Included Studies (Phase Two)

Table C.1

Summary of Included Studies (Phase Two)

Study	Aims	Research Design	Participants	Location	Methodology	Main Findings
Behzadnia et al. (2022)	To examine how teachers' need-supportive behaviours affect the experience of basic psychological needs, motivation, and well-being in students with mild and borderline intellectual disabilities in PE programs.	Experimental research design	98 students with mild and borderline ID Age range: 11 to 25 years	Iran	Experimental condition: Need support intervention (teachers; *n* = 3) Control condition: No intervention/ usual teaching (teachers, *n* = 3) Measures: • Interpersonal Behaviours Questionnaire (Rocchi et al., 2017) • Basic Psychological Need Satisfaction and Frustration Scale (Chen et al., 2015) • Self-regulation questionnaire (Ryan & Connell, 1989) • Physical Activity Readiness Questionnaire (Thomas et al., 1992)	In comparison to students of teachers in the control group, students of teachers in the experimental group demonstrated higher need satisfaction and positive affect, and lower need frustration, amotivation, and negative affect. The experimental condition positively predicted need satisfaction at the end of term. The experimental condition negatively predicted need frustration, amotivation, and negative affect at the end of term.
Mumbardó-Adam et al. (2017)	To explore differences between students with and without intellectual disability in Spain	Quantitative descriptive research design	114 students 55 students with intellectual disability	Spain	Measures: • Self-Determination Inventory System: Student Report (Shogren et al., 2015)	Students without ID reported more opportunities at home to develop self-determination.

	in relation to self-determination. To examine the personal and environmental factors that predict self-determined actions.		Mild ID: 26 Moderate: 26 59 without intellectual disability Age range: 13 – 22 years		• AIR Self-Determination Scale (Wolman et al., 1994)	Students with ID reported more opportunities at school to develop self-determination. Students without ID demonstrated higher scores in terms of self-reported capacities. Significant differences observed with students without ID reported higher scores in the following domains: volitional actions, agentic actions, and action-control beliefs. ID and opportunities at home found to significantly predict volitional action. ID and age significantly predicted agentic action. ID and opportunities at home and school significantly predicted action-control beliefs.
Qian et al. (2022)	To explore differences in autonomy, psychological empowerment, and self-realisation across difference disability groups using data from the National Longitudinal Transition Study 2012.	Quantitative descriptive research design	7,140 students with disabilities 1,330 students with ID Age range: 12 – 23 years 35% female 65% male	United States	Self-determination measure: • 21 items from Arc's Self-Determination Scale (Wehmeyer & Kelchner, 1995)	Significant differences were found for each construct (autonomy, psychological empowerment, and self-realisation) within and across groups. Students with ID, multiple disabilities, and ASD demonstrated lower self-determination scores (autonomy, psychological empowerment, and self-realisation). Higher latent standard deviations in the ID group in relation to self-

						realisation and autonomy, indicating greater variability in self-realisation and autonomy outcomes.
Shogren et al. (2007)	To examine the impact of individual and ecological factors on the self-determination of students with ID, learning disabilities, and other health issues.	Quantitative - correlational research design	*N* = 327 High school students Mild ID (*n* = 99) Moderate ID (*n* = 60) Learning disabilities (*n* = 116) Other health issue (*n* = 52)	United States	Measures: • Arc's Self-Determination Scale (Wehmeyer & Kelchner, 1995) • AIR Self-Determination Scale (Wolman et al., 1994) • Transition Empowerment Scale (Powers et al., 2001) • Demographic form completed by teachers	Students with mild and moderate ID demonstrated lower mean scores than students with learning disabilities and other health impairments in relation to capacity, inclusion, and self-determination. Greatest difference between groups identified in relation to inclusion. Students with more significant needs less likely to be included in general education settings. Significant differences observed in teachers' ratings of students' capacity for self-determination based on intellectual ability. No associated differences in relation to students' opportunities for self-determination. Significant differences in students' ratings of self-determination using SDS but not based on scores from AIR-S.
Vicente et al. (2019)	To investigate the impact of personal factors and school characteristics on self-determination	Quantitative - correlational research design	*N* = 232 Mild ID (*n* = 82) Moderate ID (*n* = 150) Age range:	Spain	Measures: • ARC-INICO Self-Determination Assessment Scale (Verdugo et al., 2013)	Students with mild ID reported significantly higher levels of self-determination than students with moderate ID. Students with higher support needs obtained significantly lower levels of

	levels among students with ID.		11-19 years Female: *n* = 108 Male: *n* = 124		• Supports Intensity Scale-Children's Version (Spanish pilot version)	self-determination than students with fewer support needs. No significant differences found in relation to gender, age, school setting, and type of educational placement.
Wehmeyer et al. (2013)	To explore whether self-determination interventions improve the self-determination scores of students with disabilities. To examine the impact of student variables (disability label and gender) on the development of self-determination.	Quantitative randomised controlled trial	371 students receiving special education 28% mental retardation 72% learning disability Age range: 14 – 20 years 130 teachers	United States	Measures • Arc's Self-Determination Scale (Wehmeyer & Kelchner, 1995) • AIR Self-Determination Scale (Wolman et al., 1994) • Criterion-referenced measures to explore fidelity to treatment Control group • Placebo control group intervention – promoting parental involvement in the education process • Intervention group training provided at end of intervention Intervention group • Training provided on a range of programmes • Teachers invited to select programme for intervention ○ *Choicemaker Curriculum*	Significant overall increase over time demonstrated based on AIR-S scores. Intervention group demonstrated significantly more positive increase on AIR-S over time. No significant effects observed for disability or gender suggesting that the only factor that impacted AIR-S scores over time was assignment to intervention or control group. SDS scores demonstrated an overall increase over time. Non-significant intervention group effect and non-significant group by time interaction. This indicates that there were consistent patterns of increasing scores over time regardless of assignment to intervention or control group. Based on AIR-S scores, disability label and gender did not significantly impact initial mean ratings of capacity or opportunities for self-determination or changes in these ratings over time.

		○ *Self-Advocacy Strategy* ○ *Steps to Self-Determination* ○ *Whose Future is it Anyway?* ○ *Self-Determined Learning Model of Instruction* ○ *NEXT S.T.E.P. Curriculum*	Marginally significant time by disability by gender by intervention group effect was observed using SDS scores. No significant differences between males and females with ID in the control group and males and females with learning disabilities. Males and females with ID in the intervention group demonstrated significantly steeper slopes than all other participants. Participants with ID demonstrated significant increase in self-determination scores over time.

Appendix K: Weight of Evidence A (Phase Two)

Weight of Evidence A (WoE A) explores the methodological quality of a study. The Mixed Methods Appraisal Tool (MMAT) (Hong et al., 2018) was utilised to analyse the methodological quality of the six studies included in phase two of the systematic review. This tool is designed for the appraisal stage of systematic reviews that include quantitative, qualitative, and mixed-method studies.

All six studies employed a quantitative research design and were appraised using the quality criteria for quantitative research. The quality criteria for each research design are presented in Appendix L.

Each study was assigned a score for each of the five criteria on the appraisal tool, in line with the study's research design. A score of one was assigned if the criteria was met and a score of zero was assigned if the criteria was not met. No score was assigned if the paper did not report the appropriate information in relation to the criterion. To calculate the overall WoE A, the total score was computed, with a range of 0-5. Table 1 outlines the scores obtained by each study.

Table 1

WoE A Scoring

Study	Category of Study Design	Criteria 1	Criteria 2	Criteria 3	Criteria 4	Criteria 5	Total Score
Behzadnia et al. (2022)	Quantitative randomised	1	0	1	1	1	4
Mumbardó-Adam et al. (2017)	Quantitative descriptive	1	1	1	1	1	5
Qian et al. (2022)	Quantitative descriptive	1	1	0	0	1	3
Shogren et al. (2007)	Quantitative descriptive	1	1	1	0	1	4
Vicente et al. (2019)	Quantitative descriptive	1	1	1	-	1	4
Wehmeyer et al. (2013)	Quantitative randomised controlled trial	1	0	1	1	-	3

As illustrated in Table 2 below, the scores obtained using the coding protocols were converted into WoE A ratings. Table 3 outlines the total WoE A rating obtained by each study.

Table 2

WoE A Scoring Criteria

WoE A Rating	Score
High = 3	Total score of 5 based on the methodological quality criteria
Medium = 2	Total score of 3 – 4 based on the methodological quality criteria
Low = 1	Total score of 0 – 2 based on the methodological quality criteria

Table 3

WoE A Rating

Study	WoE A Rating
Behzadnia et al. (2022)	2 (Medium)
Mumbardó-Adam et al. (2017)	3 (High)
Qian et al. (2022)	2 (Medium)
Shogren et al. (2007)	2 (Medium)
Vicente et al. (2019)	2 (Medium)
Wehmeyer et al. (2013)	2 (Medium)

Appendix L: Mixed Method Appraisal Tool (Phase Two)

Appraisal Tool: Hong, Q. N., Playe, P., Fàbregues, S., Bartlett, G., Boardman, F., Cargo, M., Dagenais, P., Gagnon, M. P., Griffiths, F., Nicolau, B., O'Cathain, A., Rousseau, M. C., & Vedel, I. (2018). The Mixed Methods Appraisal Tool (MMAT) Version 2018. *Education for Information*, *34*(4), 285-291. Retrieved from http://mixedmethodsappraisaltoolpublic.pbworks.com/

Study Reference: Mumbardó-Adam, C., Shogren, K. A., Guàrdia-olmos, J., & Giné, C. (2017). Contextual Predictors of Self-Determined Actions in Students with and without Intellectual Disability. *Psychology in the Schools*, *54*(2), 183–195. https://doi.org/10.1002/pits.21987

Screening Questions (for all types)

S.1. Are there clear research questions?

☒Yes

☐No

☐Unknown/ Unable to code

S.2. Do the collected data allow to address the research questions?

☒Yes

☐No

☐Unknown/ Unable to code

Methodological Quality Criteria

Qualitative

1.1 Is the qualitative approach appropriate to answer the research question?

☐Yes

☐No

☐Unknown/ Unable to code

1.2. Are the qualitative data collection methods adequate to address the research question?

☐Yes

☐No

☐Unknown/ Unable to code

1.3. Are the findings adequately derived from the data?

☐Yes

☐No

☐Unknown/ Unable to code

1.4. Is the interpretation of results sufficiently substantiated by data?

☐Yes

☐No

☐Unknown/ Unable to code

1.5. Is there coherence between qualitative data sources, collection, analysis and interpretation?

☐Yes

☐No

☐Unknown/ Unable to code

Quantitative Randomised Controlled Trials

2.1. Is randomization appropriately performed?

☐Yes

☐No

☐Unknown/ Unable to code

2.2. Are the groups comparable at baseline?

☐Yes

☐No

☐Unknown/ Unable to code

2.3. Are there complete outcome data?

☐Yes

☐No

☐Unknown/ Unable to code

2.4. Are outcome assessors blinded to the intervention provided?

☐Yes

☐No

☐Unknown/ Unable to code

2.5 Did the participants adhere to the assigned intervention?

☐Yes

☐No

☐Unknown/ Unable to code

Quantitative Non-Randomised

3.1. Are the participants representative of the target population?

☐Yes

☐No

☐Unknown/ Unable to code

3.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)?

☐Yes

☐No

☐Unknown/ Unable to code

3.3. Are there complete outcome data?

☐Yes

☐No

☐Unknown/ Unable to code

3.4. Are the confounders accounted for in the design and analysis?

☐Yes

☐No

☐Unknown/ Unable to code

3.5. During the study period, is the intervention administered (or exposure occurred) as intended?

☐Yes

☐No

☐Unknown/ Unable to code

Quantitative Descriptive

4.1. Is the sampling strategy relevant to address the research question?

☒Yes

☐No

☐Unknown/ Unable to code

4.2. Is the sample representative of the target population?

☒Yes

☐No

☐Unknown/ Unable to code

4.3. Are the measurements appropriate?

☒Yes

☐No

☐Unknown/ Unable to code

4.4. Is the risk of nonresponse bias low?

☒Yes

☐No

☐Unknown/ Unable to code

4.5. Is the statistical analysis appropriate to answer the research question?

☒Yes

☐No

☐Unknown/ Unable to code

Mixed Methods

5.1. Is there an adequate rationale for using a mixed methods design to address the research question?

☐Yes

☐No

☐Unknown/ Unable to code

5.2. Are the different components of the study effectively integrated to answer the research question?

☐Yes

☐No

☐Unknown/ Unable to code

5.3. Are the outputs of the integration of qualitative and quantitative components adequately interpreted?

☐Yes

☐No

☐Unknown/ Unable to code

5.4. Are divergences and inconsistencies between quantitative and qualitative results adequately addressed?

☐Yes

☐No

☐Unknown/ Unable to code

5.5. Do the different components of the study adhere to the quality criteria of each tradition of the methods involved?

☐Yes

☐No

☐Unknown/ Unable to code

Appendix M: Weight of Evidence B (Phase Two)

WoE B explored the appropriateness of the research design for the review question. Ratings for WoE B were devised in line with the inclusion and exclusion criteria. As outlined in the inclusion criteria, the systematic review only included studies which produced primary empirical data. However, studies with different research designs were included. The second phase of the systematic review sought to gather empirical data to determine explore current knowledge about self-determination among students with ID and/or DS in education settings. Study designs which provided statistical information about the relationship between self-determination and ID in education contexts were afforded higher WoE B ratings. Study designs which provided qualitative information about the perspectives or experiences of students with ID/DS in relation to self-determination were given lower WoE B ratings.

Table 1

WoE B Criteria (Phase Two)

Rating	Score	Criteria
High	3	Quantitative research methods are used to explore the research question. Standardised assessment tools are used to measure self-determination/need satisfaction. Data is provided about the relationship(s) between self-determination, ID, and other variables. Effect sizes are reported, where appropriate.
Medium	2	Quantitative research methods are used to explore the research question. Some data is provided about the self-determination levels of students with ID/DS. Adapted or non-standardised assessment tools are used to measure self-determination/need satisfaction or effect sizes are not reported, where appropriate.
Low	1	Qualitative research methods (e.g., interviews or case study) are used to explore the research question. Data is not provided about the relationship(s) between self-determination, ID, and other variables.

Table 3

WoE B Rating (Phase Two)

Study	WoE B Rating
Behzadnia et al. (2022)	3 (High)
Mumbardó-Adam et al. (2017)	2 (Medium)
Qian et al. (2022)	2 (Medium)
Shogren et al. (2007)	3 (High)

Vicente et al. (2019)	3 (High)
Wehmeyer et al. (2013)	2 (Medium)

Appendix N: Weight of Evidence C (Phase Two)

In a similar manner to the Phase One of the systematic review, WoE C evaluated the relevance of the characteristics of each study for providing evidence for the second review question. Three criteria were used to assess the relevance of the studies. The criteria, associated scorings, and rationales are outlined in Table 1. The overall WoE C score for each study was obtained by calculating the average of the scores attained across each of the three criteria (see Table 2).

Table 1

WoE C Criteria (Phase Two)

Criteria	Rating	Rationale
A. Participants	**3 (High)** Participants were students with ID/DS and detailed information was provided about their intellectual ability and other demographic information. **2 (Medium)** Participants were students with ID/DS and limited information was provided about their intellectual ability and other demographic information. **1 (Low)** Participants included students with ID/DS and no information was provided about their intellectual ability.	This review in exploring current knowledge about self-determination among students with ID/DS. Therefore, the review requires the inclusion of studies which recruited students with ID/DS as participants.
B. Setting	**3 (High)** The study only recruited participants from a primary and/or secondary school setting. **2 (Medium)** The study included participants from a tertiary education setting, e.g., college or post-secondary setting. **1 (Low)** The study recruited participants from an alternative education setting	Phase Two of the review is exploring current knowledge about self-determination among students with ID/DS in the education context.

	(e.g., outside of a school setting). Sufficient information about the educational setting was not provided.	
C. Measures	**3 (High)** The study includes a standardised measure of participants' self-determination/ need satisfaction. **2 (Medium)** The study includes an adapted or non-standardised measure of participants' self-determination/ need satisfaction. **1 (Low)** The study does not include any measure of participant's self-determination. The study explores participants' self-determination using qualitative methods.	The study is exploring self-determination among students with ID/DS. Therefore, it is necessary to include a standardised measure of students' self-determination/ perceived basic psychological need satisfaction.

Table 2

WoE C Scores (Phase Two)

Study	Criteria A	Criteria B	Criteria C	Total
Behzadnia et al. (2022)	3	3	3	3
Mumbardó-Adam et al. (2017)	3	2	2	2.3
Qian et al. (2022)	1	1	2	1.3
Shogren et al. (2007)	2	3	3	2.7
Vicente et al. (2019)	3	3	3	3
Wehmeyer et al. (2013)	2	3	3	2.7

As illustrated in Table 3 below, the scores obtained using the coding protocols were converted into WoE C ratings. Table 4 outlines the overall WoE C rating obtained by each study.

Table 3

WoE C Scoring Criteria (Phase Two)

WoE C Rating	Score
High = 3	Total score of ≥ 2.6
Medium = 2	Total score of 1.6 – 2.5
Low = 1	Total score of < 1.5

Table 4

WoE C Rating (Phase Two)

Study	WoE C Rating
Behzadnia et al. (2022)	3 (High)
Mumbardó-Adam et al. (2017)	2 (Medium)
Qian et al. (2022)	1 (Low)
Shogren et al. (2007)	3 (High)
Vicente et al. (2019)	3 (High)
Wehmeyer et al. (2013)	3 (High)

Appendix O: Case Study Protocol

Case Study Protocol (Yin, 2018)

Section A: Overview of the Case Study	
Case study questions, hypotheses, and propositions	**Research question:** How do students with Down syndrome experience basic psychological need satisfaction in mainstream class settings? **Case propositions:** • For a student with DS, autonomy satisfaction will be associated with feelings of happiness, enjoyment, and interest, whereas autonomy frustration will be associated with feelings of unhappiness and disengagement. • For a student with DS, competence satisfaction will be associated with feelings of happiness, enjoyment, and interest, whereas competence frustration will be associated with feelings of unhappiness and disengagement. • For a student with DS, relatedness satisfaction will be associated with feelings of happiness, enjoyment, and interest, whereas relatedness frustration will be associated with feelings of unhappiness and disengagement.
Theoretical framework for the case study	This study is underpinned by Self-Determination Theory (SDT; Deci & Ryan, 2002; Ryan & Deci, 2000) which posits that individuals are inherently directed towards growth and development. SDT comprises six micro-theories, one of which is Basic Psychological Needs Theory (BPNT; Ryan & Deci, 2000). BPNT (Ryan & Deci, 2000) provides the theoretical framework upon which the study is based. This micro-theory postulates that individuals are motivated by their desire to fulfil three basic psychological needs: autonomy, competence, and relatedness.
Role of protocol in guiding the case study researcher	The purpose of the case study protocol is to ensure that the same data collection procedures are used with multiple cases and that similar questions are used by the researcher when conducting interviews with participants (Yin, 2018).
Section B: Data Collection Procedures	
Names of contact persons for doing fieldwork	The principal and class teacher in School A and B.
Data collection plan	March/April 2023: Conduct pilot study in a primary school. Verbal and written feedback will be sought from the participants. The measures and

	procedures will be revised based on feedback and findings from the pilot study. March/April 2023: Identify potential schools for main study. Seek permission from principals of potential schools. Distribute information sheets and consent/assent forms to School A and B. May 2023: Conduct case study in School A: 1. Administer questionnaire to students in the mainstream class. 2. Complete Personal Construct Psychology activities with the student with Down syndrome (DS). 3. Carry out semi-structured interview with class teacher. 4. Carry out semi-structured interview with Special Needs Assistant. June 2023: Carry out the above steps in School B.
Expected preparation prior to fieldwork	Distribute information sheets and consent/assent forms to schools for parents/guardians, class teacher, SNA, and students. Collect the consent/assent forms from schools. Print the student questionnaires. Organise a room in school to carry out tasks/interviews. Prepare all relevant materials for the PCP tasks and interviews, e.g., Lego Duplo, paper, markers, pencils, colouring pencils, crayons, voice recorder.

Section C: Protocol Questions

The following questions were considered using data from different sources including: (1) PCP activities with the students with DS; (2) semi-structured interviews with teachers and SNAs; and (3) questionnaire administered to peers.

- What opportunities do students with Down syndrome have to direct their own learning/behaviour or make choices/decisions in school?
- What opportunities do students with Down syndrome have to develop autonomy/independence in school?
- Is the student's need for autonomy satisfied or thwarted in the school setting?
    - If so, how?
- What opportunities do students with Down syndrome have to experience success/sense of achievement in school?
- Is the student's need for competence satisfied or thwarted in the school setting?
    - If so, how?
- Have students with Down syndrome developed friendships/relationships with others in their classroom/school?
    - If so, in what ways?
    - With adults/peers?
- Is the student's need for relatedness satisfied or thwarted in the school setting?
    - If so, how?
- How do students with Down syndrome feel about their school/classroom?
- How do students with Down syndrome feel about learning in school?

- How do the experiences of students with DS align with the classroom climate for perceived basic psychological need satisfaction?

Section D: Tentative Outline for the Case Study Report

Case Report 1:

- Case overview
- Classroom Context: Basic Psychological Need Satisfaction
- Student's Experiences of the Basic Psychological Needs
    - Autonomy
    - Competence
    - Relatedness
- Discussion
    - Student's Experiences of the Basic Psychological Needs

Case Report 2:

- Case overview
- Classroom Context: Basic Psychological Need Satisfaction
- Student's Experiences of the Basic Psychological Needs
    - Autonomy
    - Competence
    - Relatedness
- Discussion
    - Student's Experiences of the Basic Psychological Needs

Cross-Case Discussion

- Students' Experiences of the Basic Psychological Needs

Conclusion

Critical Review

- Critical appraisal of the research based on Yin's (2018) characteristics of an exemplary case study
- Implications for research, practice, and policy
- Direction for future research

Appendix P: Principal Letter

Department of Educational Psychology, Inclusive and Special Education
Mary Immaculate College
Limerick
_/_/23

Dear Principal,

Re: Permission to conduct research at School Name

My name is Fiona Brennan and I am a postgraduate student, currently completing a Professional Doctorate in Educational and Child Psychology at Mary Immaculate College under the supervision of Dr. Therese Brophy. I am seeking permission to conduct research in School Name.

The title of my research project is *'Exploring how students with Down syndrome experience self-determination in mainstream class settings'*. As part of my thesis, I am exploring how students with Down syndrome experience three basic psychological needs in mainstream class settings in primary schools. The three needs are autonomy, competence, and relatedness. These needs involve making choices, experiencing success, and feeling a sense of connection and belonging.

In order to conduct this research, I will need to carry out a case study in a 5th or 6th Class in a mainstream primary school. The case study will involve one student with Down syndrome, their class teacher, Special Needs Assistant (SNA), and classmates. If permission is granted for me to carry out the research in your school, I will need students to complete a short questionnaire based on autonomy, competence, and relatedness in school. The student with Down syndrome will be invited to complete a Lego™/drawing based activity and to answer some follow-up questions. The activity will involve building or drawing an ideal and non-ideal classroom and school playground. I will need the student's class teacher and SNA to partake in a semi-structured interview. Interviews with the student, teacher, and SNA will be audio recorded for research purposes only. This will enable me as researcher to transcribe the interview and to analyse the data. All of the information gathered will remain confidential.

It is hoped that the data gathered in this study will enhance teachers' and psychologists' understanding about pupils' experiences of making choices, experiencing success, and forming relationships in mainstream classrooms; encourage pupils to reflect on their experiences of school; and create new awareness among educators, psychologists, and policymakers about the importance of nurturing self-determination among students with Down syndrome.

I therefore request permission in writing to conduct my research in School Name. If you have any questions or need further information regarding the study, please feel free to get in touch with me. Thank you for taking the time to consider this request. I look forward to hearing from you at your convenience.

Yours sincerely,
Fiona Brennan

Appendix Q: Informed Consent Documentation

Parent/Guardian Information Sheet – Students with Down Syndrome

What is the project about?

This project is exploring how students with Down syndrome experience three basic psychological needs in mainstream classrooms in primary schools. The three needs are autonomy, competence, and relatedness. These needs involve making choices, experiencing success, and feeling a sense of connection and belonging. A student's school context can influence the degree to which their needs for autonomy, competence, and relatedness are supported or thwarted. This in turn can influence the student's motivation, engagement, and wellbeing. Limited research has been carried out to explore the perspectives of students with Down syndrome in mainstream classrooms in relation to these basic psychological needs. Therefore, the purpose of this study is to examine the perceptions of students with Down syndrome about their opportunities to make choices or decisions, experience success, and form relationships and friendships with adults and peers.

Who is undertaking it?

My name is Fiona Brennan and I am a postgraduate student currently completing a Professional Doctorate in Educational and Child Psychology at Mary Immaculate College under the supervision of Dr. Therese Brophy. This current study will form part of my thesis.

What are the potential benefits of this research?

It is hoped that the data gathered from participants will (a) enhance teachers' and psychologists' understanding about pupils' experiences of making choices, experiencing success, and forming relationships in mainstream classrooms (b) encourage pupils to reflect on their experiences of school in mainstream settings and (c) create new awareness among educators, psychologists, and policymakers about the importance of nurturing self-determination among students with Down syndrome.

What is involved for the participant regarding time, location, etc.?

I will invite your child to complete a short questionnaire based on their experiences of autonomy, competence, and relatedness in school. It will take approximately ten minutes to complete and will be carried out in school. The study will also involve Lego™/drawing based activities, in line with your child's preferences. The activities will take approximately one-two hours to complete and will be carried out over at least two sessions. I will invite your child to build their ideal and non-ideal classroom and school playground using Lego™ or Lego™ Duplo. Alternatively, I will invite your child to draw a picture of their ideal and non-ideal classroom and school playground. I will invite your child to choose

their preferred method for completing the task. I will invite your child to partake in a short interview to answer some questions about their constructions/drawings. The interview will be audio recorded for research purposes only. This will enable the researcher to transcribe the interview and to analyse the data. All activities will take place during school time. All data will be anonymised and will be retained indefinitely as required by the researcher.

Right to withdraw

Your child's anonymity is assured and your child is free to withdraw from the study at any time without giving a reason and without consequence.

How will the information be used/disseminated?

Your child's data will be combined with that of the other participants in this study and used to form the results section of the report. Summary data only will appear in the report and individual participant data will not be shown.

How will confidentiality be protected?

All information gathered will remain confidential and will not be released to any third party. A random identity number will be generated for each participant and it is this number rather than your child's name which will be held with their data to maintain their anonymity.

What will happen to the data after the research has been completed?

In accordance with MIC Data Retention Policy, anonymised data may be retained indefinitely as required by the researcher.

Contact details:

If at any time you have any queries/issues with regard to this study, my contact details are as follows:

If you have concerns about this study and wish to contact my research supervisor, you may contact:

If you have concerns about this study and wish to contact an independent individual, you may contact:

MIREC Administrator, Mary Immaculate College, Limerick

Telephone: 061-204980 Email: mirec@mic.ul.ie

This research study has received ethical approval from the Mary Immaculate College Research Ethics Committee (MIREC) (Ref: A22-070).

Parent/Guardian Consent Form – Students with Down Syndrome

Dear Parent/Guardian,

As outlined in the **parent/guardian information sheet,** the current study will explore how students experience three basic psychological needs – autonomy, competence, and relatedness – in mainstream classrooms in primary schools.

Details of your child's participation in the study are contained in the **parent/guardian information sheet.** The parent/guardian information should be read fully and carefully before consenting for your child to take part in the study.

Your child's anonymity is assured and they will be free to withdraw from the study at any time. All information gathered will remain confidential and will not be released to any third party. In accordance with the MIC Data Retention Policy, anonymised data may be retained indefinitely as required by the researcher.

Please tick that you have read the following statements before signing the consent form.

- I have read and understood the **parent/guardian information sheet**. ☐
- I understand what the project is about and what the findings will be used for. ☐
- I am fully aware of all of the procedures involving my child and of any risks and benefits associated with the study. ☐
- I understand that my child's participation is voluntary and that they can withdraw from the study at any stage without giving any reason. ☐
- I am aware that my child's results will be kept confidential. ☐
- I am aware that part of this study involves the use of audio recordings for research purposes. Only the researcher will have access to this data and it will not be shared with any third party. Neither my child's name nor any identifying information will be associated with the audio recording or the transcript. ☐

Name (PRINTED): _____

Name (Signature): _____

Date: _____

Parent/Guardian Information Sheet – Students without Down Syndrome

What is the project about?

This project is exploring how students with Down syndrome experience three basic psychological needs in mainstream classrooms in primary schools. The three needs are autonomy, competence, and relatedness. These needs involve making choices, experiencing success, and feeling a sense of connection and belonging. A student's school context can influence the degree to which their needs for autonomy, competence, and relatedness are supported or thwarted. This in turn can influence the student's motivation, engagement, and wellbeing. Limited research has been carried out to explore the perspectives of students with Down syndrome in mainstream classrooms in relation to these basic psychological needs. Therefore, the purpose of this study is to examine the perceptions of students with Down syndrome about their opportunities to make choices or decisions, experience success and mastery, and form relationships and friendships with adults and peers.

Who is undertaking it?

My name is Fiona Brennan and I am a postgraduate student currently completing a Professional Doctorate in Educational and Child Psychology at Mary Immaculate College under the supervision of Dr. Therese Brophy. This current study will form part of my thesis.

What are the potential benefits of this research?

It is hoped that the data gathered from participants will (a) enhance teachers' and psychologists' understanding about pupils' experiences of making choices, experiencing success, and forming relationships in mainstream classrooms (b) enable pupils to reflect on their experiences of school in mainstream settings and (c) create new awareness among educators, psychologists, and policymakers about the importance of nurturing self-determination among students with Down syndrome.

What is involved for the participant regarding time, location, etc.?

I will invite your child to complete a short questionnaire. This will involve responding to questions based on their experiences of autonomy, competence, and relatedness in school. The questionnaire will take approximately ten minutes to complete. It will be carried out during school time. All data will be anonymised and will be retained indefinitely as required by the researcher.

Right to withdraw

Your child's anonymity is assured and your child is free to withdraw from the study at any time without giving a reason and without consequence.

How will the information be used/disseminated?

Your child's data will be combined with that of the other participants in this study and used to form the results section of the report. Summary data only will appear in the report and individual participant data will not be shown.

How will confidentiality be protected?

All information gathered will remain confidential and will not be released to any third party. A random identity number will be generated for each participant and it is this number rather than your child's name which will be held with their data to maintain their anonymity.

What will happen to the data after the research has been completed?

In accordance with MIC Data Retention Policy, anonymised data may be retained indefinitely as required by the researcher.

Contact details:

If at any time you have any queries/issues with regard to this study, my contact details are as follows:

If you have concerns about this study and wish to contact my research supervisor, you may contact:

If you have concerns about this study and wish to contact an independent individual, you may contact:

MIREC Administrator, Mary Immaculate College, Limerick

Telephone: 061-204980 Email: mirec@mic.ul.ie

This research study has received ethical approval from the Mary Immaculate College Research Ethics Committee (MIREC) (Ref: A22-070).

Parent/Guardian Consent Form – Students without Down Syndrome

Dear Parent/Guardian,

As outlined in the **parent/guardian information sheet,** the current study will explore how students experience three basic psychological needs – autonomy, competence, and relatedness – in mainstream classrooms in primary schools.

Details of your child's participation in the study are contained in the **parent/guardian information sheet.** The parent/guardian information should be read fully and carefully before consenting for your child to take part in the study.

Your child's anonymity is assured and they will be free to withdraw from the study at any time. All information gathered will remain confidential and will not be released to any third party. In accordance with the MIC Data Retention Policy, anonymised data may be retained indefinitely as required by the researcher.

Please tick that you have read the following statements before signing the consent form.

- I have read and understood the **parent/guardian information sheet**. ☐
- I understand what the project is about and what the findings will be used for. ☐
- I am fully aware of all of the procedures involving my child and of any risks and benefits associated with the study. ☐
- I understand that my child's participation is voluntary and that they can withdraw from the study at any stage without giving any reason. ☐
- I am aware that my child's results will be kept confidential. ☐

Name (PRINTED): _____

Name (Signature): _____

Date: _____

Participant Information Sheet – Teachers and Special Needs Assistants

What is the project about?

This project is exploring how students with Down syndrome experience three basic psychological needs in mainstream classrooms in primary schools. These three needs are autonomy, competence, and relatedness. These needs involve making choices, experiencing success, and feeling a sense of connection and belonging. A student's school context can influence the degree to which their needs for autonomy, competence, and relatedness are supported or thwarted. This in turn can influence the student's motivation, engagement, and wellbeing. Limited research has been carried out to explore the perspectives of students with Down syndrome in mainstream classrooms in relation to these basic psychological needs. Therefore, the purpose of this study is to examine the perceptions of students with Down syndrome about their opportunities to make choices or decisions, experience success and/or mastery, and form relationships and friendships with adults and peers.

Who is undertaking it?

My name is Fiona Brennan and I am a postgraduate student currently completing a Professional Doctorate in Educational and Child Psychology at Mary Immaculate College under the supervision of Dr. Therese Brophy. This current study will form part of my thesis.

What are the potential benefits of this research?

It is hoped that the data gathered from participants will (a) enhance teachers' and psychologists' understanding about pupils' experiences of making choices, experiencing success, and forming relationships in mainstream classrooms (b) enable pupils to reflect on their experiences of school in mainstream settings and (c) create new awareness among educators, psychologists, and policymakers about the importance of nurturing self-determination among students with Down syndrome.

What is involved for the participant regarding time, location etc.?

I will invite you to partake in a semi-structured interview. I will invite you to respond to questions about students' experiences of autonomy, competence, and relatedness in school. The interview will take approximately thirty minutes to complete. It will be conducted during or after school hours, depending on your availability. The interview will take place in the school building or online using Microsoft Teams. The interview will be audio recorded for research purposes only. This will

enable the researcher to transcribe the interview and analyse the data. All data will be anonymised and will be retained indefinitely, as required by the researcher.

Right to withdraw

Your anonymity is assured and you are free to withdraw from the study at any time without giving a reason and without consequence.

How will the information be used/disseminated?

Your data will be combined with that of the other participants in this study and used to form the results section of the report. Summary data only will appear in the report and individual participant data will not be shown.

How will confidentiality be protected?

All information gathered will remain confidential and will not be released to any third party. A random identity number will be generated for each participant and it is this number, rather than your name, which will be held with your data to maintain your anonymity.

Contact details:

If at any time you have any queries/issues with regard to this study, my contact details are as follows:

If you have concerns about this study and wish to contact my research supervisor, you may contact:

If you have concerns about this study and wish to contact an independent individual, you may contact:

MIREC Administrator, Mary Immaculate College, Limerick

Telephone: 061-204980 Email: mirec@mic.ul.ie

This research study has received ethical approval from the Mary Immaculate College Research Ethics Committee (MIREC) (Ref: A22-070).

Participant Consent Form – Teachers and Special Needs Assistants

Dear Participant,

As outlined in the **participant information sheet,** the current study will explore how students experience three basic psychological needs – autonomy, competence, and relatedness – in mainstream classrooms in primary schools.

Details of your participation in the study are contained in the **participant information sheet.** The participant information should be read fully and carefully before consenting to take part in the study.

Your anonymity is assured and you will be free to withdraw from the study at any time. All information gathered will remain confidential and will not be released to any third party. In accordance with the MIC Data Retention Policy, anonymised data may be retained indefinitely as required by the researcher.

Please tick that you have read the following statements before signing the consent form.

- I have read and understood the **participant information sheet**. ☐
- I understand what the project is about and what the findings will be used for. ☐
- I am fully aware of all of the procedures and of any risks and benefits associated with the study. ☐
- I understand that my participation is voluntary and that I can withdraw from the study at any stage without giving any reason. ☐
- I am aware that my data will be kept confidential. ☐
- I am aware that part of this study involves the use of audio recordings for research purposes. Only the researcher will have access to this data and it will not be shared with any third party. Neither my name nor any identifying information will be associated with the audio recording or the transcript. ☐

Name (PRINTED): _____

Name (Signature): _____

Date: _____

Appendix R: Informed Assent Documentation

Participant Information Sheet – Student with Down Syndrome

My Dream School

1.		My name is Fiona. I am doing some homework for my teachers in College.
2.		I need some help from you.
3.		You will answer some questions about how you feel in school.
4.		You will build or draw a classroom and playground. We will do this in school.
5.		We will have a chat about what you built or drew.
6.		I will need to record our chat so I can remember everything.
7.		I will take a picture of what you build or draw.
8.		If you want to stop – that's okay.
9.		If you want a break – that's okay.
10.		When I'm sharing your ideas with other people, I won't tell them your name.

Assent Form – Student with Down Syndrome

My Dream School

My name is _____

1.		I am going to answer questions about how I feel in school.		
2.		I am going to build or draw a classroom and playground.		
3.		I am going to talk about what I build or draw.		
4.		Fiona will record our chat.		
5.		Fiona will take a photograph of what I make or draw.		
6.		I can take a break whenever I want.		
7.		I can stop whenever I want.		

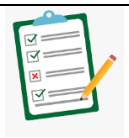
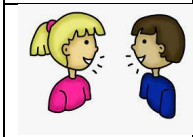
Would you like to help?

 Yes ☐

 No ☐

Child's Information Sheet – Students without Down syndrome

My Needs in School

	My name is Fiona. I have designed a survey for my college work. It's like a project you might do in school.
	I am doing this project to find out about how pupils like you feel in school and to help teachers discover how they can help students to do their best.
	I need some help from students in 5th and 6th Class. If you agree to help, I will invite you to answer some questions on a survey about how you feel in school.
	All of the children in your class who agree to help out will do the survey at the same time.
	The survey is not like a test – there are no right or wrong answers.
	It will take about ten minutes to answer the questions. If you need extra time to fill it in, that's okay.
	When you are answering the questions, if you want to stop, that's okay. You won't have to say why you want to stop. If you don't want to answer some of the questions, that's okay.
	The answers you fill in on the survey will only be seen by my Supervisor and I. I will not let anyone else see your answers because that is our college rule.
	If people want to learn more about the survey, I might talk about some of the ways you feel in school. I won't use your name so people won't know who you are.
	If you have any worries or questions after doing the survey, you can talk to me, your teacher, or your parents/guardians.

Assent Form – Students without Down Syndrome

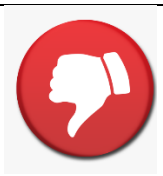
My Needs in School

My name is _____.

Please read each sentence. Please tick whether you agree or disagree with each sentence.

1.		I am going to answer questions about how I feel in school.		
2.		I know that I don't have to answer the questions if I don't want to.		
3.		I know that whenever I feel like stopping that's okay. I won't get into trouble and I don't have to say why I want to stop.		
4.		I know this activity is not a test and that there are no right or wrong answers.		

Are you happy to answer the questions on the survey?

	
I am happy to answer the questions on the survey. ☐	I am NOT happy to answer the questions on the survey. ☐

Appendix S: Overview of Cases Included in the Study

Pilot Case

The pilot case was conducted in an all-boys mainstream primary school. The school has an administrative principal, thirteen class teachers, three support teachers, one special class teacher, and seven SNAs. There are approximately 320 students enrolled in the school.

One male student with DS in Fifth Class was invited to partake in the pilot study. The student's classmates, class teacher, and SNA were also invited to participate. In total, consent and assent were obtained from 24 students and their parents/guardians to partake in the study. All student participants were male and ages ranged from ten to eleven years.

Case 1

Case 1 was carried out in a co-educational mainstream primary school. The school has an administrative principal and approximately 19 teachers. There are approximately 225 students enrolled in the school. The school has one special class for students with autism and seven SNAs.

One female student with DS in Sixth Class was invited to partake in the pilot study. In addition, the student's classmates, class teacher, and SNA were recruited as participants. In total, consent and assent were obtained from 17 students and their parents/guardians to participate in the case study. Students' ages ranged from eleven to twelve years.

Case 2

Case 2 was conducted in an all-girls mainstream primary school. It has an administrative principal, 16 class teachers, seven support teachers, three special class teachers, and ten SNAs. The school has three special classes for students with autism.

One female student in Fifth Class was invited to partake in the study. The student's classmates, class teacher, and SNA were also invited to participate. In total, consent and assent were obtained from 22 students and their parents/guardians to partake in the case study. All participants were female and ranged in age from ten to eleven years.

Appendix T: Student Questionnaire

Basic Psychological Needs in the Classroom Scale (Conesa & Duñabeitia, 2021)

Student Questionnaire

Age: _____ Class: _____

Thank you very much for agreeing to take part in this project. This survey has some sentences about how you feel about different things in school. There are twelve sentences on the survey.

For each sentence, think about how you feel in school and circle the answer which is true for you. There will be a choice of five answers for each question.

Here is an example:

		Disagree a lot	Disagree a little	Neither agree nor disagree	Agree a little	Agree a lot
a.	School is interesting.	1	2	3	4	5

Remember, this survey is not a test - there are no right or wrong answers so there is no need to worry. I won't be showing your answers to anyone so I would like you to be honest as you can. You can stop doing the survey at any time.

Thank you very much for taking part. I hope you enjoy doing the survey.

		Disagree a lot	Disagree a little	Neither agree nor disagree	Agree a little	Agree a lot
1.	I feel I have been doing what really interests me in class.	1	2	3	4	5
2.	I feel able to achieve my goals.	1	2	3	4	5
3.	I feel very comfortable with my teachers and classmates.	1	2	3	4	5
4.	The activities I do in class match perfectly with the way I want to do them.	1	2	3	4	5
5.	I am well able to do tasks, even tasks that most of my peers find difficult.	1	2	3	4	5
6.	I feel like I have a close relationship with my teachers and classmates.	1	2	3	4	5
7.	I feel my choices express who I really am in class.	1	2	3	4	5
8.	In class, I feel confident that I can do things well.	1	2	3	4	5
9.	I feel connected with people who care about me, and for whom I care.	1	2	3	4	5
10.	In my class, I feel a sense of choice and freedom in the things I do.	1	2	3	4	5
11.	I think I can meet the expectations of the class.	1	2	3	4	5
12.	I like my teachers and classmates very much.	1	2	3	4	5

Appendix U: PCP Activity 1 - Building the Ideal Classroom

Equipment

- Lego® Duplo blocks, school equipment, mini-figures
- Lego® school equipment
- Pencils, crayons, markers
- A4 and A3 paper
- Camera/iPad and printer

Part 1: Building the Ideal Classroom

- Ask the student to think about their dream (ideal) classroom or a classroom they would like to have.
- Tell the student that this is not a real classroom but one they can dream of.
- Invite the student to make or draw their dream classroom using a choice of Lego Duplo™ or pencils, crayons and markers.
- Remind the student that a Lego Duplo™ brick can represent anything and that there is no right or wrong way of doing this.
- Provide the student with the Lego Duplo™ and drawing materials.
- As the student is creating their model or drawing, ask the following questions:
    - *What's this?*
    - *Who is this?*
    - *What are they doing?*
    - *How come?*
    - *Why is this important?*
- The student's responses can be written beside the drawing or picture.
- When the student is happy with their model or picture, take a photograph of it.

Follow-Up Questions

When the student has completed their model or drawing of their ideal classroom, the following questions can be used to elicit their views:

b. What is your favourite thing in this classroom?
    a. What would you like to do in this classroom?
c. If this classroom had rules, what would they be?
    a. What subjects would you do in this classroom?

    b. Where would you like to do your work?

d. Tell me three things the students are good at doing in this classroom.
    a. What are they proud of?

e. What people would be in this classroom?
    a. If you were in this classroom, who would you sit with?

f. If you walked into the classroom, how would you feel?

For some questions (e.g., Q. 2a, Q. 5) visual prompts may be used to support students in responding to the questions. *Where appropriate, elicit more information by asking, "Why is that important?" or "How come?"*

Part 2: Building the Non-Ideal Classroom

- Ask the student to think about a classroom they would not like to have (non-ideal).
- Remind the student that this is not a real classroom but one they can imagine.
- Invite the student to make or draw their non-ideal classroom using a choice of Lego Duplo™ or pencils, crayons and markers.
- Remind the student that a Lego Duplo™ brick can represent anything and that there is no right or wrong way of doing this.
- Provide the student with the Lego Duplo™ and drawing materials.
- As the student is creating their model or drawing, ask the following questions:
    - *What's this?*
    - *Who is this?*
    - *What are they doing?*
    - *How come?*
    - *Why is this important?*
- The student's responses can be written beside the drawing or picture.
- When the student is happy with their model or picture, take a photograph of it.

Part 3a: Salmon Line Technique – Current Classroom

1. Place the photographs of the student's two models or drawings on the table (ideal classroom on the right and non-ideal classroom on the left).
2. Draw a line between the two photographs.
3. Ask the student, *"Which one is more like your classroom in school?"*
4. Invite the student to place a visual image of their school along the Salmon Line to represent their answer.

Part 3b: Salmon Line Technique - Basic Psychological Need Satisfaction

Using visual images, invite the student to complete Salmon Lines to explore their perceptions in terms of need satisfaction for autonomy, competence, and relatedness in their classroom.

Present each pair of supplied constructs to the student. Invite the student to describe each construct. Use the student's descriptions to complete each Salmon Line.

a) *What is your classroom in school like? Is it more like X or like Y?*

b) *If you had a wish, what would your classroom be like?*

Appendix V: PCP Activity 2 – Building the Ideal School Playground

- Lego® Duplo blocks, school equipment, mini-figures
- Lego® school equipment
- Pencils, crayons, markers
- A4 and A3 paper
- Camera/iPad and printer

Part 1: Building the Ideal Playground

- Ask the student to think about their dream (ideal) playground or a playground they would like to have in school.
- Tell the student that this is not a real playground but one they can dream of.
- Invite the student to make or draw their dream playground using a choice of Lego Duplo™ or pencils, crayons and markers.
- Remind the student that a Lego Duplo™ brick can represent anything and that there is no right or wrong way of doing this.
- Provide the student with the Lego Duplo™ and drawing materials.
- As the student is creating their model or drawing, ask the following questions:
    - *What's this?*
    - *Who is this?*
    - *What are they doing?*
    - *How come?*
    - *Why is this important?*
- The student's responses can be written beside the drawing or picture.
- When the student is happy with their model or picture, take a photograph of it.

Follow-Up Questions

When the student has completed their model or drawing of their ideal playground, the following questions can be used to elicit their views:

1. *What is your favourite thing in this playground?*
    a. *What do you like in this playground?*

2. *If this playground had rules, what would they be?*
    a. *What games would you play in this playground?*
3. *Tell me three things the students are good at doing in this playground.*
    a. *What are they proud of?*
4. *What people would be in this playground?*
    a. *If you were in this playground, who would you play with?*
5. *If you walked into the playground, how would you feel?*

For some questions, visual prompts may be used to support students in responding to the questions. *Where appropriate, elicit more information by asking, "Why is that important?" or "How come?"*

Part 2: Building the Non-Ideal Playground

- Ask the student to think about a playground they would not like to have (non-ideal).
- Remind the student that this is not a real playground but one they can imagine.
- Invite the student to make or draw their non-ideal playground using a choice of Lego Duplo™ or pencils, crayons and markers.
- Remind the student that a Lego Duplo™ brick can represent anything and that there is no right or wrong way of doing this.
- Provide the student with the Lego Duplo™ and drawing materials.
- As the student is creating their model or drawing, ask the following questions:
    - *What's this?*
    - *Who is this?*
    - *What are they doing?*
    - *How come?*
    - *Why is this important?*
- The student's responses can be written beside the drawing or picture.
- When the student is happy with their model or picture, take a photograph of it.

Part 3a: Salmon Line Technique – Current Playground

1. Place the photographs of the student's two models or drawings on the table (ideal playground on the right and non-ideal playground on the left).

2. Draw a line between the two photographs.
3. Ask the student, *"Which one is more like your playground in school?"*
4. Invite the student to place a visual image of their school along the Salmon Line to represent their answer.

Part 3b: Salmon Line Technique - Basic Psychological Need Satisfaction

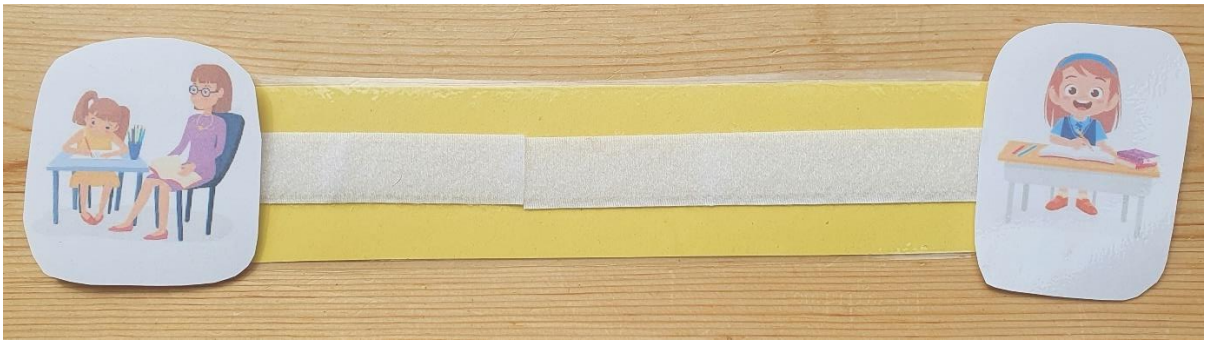
Using visual images, invite the student to complete Salmon Lines to explore their perceptions in terms of need satisfaction for autonomy, competence, and relatedness in their playground.

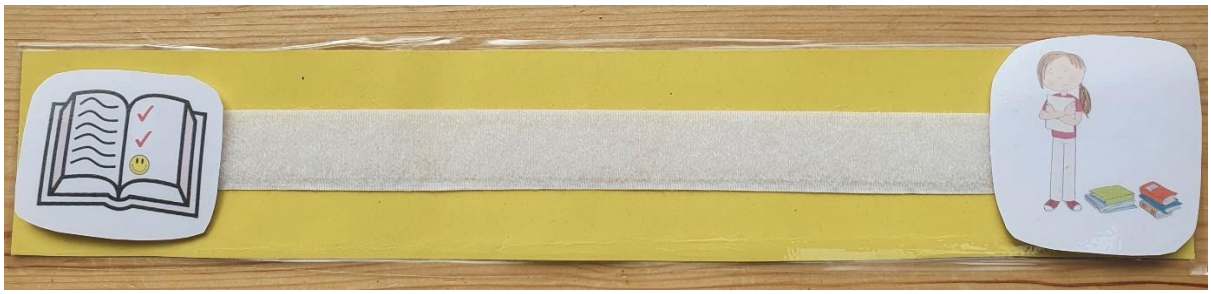
Present each pair of supplied constructs to the student. Invite the student to describe each construct. Use the student's descriptions to complete each Salmon Line using visual images.

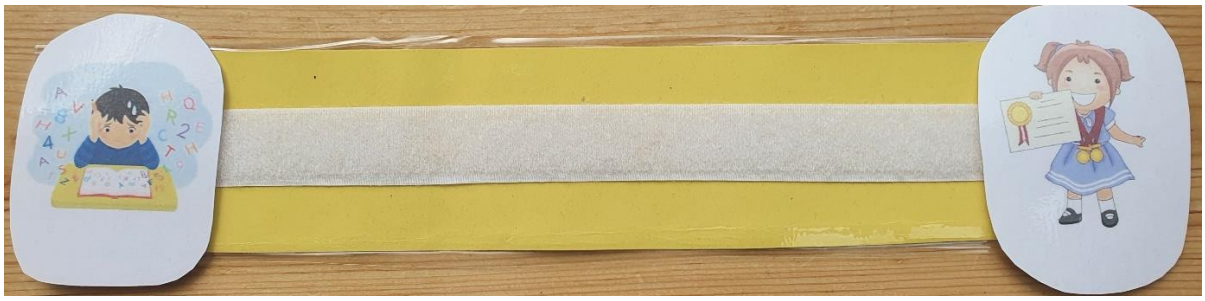
c) *What is your playground in school like? Is it more like X or like Y?*

d) *If you had a wish, what would your playground be like?*

Appendix W: Salmon Line Scales







Appendix X: Teacher/SNA Semi-Structured Interview

1. Could you tell me briefly about your experience of working with students with Down syndrome?
2. Could you tell me three things that you feel are important to consider when teaching/supporting a student with Down syndrome in a mainstream class setting?
3. In general, how would you describe the school's attitude toward supporting and including X (student with Down syndrome)?
4. Within this mainstream school, in what ways is X (student with Down syndrome) supported to reach their potential?
5. In relation to X (student with Down syndrome):
    a) How would you describe their general attitude/feelings toward school?
    b) How would you describe their overall level of motivation?
    c) How would you describe their interest in learning?
6. Could you tell me about any opportunities that X (student with Down syndrome) might have to develop independence at school?
7. Could you tell me about any ways in which X (student with Down syndrome) might make choices or decisions in school?
8. Could you tell me about any opportunities that X (student with Down syndrome) might have to experience success in school?
    - Could you tell me about some of their areas of strength?
9. Could you tell me about any ways in which X (student with Down syndrome) might have developed friendships in school?
    - How would you describe their relationship with other children in their class?

10. Could you tell me about any examples of how X (student with Down syndrome) might have developed relationships with others in school?

Appendix Y: Changes Applied Following Pilot Study

Table 1.

Summary of Changes Applied to the Student Questionnaire

Question	Pilot Study	Main Study
2	I feel competent (able) to achieve my goals.	I feel able to achieve my goals.
5	I am capable of effectively doing even tasks that most of my peers find difficult.	I am well able to do tasks, even tasks that most of my peers find difficult.

Table 2.

Summary of Changes Applied to PCP Activity 1 - Building the Ideal Classroom

Pilot Study – Follow-Up Questions	Main Study – Follow-Up Questions

When the student has completed their model or drawing of their ideal/non-ideal classroom, the following questions can be used to elicit their views:
• Who chooses what activities the students do?
• If this classroom had rules, what would they be?
• If a student has an idea about something in this classroom, what might happen?
• Tell me three things the students are doing in this classroom.
• How do the students feel when they are doing ---?
	When the student has completed their model or drawing of their ideal classroom, the following questions can be used to elicit their views:
	• What is your favourite thing in this classroom?
	  ○ What would you like to do in this classroom?
	• If this classroom had rules, what would they be?
	  ○ What subjects would you do in this classroom?
	  ○ Where would you like to do your work?

• What might a student in this classroom be good at?
• How do students get on with each other in this classroom?
• How do the students get on with the adults in this classroom?
• How do students treat each other in this classroom?
• How do students feel in this dream/worst classroom?
• What do students like about this classroom?
• What makes students feel happy in this classroom?
Where appropriate, elicit more information by asking, "Why is that important?" or "How come?"
	• Tell me three things the students are good at doing in this classroom.
	  ○ What are they proud of?
	• What people would be in this classroom?
	  ○ If you were in this classroom, who would you sit with?
	• If you walked into the classroom, how would you feel?
	For some questions, visual prompts may be used to support students in responding to the questions. *Where appropriate, elicit more information by asking, "Why is that important?" or "How come?"*

Table 3.

Summary of Changes Applied to PCP Activity 2 - Building the Ideal School Playground

Pilot Study – Follow-Up Questions	**Main Study – Follow-Up Questions**
When the student has completed their model or drawing of their ideal/non-ideal playground, the following questions can be used to elicit their views: • Who chooses what activities the students do in the playground? • If this playground had rules, what would they be?	When the student has completed their model or drawing of their ideal playground, the following questions can be used to elicit their views: • What is your favourite thing in this playground? ○ What do you like in this playground?

• If a student has an idea about something they would like to do in the playground, what might happen?
• Tell me three things the students are doing in the playground.
• How do the students feel when they are doing ---?
• What might a student in this playground be good at?
• How do students get on with each other in the playground?
• How do the students get on with the adults in the playground?
• How do students treat each other in this playground
• How do students feel in this playground?
• What do students like about this playground?
• What makes students feel happy in this playground?
Where appropriate, elicit more information by asking, "Why is that important?" or "How come?"
	• If this playground had rules, what would they be?
	  ○ What games would you play in this playground?
	• Tell me three things the students are good at doing in this playground.
	  ○ What are they proud of?
	• What people would be in this playground?
	  ○ If you were in this playground, who would you play with?
	• If you walked into the playground, how would you feel?
	For some questions, visual prompts may be used to support students in responding to the questions. *Where appropriate, elicit more information by asking, "Why is that important?" or "How come?"*

Table 4.

Summary of Changes Applied to the Salmon Line Scales

Pilot Study – Instructions	Main Study – Instructions
Place photographs of the two models/drawings on the table. Draw a line	**Salmon Line Technique – Current Classroom**

between the two photographs. With guidance from the researcher, invite the student to plot their views about their current classroom along the line. Select constructs suggested by the child when discussing their ideal classroom in relation to autonomy, competence, and relatedness. For each construct, elicit the contrasting pole from the child. If constructs are not elicited from the child, supplied constructs may be used. Sample construct pairs include the following: • Students get to pick what they do *versus* teacher picks what the children do • Students are good at their work *versus* students don't know how to do their work • Students are friends with each other *versus* students have no friends • Students think school is fun *versus* students think school is boring For each construct, draw a line ask the students to choose their preferred pole for each construct. Invite the student to complete the rating scale based on their views about their current school and their ideal (dream) school.	• Place the photographs of the student's two models or drawings on the table (ideal classroom/playground on the right and non-ideal classroom/playground on the left). • Draw a line between the two photographs. • Ask the student, *"Which one is more like your classroom/playground in school?"* • Invite the student to place a visual image of their school along the Salmon Line to represent their answer. **Salmon Line Technique - Basic Psychological Need Satisfaction** Using visual images, invite the student to complete Salmon Lines to explore their perceptions in terms of need satisfaction for autonomy, competence, and relatedness in their classroom/playground. Present each pair of supplied constructs to the student. Invite the student to describe each construct. Use the student's descriptions to complete each Salmon Line. • *What is your classroom/playground in school like? Is it more like X or like Y?* • *If you had a wish, what would your classroom/playground be like?*

Table 4.

Summary of Changes Applied to the Teacher/SNA Semi-Structured Interview

Pilot Study – Interview Questions	**Main Study – Interview Questions**

• Could you tell me a little bit about your experience of working with students with Down syndrome?
• Based on your experience as a teacher/ SNA, do you feel that students with Down syndrome in your classroom have opportunities to direct their own learning/make decisions about their learning?
  ○ If so, in what ways?
• Based on your experience as a teacher/SNA, do you feel that students with Down syndrome in your classroom have opportunities to develop autonomy/independence in school?
• If so, in what ways?
• Based on your experience as a teacher/SNA, do you feel that students with Down syndrome have opportunities to experience success/sense of achievement in school?
  ○ If so, in what ways?
• Do you feel that students with Down syndrome in your classroom have
	• Could you tell me briefly about your experience of working with students with Down syndrome?
	• Could you tell me three things that you feel are important to consider when teaching/supporting a student with Down syndrome in a mainstream class setting?
	• In general, how would you describe the school's attitude toward supporting and including X (student with Down syndrome)?
	• Within this mainstream school, in what ways is X (student with Down syndrome) supported to reach their potential?
	• In relation to X (student with Down syndrome):
	  ○ How would you describe their general attitude/feelings toward school?
	  ○ How would you describe their overall level of motivation?
	  ○ How would you describe their interest in learning?
	• Could you tell me about any opportunities that X (student with Down syndrome) might have to develop independence at school?

developed friendships/relationships with others in their classroom/school? ○ If so, in what ways? ○ With adults? ○ With peers? • The following questions refer to students with Down syndrome: ○ How would you describe the student's level of motivation? ○ How would you describe the student's interest in learning? ○ How would you describe the student's happiness in school?	• Could you tell me about any ways in which X (student with Down syndrome) might make choices or decisions in school? • Could you tell me about any opportunities that X (student with Down syndrome) might have to experience success in school? • Could you tell me about some of their areas of strength? • Could you tell me about any ways in which X (student with Down syndrome) might have developed friendships in school? • How would you describe their relationship with other children in their class? • Could you tell me about any examples of how X (student with Down syndrome) might have developed relationships with others in school?

Appendix Z: Questionnaire Data Analysis and Interpretation

Calculating Composite Scores

Composite scores were derived for each individual by averaging the value of responses to the items for the relevant subscale or scale. Composite scores were calculated for each participant for each of the three subscales: autonomy satisfaction, competence satisfaction, and relatedness satisfaction. A composite score was also calculated for the overall scale: basic psychological need satisfaction.

Classifying the Data into Class Intervals

As suggested by Alkharusi (2022), a scale of class intervals was developed for interpreting the composite scores. For each of the three subscales and the overall scale, a triple scale of class intervals was developed to interpret the participants' scores: low, moderate, or high level of perceived need satisfaction. The steps involved in developing each triple scale of class intervals is outlined below (Alkarusi, 2022, p. 15). The steps were repeated to develop intervals for interpreting scores for the overall scale.

Step One

Find the range of possible composite scores by subtracting the minimum composite score from the maximum composite score.

- Range = Maximum total sum score (divided by total number of items) – minimum total sum score (divided by the total number of items)
- Range = [(5 x 4) ÷ 4] – [(1 x 4) ÷ 4]
- Range: 5 – 1= 4

Step Two

Find the width of the class intervals by dividing the composite score range by the number of scale categories.

- Width = Score range (4) ÷ number of scale categories (3)
- Width: 4 ÷ 3 = 1.33

Step Three

Create the class intervals by adding the width to the lower limit of the first class interval. This is the minimum score. Repeat the process for each interval.

- First class interval: Lower limit (minimum score: 1) + width (1.33)
- First class interval: 1 + 1.33 = 2.33
- Second class interval: Lower limit (2.34) + width (1.33)
- Second class interval: 2.34 + 1.33 = 3.67
- Third class interval: Lower limit (3.68) + width (1.33)
- Third class interval: 3.68 + 1.33 = 5.01

The categories for interpreting the subscale scores are presented in Tables 1, 2, and 3 below. The categories for interpreting the overall scale scores are outlined in Table 4.

Table 1

Triple Scale of Class Intervals for Interpreting the Composite Scores on the Autonomy Satisfaction Subscale

Interval	Interval	Interpretation
1 – (1 + 1.33)	1 – 2.33	Low level of perceived autonomy
2.34 – (2.34 + 1.33)	2.34 – 3.67	Moderate level of perceived autonomy
3.68 – (3.68 + 1.33)	3.68 – 5.01	High level of perceived autonomy

Table 2

Triple Scale of Class Intervals for Interpreting the Composite Scores on the Competence Satisfaction Subscale

Interval	Interval	Interpretation
1 – (1 + 1.33)	1 – 2.33	Low level of perceived competence
2.34 – (2.34 + 1.33)	2.34 – 3.67	Moderate level of perceived competence
3.68 – (3.68 + 1.33)	3.68 – 5.01	High level of perceived competence

Table 3

Triple Scale of Class Intervals for Interpreting the Composite Scores on the Relatedness Satisfaction Subscale

Interval	Interval	Interpretation
1 – (1 + 1.33)	1 – 2.33	Low level of perceived relatedness

2.34 – (2.34 + 1.33)	2.34 – 3.67	Moderate level of perceived relatedness
3.68 – (3.68 + 1.33)	3.68 – 5.01	High level of perceived relatedness

Table 4

Triple Scale of Class Intervals for Interpreting the Composite Scores on the Basic Psychological Need Satisfaction Scale

Interval	**Interval**	**Interpretation**
1 – (1 + 1.33)	1 – 2.33	Low level of perceived need satisfaction
2.34 – (2.34 + 1.33)	2.34 – 3.67	Moderate level of perceived need satisfaction
3.68 – (3.68 + 1.33)	3.68 – 5.01	High level of perceived need satisfaction

Appendix AA: Pattern-Matching Codes

Proposition	Codes Applied to Data	Colour Code
For a student with DS, autonomy satisfaction will be associated with feelings of happiness, enjoyment, and interest, whereas autonomy frustration will be associated with feelings of unhappiness and disengagement.	choices/decisions	bright green
	self-directing learning and/or behaviour	red
	happiness/enjoyment and/or interest	yellow
	lack/limited opportunity	dark grey
	lack/limited happiness, enjoyment or interest	dark red
For a student with DS, competence satisfaction will be associated with feelings of happiness, enjoyment, and interest, whereas competence frustration will be associated with feelings of unhappiness and disengagement.	success/achievement	turquoise
	mastery/progress	pink
	happiness/enjoyment and/or interest	yellow
	lack/limited opportunity	dark grey
	lack/limited happiness, enjoyment or interest	dark red
For a student with DS, relatedness satisfaction will be associated with feelings of happiness, enjoyment, and interest, whereas relatedness frustration will be associated with feelings of unhappiness and disengagement.	friendships/relationships	teal
	belonging/connection	dark yellow
	happiness/enjoyment and/or interest	yellow
	lack/limited opportunity	dark grey
	lack/limited happiness, enjoyment or interest	dark red

Appendix BB: Overview of Thematic Analysis Phases

The following section will outline the phases involved in analysing the data using reflexive thematic analysis (Braun & Clarke, 2022). This approach was utilised to explore the data gathered from the Personal Construct Psychology (PCP; Kelly, 1955) activities which were conducted with the students with Down syndrome and the semi-structured interviews that were carried out with the class teacher and Special Needs Assistant. The six phases of reflexive thematic analysis were completed for Case 1 and Case 2, respectively. The six phases are described below.

Phase 1: Familiarising yourself with the dataset

This phase required the researcher to become familiar with the datasets through a process of immersion. This involved transcribing audio transcripts, reading and re-reading the data, and recording initial analytic ideas and insights.

Phase 2: Coding

This phase required the researcher to identify segments of data that were potentially interesting or relevant to the research question and applying code labels to the data. The entire dataset was coded, systematically and thoroughly. The code labels were collated and relevant segments of data were compiled for each code. As noted by Braun and Clarke (2022), data can be coded at two levels: semantic and latent. Semantic coding focuses on the explicitly-expressed meaning of data and codes labels often use the language utilised by participants. On the other hand, latent coding captures a deeper or conceptual level of meaning. As part of Phase 2, the entire data sets were coded by the researcher on two separate occasions and the order in which the data were coded was varied. Initial codes were devised and relevant sections of data were collated for each code. An sample of the codes and corresponding data is presented in Table 1 below.

Table 1

Initial codes and relevant data

Code(s)	Relevant Data Extracts

	And how would you describe her attitude towards school and learning?
Work ethic Demonstrating progress Being focused Visual checklist Structure/routine Promoting independence	You know what, she has such a great work ethic. Like I was writing out her report there the last day and I just feel like she has progressed so much. Like she is ploughing through her work now. Like she's really focused now, *This is on my list, I'm going to get it done now.* So, her work ethic is really strong. All back to her checklist. A lot of things are stemming from that. Because I felt like without the checklist, she didn't know what she was doing until she was told, you know that kind of way? Whereas, this gave her a bit more independence and she knew what was ahead of her each day, you know?
	That's very interesting, Niamh. Could you tell me about any other opportunities that Emma might have to develop her independence in school?
Promoting independence Providing/making choices Interpersonal strengths Friendship Flight risk Establishing boundaries	Yeah, I mean we're trying to give her a bit more independence, like when she's out on yard, like, "Who do you want to play with? What games do you want to play?" It's all about giving her the choice. And she confidently says what she wants to do, who she wants to play with. She's very social. She's got a great circle of friends so in those areas, we don't have to work on them too much. There are other areas though that we definitely still need to keep an eye on like she's a flight risk. Now, she won't go out onto the road or anything like that but she might flee to the toilet. You can't fully leave her independently in that way. And we've just had to have chats with her about the rules and what's okay and what's not okay. But, it's still an issue.
	Niamh, Class Teacher
	And could you tell me about any opportunities that Emma might have to make choices in school?
Providing choices Making choices Enjoyment of tasks	Yeah, well actually in her timetable, I have a slot for free choice time. So, every day, once she gets all her work completed, there's a little slot where she can have her free choice time and now, she often likes to play one of her English games on the iPad or she might want to do a bit of art or she loves wordsearches. So I have a bundle of activities that she can choose from and that's on her timetable every day.

Phase 3: Generating initial themes

This phase involved the researcher compiling clusters of codes that shared a core idea or concept. The researcher constructed candidate themes based on the data, the research question, and the researcher's knowledge and insights. As noted by Braun and Clarke (2022), a candidate theme involves the clustering of codes and a potential theme. Importantly, the clustering of patterns must be considered across the dataset, as opposed to solely within a single data item. Coded data were collated relevant to each candidate theme. Within reflexive thematic analysis, patterned meaning can be represented at three different levels: overarching themes, themes, and subthemes. An overview of the candidate themes and corresponding codes for Case 1 and Case 2 are presented in Tables 2 and 3 below.

Table 2

Case 1 Candidate Themes and Revised Codes

Candidate Theme	**Revised Codes**
Interests and preferences	Favourite activities Child's preferences Participation in Arts subjects Playing
Choice and self-direction	Following child's lead Making choices Self-directing behaviour
Adaptations and accommodations	Being flexible Working at own level Individual expectations Individualised learning programme Individual reward systems
Challenges of mainstream	Challenging tasks Challenges of mainstream Peer comparisons Learning differences Becoming aware of differences Placement suitability
Supportive relationships	Peer support Learning from peers Importance of peers Relationship with teachers Relationship with SNA

Sense of belonging	Inclusive school environment Part of school community Social inclusion Peer acceptance
Developing friendships	Kindness towards others Friends Close friendship with peers
Emotional wellbeing	Having fun Enjoyment of tasks Being praised Feeling happy Motivation

Table 3

Case 2 Revised Codes and Candidate Themes

Candidate Theme	**Revised Codes**
Providing structure	Structure/routine Checklist/timetable Establishing boundaries Learning targets Supervision Teacher direction
Nurturing independence	Demonstrating independence Self-directing learning Pupil voice Promoting independence Making decisions Making/providing choices
Supporting learning	Differentiation Importance of SET Visual supports Educational supports Providing encouragement Praise Embracing strengths
Experiencing success	Mastery Working independently Achievement Demonstrating progress Working at own level Enjoying success

Interpersonal strengths	Liked by peers Personality traits Positive peer relations Showing affection
Forming friendships and relationships	Enjoyment with friends Relationship building Good network of friends Relationships with staff Good relationships with peers Friendship
Emotional development • Positive feelings	Enjoyment of tasks Excitement Happiness in school Having fun
Emotional development • Engagement	Participating in tasks Being focused Work ethic Motivation Reward systems

Phase 4: Developing and reviewing themes

This phase required the researcher to ensure that themes made sense in relation to the coded extracts and the full dataset. The central organising concept (core focus or idea) of each theme was considered. A second coder was employed to review the themes. The revised themes and corresponding codes for Cases 1 and 2 are illustrated in Figures 1 and 2.

Figure 1

Case 1 Revised Themes and Corresponding Codes

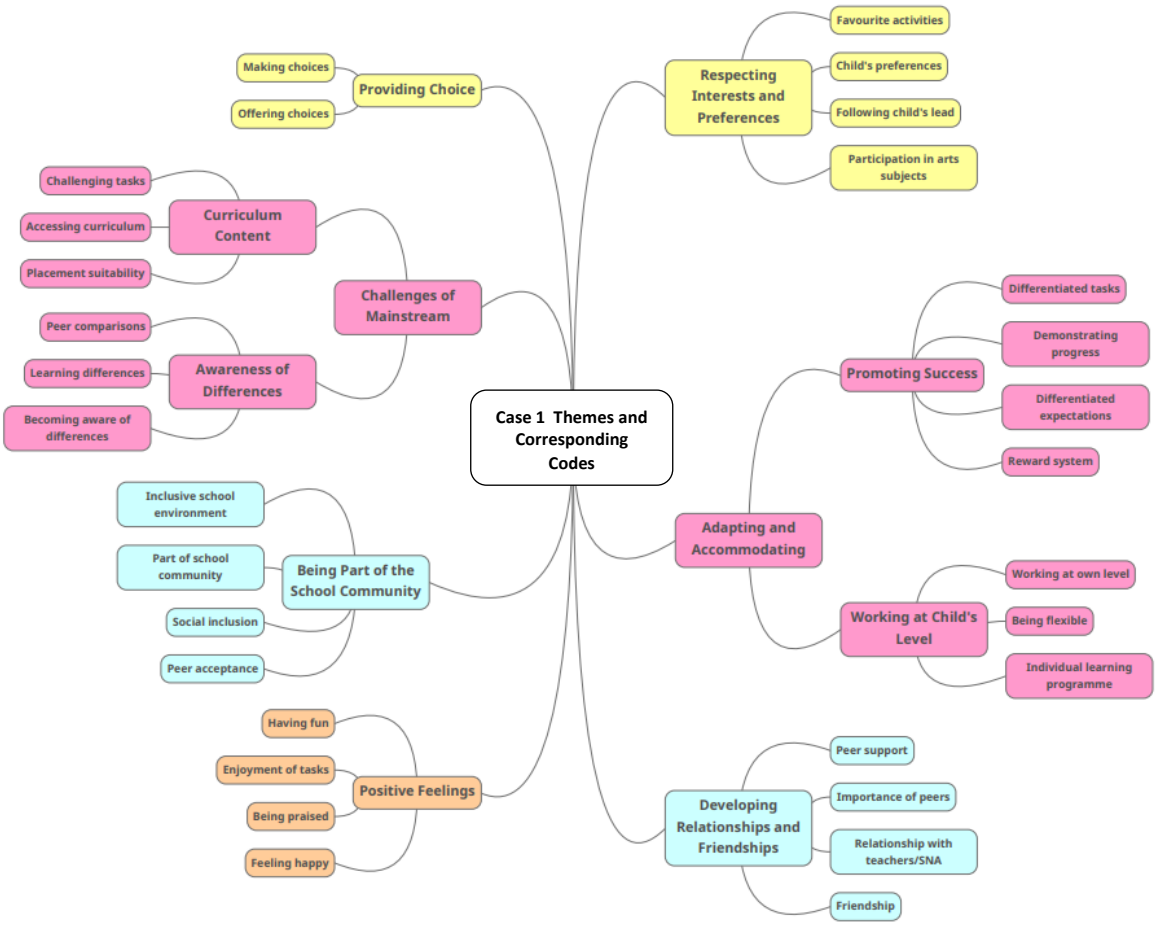


Figure 2

Case 2 Revised Themes and Corresponding Codes

Phase 5: Refining, Defining and Naming Themes

This phase required the researcher to ensure that each theme was clearly demarcated and based upon a strong core concept. Each theme was defined and named. An overview of the final themes for Case 1 and their link to constructs associated with Basic Psychological Needs Theory (BPNT;

Deci & Ryan, 2000) is presented in Table 4 below. Similarly, the final themes for Case 2 and their related BPNT constructs are illustrated in Table 5 below.

Table 4

Case 1 Themes, Subthemes and BPNT Constructs

Theme	Subthemes	BPNT Construct(s)
Respecting interests and preferences		Autonomy
Providing choice		Autonomy
Adapting and accommodating	Promoting success Working at child's level	Competence
Challenges of mainstream	Curriculum content Awareness of differences	Competence
Developing relationships		Relatedness
Being part of the school community		Relatedness
Positive feelings		Relatedness Intrinsic motivation

Table 5

Case 2 Themes and BPNT Constructs

Theme	BPNT Construct(s)
Nurturing independence	Autonomy
Need for structure	Autonomy
Providing support	Competence
Experiencing success	Competence
Interpersonal strengths	Relatedness
Forming friendships and relationships	Relatedness
Engagement and enthusiasm	Autonomy, competence, relatedness, intrinsic motivation

Phase 6: Writing Up

This phase involved the completion of the formal writing process. Given that the current study utilised a multiple-case study design, two separate case reports were completed. The case reports are presented in Sections 3.4 and 3.6 and the extended versions of the reports are included in Appendix CC and DD. Following the completion of the individual case reports, a cross-case synthesis of findings was conducted. The cross-case synthesis report is presented in Section 3.8.

Appendix CC: Mary Immaculate Research Ethics Committee – Ethical Approval

MIREC-5, Created November 2021

MIREC-5

Research Ethics Committee

MIREC Final Decision Form

APPLICATION NUMBER:	A22-070

1. PROJECT TITLE

Exploring how students with Down syndrome experience self-determination in mainstream class settings

2. APPLICANT

Name:	Fiona Brennan
Department / Centre / Other:	EPISE
Position:	Postgraduate Researcher (DECPsy)

3. DECISION OF MIREC CHAIR (✓)

☐	Ethical clearance through MIREC is not required and therefore the applicant need take no further action in this regard.
✓	Ethical clearance is required and is hereby granted by the Chair without need for referral to the MIREC committee.
☐	Ethical clearance for a funding application or a similar purpose is granted by the Chair *pro tem* without need for referral to the MIREC committee. However, the applicant must subsequently seek ethical clearance from MIREC prior to embarking on any related project work involving human participants or their data.
☐	Ethical clearance is granted following review of the application by the MIREC committee.
☐	Ethical clearance is not granted following review of the application by the MIREC committee.

Appendix DD: Case Study Report 1

Case Study Report 1

Within Case Analysis

The following section presents the case report for the first case. To explore the classroom context in relation to perceived need satisfaction, data from the *Basic Psychological Needs in the Classroom Scale* (Conesa & Duñabeitia, 2021) were analysed using descriptive analysis. To explore the research question, the data gathered from the PCP activities and the semi-structured interviews were examined in relation to the three psychological needs. Pattern matching (Trochim, 1989) and reflexive thematic analysis (Braun & Clarke, 2022) were used to analyse the data.

Case Overview

Case 1 was carried out in a co-educational mainstream primary school. The school has an administrative principal and approximately 19 teachers. There are approximately 225 students enrolled in the school. The school has one special class for students with autism and seven SNAs.

One female student with DS in Sixth Class was invited to partake in the study. Additionally, the student's classmates, class teacher, and SNA were recruited as participants. In total, consent and assent were obtained from 17 students and their parents/guardians to participate in the case study. Students' ages ranged from eleven to twelve years.

Classroom Context: Basic Psychological Need Satisfaction

The *Basic Psychological Needs in the Classroom Scale* (Conesa & Duñabeitia, 2021) was not intended to be utilised for comparative purposes; rather, it was used to provide a rich picture of the classroom context within which the student with DS was learning.

For Case 1, the overall scale and two subscales achieved acceptable values for internal reliability (α = .84 for overall scale; α = .747 for autonomy satisfaction; α = .806 for relatedness satisfaction). These scores are similar to previous findings reported by Conesa & Duñabeitia (2021) (α = .72 for autonomy satisfaction; α = .78 for relatedness satisfaction). An alpha value of .616 was obtained for competence satisfaction. Given that scores above .7 are considered acceptable (DeVellis, 2017), the findings derived from the competence subscale should be interpreted with caution.

To score and interpret the questionnaire, the researcher followed approaches used to explore similar scales (e.g., Gagné, 2003). Composite scores were calculated for the three subscales and overall scale by averaging participants' scores for the relevant items (Gagné, 2003; Johnston & Finney, 2010; Meyer et al., 2007). As recommended by Alkharusi (2022), a scale of class intervals was developed for interpreting the composite scores (see Appendix Y). Higher scores indicated higher need satisfaction (Cromhout et al., 2018). The collated data were explored using frequency analysis by calculating the percentage of responses in each category (Sullivan & Artina, 2013). Sixteen participants completed the questionnaire. The findings for each subscale are illustrated in Figures 1, 2, and 3 below. The scores for the overall scale are presented in Figure 4.

Figure 1

Autonomy Satisfaction Subscale Findings for Case 1

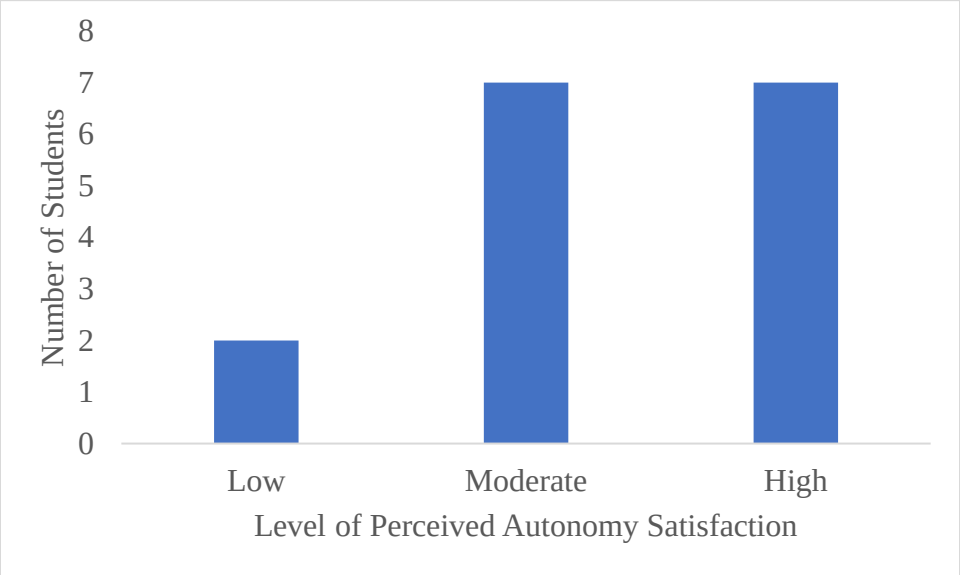


Figure 2

Competence Satisfaction Subscale Findings for Case 1

Figure 3

Relatedness Satisfaction Subscale Findings for Case 1

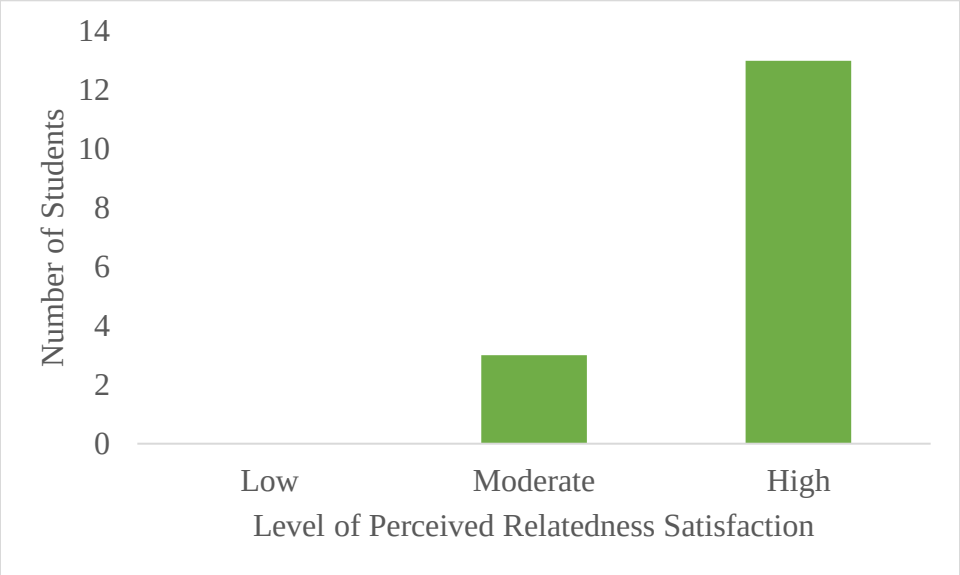
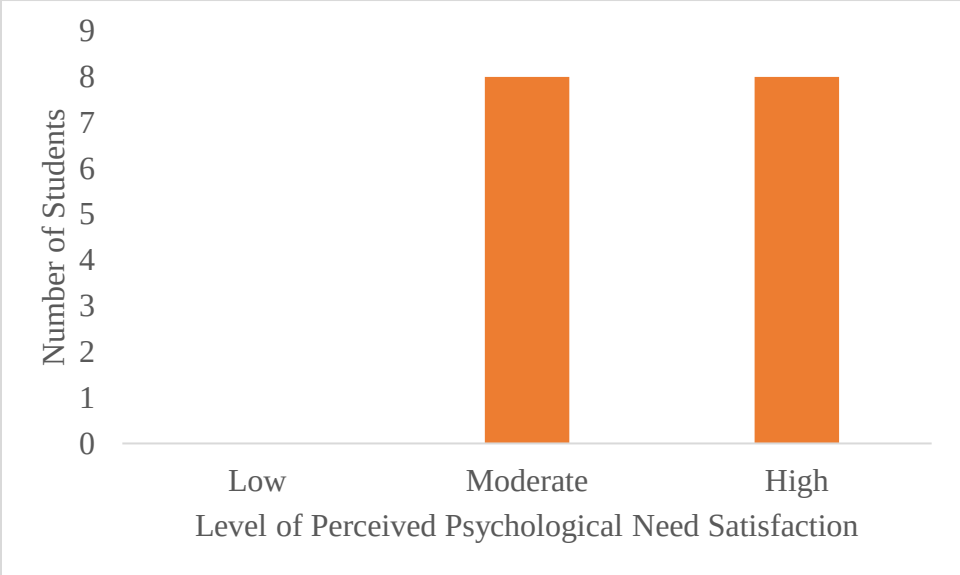


Figure 4

Overall Basic Psychological Need Satisfaction Findings for Case 1



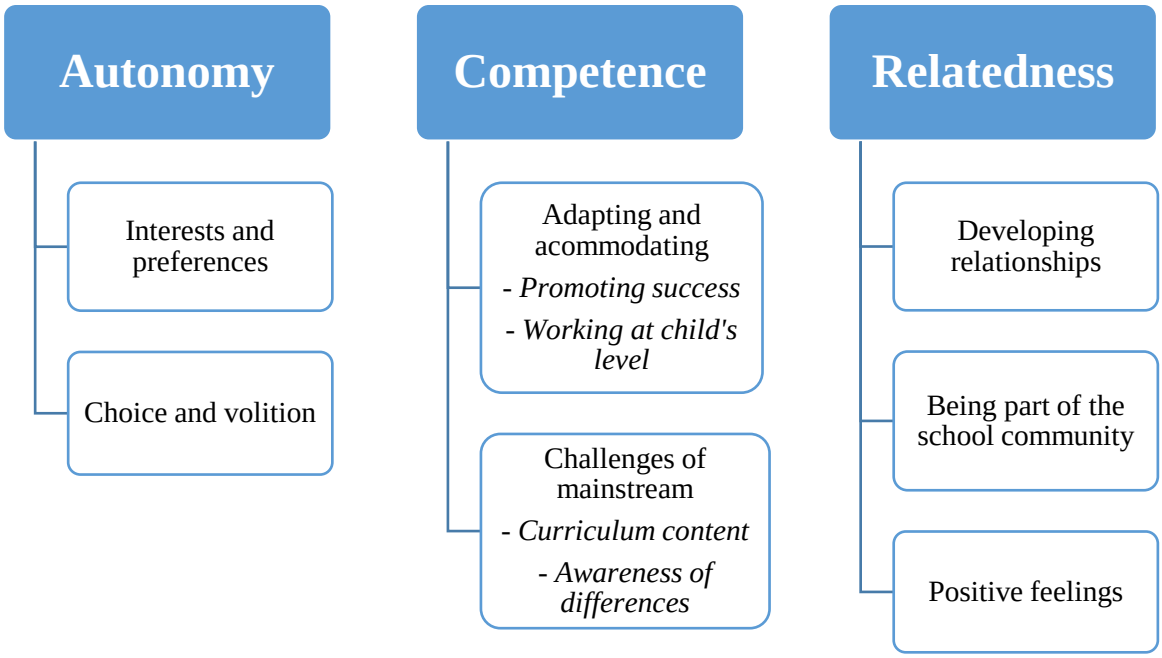
As illustrated above, the majority of participants reported moderate and high levels of perceived autonomy, competence, and relatedness satisfaction. No participants reported a low level of perceived competence or relatedness satisfaction. Figure 3.3 suggests that most participants (n = 13; 81.25%) reported a high level of perceived relatedness satisfaction, whereas fewer participants (n = 3; 18.75%) reported a moderate level of perceived relatedness satisfaction. Figure 3.4 demonstrates that half the participants (n = 8; 50%) reported a moderate level in terms of overall need satisfaction. The other half (n = 8; 50%) reported a high level for overall need satisfaction.

Student's Experiences of the Basic Psychological Needs

As noted above, the findings will be presented in relation to each of the three basic psychological needs. For each need, an overview of how the pattern-matching technique was applied to data obtained from the PCP tasks activities and the semi-structured interviews is provided. A summary of the themes pertaining to each need is outlined. A overview of the themes and subthemes for Case 1 and their link to constructs associated with BPNT is presented in Figure 5.

Figure 5

Summary of Themes and Subthemes and Associated BPNT Constructs for Case 1



Analysis of Findings for Autonomy

The following sections provide an overview of the analysis of findings in relation to the first proposition which related to autonomy for Case 1.

Section 1: Criteria for Interpreting Proposition 1

Proposition	**PCP Activity 1 – *Building the Ideal Classroom* and *Salmon Line Technique***	**PCP Activity 2 – *Building the Ideal School Playground* and *Salmon Line Technique***	**Semi-Structured Interviews with Teacher and SNA**
Proposition 1 For a student with DS, autonomy satisfaction will be associated with feelings of happiness, enjoyment, and interest, whereas autonomy frustration will	**Pattern-Matching:** Elements of models/drawings or comments that link students' opportunities to make choices/ decisions or self-direct learning/ behaviour with feelings of happiness, enjoyment, and	**Pattern-Matching:** Elements of models/drawings or comments that link students' opportunities to make choices/ decisions or self-direct learning/ behaviour with feelings of happiness, enjoyment, and interest in school or the opposite.	**Pattern-Matching:** Interview responses that link students' opportunities to make choices/ decisions or self-direct learning/ behaviour with feelings of happiness, enjoyment, and interest in school or the opposite.

be associated with feelings of unhappiness and disengagement.	interest in school or the opposite. **Reflexive Thematic Analysis:** Themes and patterns within the data set that refer to autonomy in school.	**Reflexive Thematic Analysis:** Themes and patterns within the data set that refer to autonomy in school.	**Reflexive Thematic Analysis:** Themes and patterns within the data set that refer to autonomy in school.

Section 2: Pattern-Matching for Proposition 1

Table 1 below outlines the pattern-matching codes applied to data in relation to Proposition 1.

Table 1

Pattern-Matching Codes

Proposition	Codes Applied to Data	Colour Code
For a student with DS, autonomy satisfaction will be associated with feelings of happiness, enjoyment, and interest, whereas autonomy frustration will be associated with feelings of unhappiness and disengagement.	choices/decisions	bright green
	self-directing learning and/or behaviour	red
	happiness/enjoyment and/or interest	yellow
	lack/limited opportunity	dark grey
	lack/limited happiness, enjoyment or interest	dark red

Section 2.1: Pattern-Matching Applied to PCP Activities for Proposition 1

Participant	Salmon Line Technique	Quotes
Sophie, Student		*In this classroom, the girl gets to pick what she'd like to do and, in this classroom, the girl doesn't get to pick what to do. Which is more like you?* This one [points to 'girl picks what to do']. *If you had a magic wish, which would you like?* This one here [points to 'girl picks what to do']. *What kind of things do you like to pick in school? …* All my songs and all my games and all my favourite treats. *How do you feel*

	when you get to pick your favourite game or favourite treat? Like this one [points to picture of 'happy face'].

Section 2.2: Pattern-Matching Applied to Semi-Structured Interviews for Proposition 1

Participant	Quotes
Breda, SNA	*How would you describe her attitude towards learning?* … I'd say she likes to play a lot so it's very much a reward like, "If you get this much done, then you can have a treat." She likes to pick her own treat. She loves her pegs. She has a peg board and these tiny little begs and she loves just creating her own designs on the board with those. So they're kind of her treat thing at the moment.
Breda, SNA	You have to be flexible … She'll come in off the yard when she feels ready … I think if you're someone who's very rigid and just say, "No, we have to do this now. We can't do it later". It just won't work with Sophie and then she just mightn't want to do it at all.
Helen, Class Teacher	*And then, in terms of friendships or relationships in school, what opportunities might she have to develop those?* She has great friends in her class … she does have a small group of friends and she will play with them on yard and they will play games that she would like to play. Games that they probably wouldn't be in to. Games that Infants might play. But yeah, she really enjoys playing with those friends.

Section 3: Thematic Analysis and Autonomy

Theme	Illustrative Quotes **Student, Class Teacher, SNA**
Interests and preferences	**Sophie, Student:** *(Discussing Lego model of Dream Classroom)* • *Which of these subjects would you like to do in this classroom?* This one [point to 'music']. She's the music teacher [holding small doll in hand]. "Hello everybody. Hi class." *Sophie, if you were in the classroom doing music with the teacher, how would you feel?* This one here [points to 'happy face']. It's so much fun. • *Sophie, if you were in this classroom, where would you like to sit?* Here [points to chair at table]. *What would you be doing?* I'm doing some painting. Look at the picture. • *What do you like doing in school?* I love art and singing and dressing up. **Helen, Class Teacher**

	• For Sophie, accessing the curriculum in Sixth Class would be mostly through the Arts subjects. She loves music and dance so those would be the subject areas that she really enjoys and feels included in. **Breda, SNA:** • You have to think from her perspective not your own … because, as I said, she's an independent lady. She knows what she wants, what she doesn't want, what she feels likes doing, what she doesn't feel like doing. So, that's what I find works best for her. That's what keeps her going in school. • Science can be very hit and miss. She doesn't like doing experiments and getting her hands messy … She might just do a drawing of the experiment instead or a worksheet with pictures … for those kinds of things, if she's not willing to do them, you can't force it. • When we'd be going out on lunch, she might refuse to go initially and you'd have to be willing to wait because she'll go out when she needs to, when she feels ready. • You have to be flexible … She'll come in off the yard when she feels ready … I think if you're someone who's very rigid and just say, "No, we have to do this now. We can't do it later". It just won't work with Sophie and then she just mightn't want to do it at all.
Choice and volition	**Sophie, Student:** *(Discussing Salmon Line scales)* • *In this classroom, the teacher lets the girl choose what activity she does in school and in this classroom, the teacher tells the girl what to do. Which is more like you?* This one [point to picture for 'teacher tells girl what to do'] *If you had a magic wish, which would you like?* This one here [point to picture for 'teacher lets girl choose what to do']. • *In this classroom, the girl gets to pick what she'd like to do and, in this classroom, the girl doesn't get to pick what to do. Which is more like you?* This one [point to picture for 'girl picks what to do']. • *What kind of things do you like to pick in school?* All my songs and all my games and all my favourite treats. *How do you feel when you get to pick your favourite game or favourite treat?* Like this one [point to 'happy' face]. **Helen, Class Teacher:** • She does have a small group of friends and she will play with them on yard and they will play games that she would like to play. Games that they probably wouldn't be in to. Games that Infants might play. **Breda, SNA:**

	• She likes to pick her own treat. She loves her pegs. She has a peg board and these tiny little begs and she loves just creating her own designs on the board with those.

Analysis of Findings for Competence

The following sections provide an overview of the analysis of findings in relation to the second proposition which related to competence.

Section 1: Criteria for Interpreting Proposition 2

Proposition	**PCP Activity 1 – *Building the Ideal Classroom* and *Salmon Line Technique***	**PCP Activity 2 – *Building the Ideal School Playground* and *Salmon Line Technique***	**Semi-Structured Interviews with Teacher and SNA**
Proposition 2 For a student with DS, competence satisfaction will be associated with feelings of happiness, enjoyment, and interest, whereas competence frustration will be associated with feelings of unhappiness and disengagement.	**Pattern-Matching:** Elements of models/drawings or comments that link students' opportunities to experience success/ achievement and mastery/ progress with feelings of happiness, enjoyment, and interest in school and vice versa. **Reflexive Thematic Analysis:** Themes and patterns within the data set that refer to competence in school.	**Pattern-Matching:** Elements of models/drawings or comments that link students' opportunities to experience success/ achievement and mastery/ progress with feelings of happiness, enjoyment, and interest in school and vice versa. **Reflexive Thematic Analysis:** Themes and patterns within the data set that refer to competence in school.	**Pattern-Matching:** Interview responses that link students' opportunities to experience success/ achievement and mastery/ progress with feelings of happiness, enjoyment, and interest in school and vice versa. **Reflexive Thematic Analysis:** Themes and patterns within the data set that refer to competence in school.

Section 2: Pattern-Matching

Table 1 below outlines the pattern-matching codes applied to data in relation to Proposition 2.

Table 1

Pattern-Matching Codes

Proposition	**Codes Applied to Data**	**Colour Code**

For a student with DS, competence satisfaction will be associated with feelings of happiness, enjoyment, and interest, whereas competence frustration will be associated with feelings of unhappiness and disengagement.	success/achievement	turquoise
	mastery/progress	pink
	happiness/enjoyment and/or interest	yellow
	lack/limited opportunity	dark grey
	lack/limited happiness, enjoyment or interest	dark red

Section 2.1: Pattern-Matching Applied to PCP Activities for Proposition 2

Participant	LEGO Model	Quotes
Sophie, Student		*Which of these subjects would you like to do in this classroom?* This one [points to picture for 'music']. She's the music teacher [holding small doll in hand]. "Hello everybody. Hi class." *Sophie, if you were in the classroom doing music with the teacher, how would you feel?* This one here [points to picture of 'happy face']. It's so much fun.
Sophie, Student	N/A	*What do you like doing in school?* I love art and singing and dressing up. *Wow. And are you really good at doing all those things?* Yes, so good. I love singing.

Section 2.2: Pattern-Matching Applied to Semi-Structured Interviews for Proposition 2

Participant	Quotes
Helen, Class Teacher	*Could you tell me about any opportunities that Sophie might have to experience success in school?* In relation to learning, that would mostly happen on a one-to-one basis with the Special Ed. Teacher where the work is differentiated to her level. It's hard in the mainstream classroom. She loves music but even when the class were learning the ukelele, she tried it for a while but she found it hard. Her fingers were getting sore and she didn't want to do it anymore. *And how might she behave in response to this type of task?* With the ukelele, she'd just say, "That's it." And she'd push the ukelele across the table. She'd just move it to the other side of the table.

Helen, Class Teacher	… But in terms of the heavier subjects, like we're doing Northern Ireland at the moment and that's very hard to differentiate so far down to Sophie's level that she can be included. But she does like sitting there, if there's a video on the board, she'll be watching it. But**,** in terms of how much she's able to interact or engage with it, it's hard to know.
Breda, SNA	*Could you tell me about any opportunities that Sophie might have to experience success?* She loves getting her stickers for her Maths work. We do her Maths in her copy and she knows then that once they're corrected, she picks out her stickers. She loves getting to do that work and she loves getting a bit of praise for her Maths and her reward. Her tasks are generally at her level so she does achieve. And she does experience success. Like she gets Pupil of the Week … So, she does get to experience success in school and she does thrive on it.
Breda, SNA	*Could you tell me about any opportunities that Sophie might have to experience success?…* She loves when she's praised. Even with the other kids … when the kids would say, "Well done, Sophie!" For doing things, you'd see her little face light up and stuff … The kids are brilliant. They'll always be like, "Well done!" And give her a thumbs up and high-fives and she loves that.
Breda, SNA	There are times where she'd be like, "I can't do it." And she gets frustrated and upset if it's a task that she's not able for.

Section 3: Thematic Analysis and Competence

Theme	**Subtheme**	**Illustrative Quotes** **Student, Class Teacher, SNA**

Adapting and accommodating	**Promoting success**	**Sophie, Student:** *(Discussing a Salmon Line Scale)* • *What do you see here?* Stickers. *Yes, this person gets their work right. And this person doesn't get their work right. Which are you more like?* This one [points to picture 'gets work right']. I have stickers in my copy. *Lovely. And what do you get stickers for?* From my teacher. For my letters and my sums. *And if you had a magic wish, which would you like?* This one with the stickers. More stickers. • *What do you like doing in school?* I love art and singing and dressing up. *Wow. And are you really good at doing all those things?* Yes, so good. I love singing. **Helen, Class Teacher:** • In relation to (experiencing success in) learning, that would mostly happen on a one-to-one basis with the SET where the work is differentiated to her level. **Breda, SNA:** • We do her own Maths in her copy and she knows then that once they're corrected, she picks out her stickers. She loves getting to do that work and she loves getting a bit of praise for her Maths and her reward. Her tasks are generally at her level so she does achieve. And she does experience success.
Adapting and accommodating	**Working at child's level**	**Helen, Class Teacher:** • Like her English and Maths would probably be at a Senior Infant level so she would do most of her instruction outside the classroom on a one-to-one basis with a SEN teacher. **Breda, SNA:** • She has her individual Maths and English time with the special education teacher. I suppose most of her learning takes place in those settings. And then, I suppose, I would work with them (SETs). They would give me work that I can work on in the class with her. So, when the class are doing Maths, Sophie is doing Maths. When the class are doing English, Sophie is doing English but it's at her level. • The other subjects would be kind of differentiated to suit her level. I suppose the expectations wouldn't be as high for the other subjects in that she takes part in what she can. • Academically … her abilities wouldn't be the same so it's just getting a balance between inclusion at some levels and at other levels, it's more individualised.

		• But she's learning at her pace. She's learning and she's progressing … I think every year she has come on but it is very much working at her own level.
Challenges of mainstream	**Curriculum content**	**Helen, Class Teacher:** • In terms of the heavier subjects, like we're doing Northern Ireland in History at the moment and that's very hard to differentiate so far down to Sophie's level that she can be included. • But she does like sitting there, if there's a video on the board, she'll be watching it. But, in terms of how much she's able to interact or engage with it, it's hard to know. • I suppose the mainstream curriculum would be very challenging for Sophie. She isn't really able to access most of it. She definitely needs Breda's help all the time with things. • It's hard in the mainstream classroom. She loves music but even when the class were learning the ukelele, she tried it for a while but she found it hard. Her fingers were getting sore and she didn't want to do it anymore. • Yeah, I suppose, it's a tricky one to know whether mainstream is the best place. **Breda, SNA:** • Mainstream is hard and there are times in the day where she maybe feels lost, you know? There are certain subjects, like certain topics in History, and sometimes I don't know if they're relevant to where Sophie is at. • Like mainstream is hard … I suppose, maybe you don't always have that ability to be flexible with things. • There are times where she'd be like, "I can't do it." And she gets frustrated and upset if it's a task that she's not able for.
Challenges of mainstream	**Awareness of differences**	**Sophie, Student:** *(Discussing a Salmon Line scale)* • *What about these pictures? This girl does her work by herself and this girl needs some help with her work? Are you more like this girl or this girl?* This one [points to 'needs help']. *And who usually helps you with your work?* That's Breda and that's me. *And if you had a magic wish, which would you be like?* This girl [points to 'works alone']. **Breda, SNA:** • Back in Third Class, she would say, "I'm different." She was becoming more aware of her abilities and

	comparing them to the class and stuff because she would struggle academically. She does her own work. She's not really doing what the class are doing. • As time went on, she was becoming more of the fact that she's doing different work, that she's not doing the same as them. Maybe at that Third-Class age, she was watching others and become more aware of that. • There have been times where I would question the appropriateness of mainstream. Things that she would've been struggling with. I suppose you'd be saying, *If she was in a different environment, for her self-esteem and confidence, would it have been better?*

Analysis of Findings for Relatedness

The following sections provide an overview of the analysis of findings in relation to the third proposition which pertained to relatedness.

Section 1: Criteria for Interpreting Proposition 3

Proposition	**PCP Activity 1 – *Building the Ideal Classroom* and *Salmon Line Technique***	**PCP Activity 2 – *Building the Ideal School Playground* and *Salmon Line Technique***	**Semi-Structured Interviews with Teacher and SNA**
Proposition 3 For a student with DS, relatedness satisfaction will be associated with feelings of happiness, enjoyment, and interest, whereas relatedness frustration will be associated with feelings of unhappiness and disengagement.	**Pattern-Matching:** Elements of models/drawings or comments that link students' opportunities to form friendships/ relationships with others and experience a sense of belonging/connection with feelings of happiness, enjoyment, and interest in school and vice versa. **Reflexive Thematic Analysis:** Themes and patterns within the	**Pattern-Matching:** Elements of models/drawings or comments that link students' opportunities to form friendships/ relationships with others and experience a sense of belonging/connection with feelings of happiness, enjoyment, and interest in school and vice versa. **Reflexive Thematic Analysis:** Themes and patterns within the data set that refer to relatedness in school.	**Pattern-Matching:** Interview responses that link students' opportunities to form friendships/ relationships with others and experience a sense of belonging/connection with feelings of happiness, enjoyment, and interest in school and vice versa. **Reflexive Thematic Analysis:** Themes and patterns within the data set that refer to relatedness in school.

	data set that refer to relatedness in school.

Section 2: Pattern-Matching

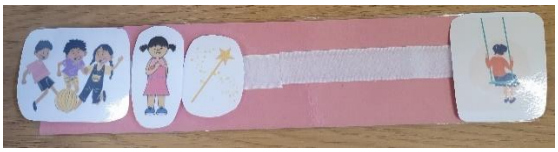
Table 1 below outlines the pattern-matching codes applied to data in relation to Proposition 3.

Table 1

Pattern-Matching Codes

Proposition	Codes Applied to Data	Colour Code
For a student with DS, relatedness satisfaction will be associated with feelings of happiness, enjoyment, and interest, whereas relatedness frustration will be associated with feelings of unhappiness and disengagement.	friendships/relationships	teal
	belonging/connection	dark yellow
	happiness/enjoyment and/or interest	yellow
	lack/limited opportunity	dark grey
	lack/limited happiness, enjoyment or interest	dark red

Section 2.1: Pattern-Matching Applied to PCP Activities for Proposition 3

Participant	Salmon Line Technique	Quote
Sophie, Student		*Look at these pictures. What's happening in this one?* Playing. *Yes, the children and playing together. What's happening in this picture?* All alone. *Yes, the girl is alone. She has nobody to play with. Which is more like you?* This one [points to 'children playing together']. *If you had a magic wand, which one would you like to be?* This girl here [points to 'children playing together'].
		*…. Look at these pictures, Sophie. What's happening in this picture?* Having fun. *Yes, the children feel happy in school. What about this picture, what's happening here?* Crying. *Yes, the child feels sad in school. Which is more like you?*

		This one [points to 'happy child'].
Sophie, Student		*Look, in this picture, the boys and girls are all part of the group. In this picture, the girl is all alone. Which is more like you?* That's me [points to 'part of the group']. *If you had a magic wand, which would you pick?* This one [points to 'part of the group']. That's all my friends. *That's lovely. Have you lots of friends in school?* Yes. Lots of friends. Lucy is my best friend and Sarah, she's my best friend too. *What do you like to do with Lucy and Sarah?* Playing, dancing … so much fun.

Section 2.2: Pattern-Matching Applied to Semi-Structured Interviews for Proposition 3

Participant	Quotes
Helen, Class Teacher	*Could you tell me three things that you feel are important to consider when teaching a student with Down syndrome in a mainstream class?* … And then their relationship with their peers is important too. Like, Sophie has a great relationship with the kids in the class and they would often, you know, if Breda (SNA) wasn't there, they would often fly around and help her. So, I've found that is a big thing and Sophie really likes being with the other kids in the class.
Helen, Class Teacher	*Could you tell me about any opportunities Sophie might have had to develop friendships in school?* She has great friends in class. And I suppose they're friends that she would have had the whole way up through the school, both male and female. The class would be very kind in general. Like all of them, whether they're close friends or not, they would be very kind to her … She had a birthday party two months ago and the whole class went. *Is there anything else you would like to add? …* It's a tricky one to know whether mainstream is the best place … And then you look at the friends she has and how happy she is with them.
Breda, SNA	*Could you tell me about any opportunities Sophie might have had to develop friendships in school?* I suppose, socially, the class that she's in are a particularly nice group of kids and they have really helped her to integrate into the school community. They're very good. They always include her and she has her friends … Like all the class are really good

	with her and nice to her but then she also has her little smaller group that she loves to play with as well and they are always there for her.
Breda, SNA	*How would you describe her relationship with her peers?* …. But she has been blessed now with the group that she's in because they just accept her as she is … They give her the high-fives. She's very much included as part of the class, you know, it's lovely to see … I suppose, in a way, she nearly loves the praise from the other kids as much as she loves it from any of the adults on the staff in the school.

Section 3: Thematic Analysis and Relatedness

Theme	**Illustrative Quotes** **Student, Class Teacher, SNA**
Developing relationships	**Sophie, Student:** *(Discussing Salmon Line scales)* • *Which one are you like?* This one [points to 'being part of the group']. That's all my friends. *That's lovely. Have you lots of friends in school?* Yes. Lots of friends. Lucy is my best friend and Sarah, she's my best friend too. • *Look at these pictures. What's happening in this one?* Boys and girls are playing outside. *Yes, the children and playing together. What's happening in this picture?* Girl is on the swing. *Yes, the girl is alone on the swing. She has nobody to play with. Which is more like you?* Right here [points to 'children playing together']. **Helen, Class Teacher** • Sophie has a great relationship with the kids in the class and they would often, you know, if Breda (SNA) wasn't there, they would often fly around and help her. • She would have good relationships with all of the adults in the school, especially Breda (SNA). She would have had Breda all the way up so Breda is like her go-to person in school if she ever needs anyone. • She has great friends … They're friends that she would have had the whole way up through the school … She had a birthday party two months ago and the whole class went. **Breda, SNA:** • Mary and Trish, the two SEN teachers, so they have her one-to-one now and they've had her for a good few years … she'd have a fairly good bond. • All the teachers are very fond of her and like she'd go up and give teachers a hug, she'd hold their hand. She has a good relationship with them all, you know? • Even Maura, the principal, and Trish in the office, she gets on really well with … She'd go in for the little chat with Trish. • She has her little group of friends. Like all the class are really good with her and nice to her but then she also has her little smaller group

	that she loves to play with as well and they are always there for her. They chat away and I know, in more recent years, she goes to houses and has kids up to her house. • She's very affectionate, very caring. If others are hurt, she'd draw my attention to it or, you know, like she's very aware of others' feelings.
Being part of the school community	**Sophie, Student:** *(Discussing a Salmon Line scale)* • *Look, in this picture, the boys and girls are all part of the group. In this picture, the girl is all alone. Which is more like you?* That's me [point to picture for 'part of the group']. *If you had a magic wand, which would you pick?* This one [points to 'being part of the group']. That's all my friends. **Helen, Class Teacher:** • I've found that (relationships) is a big thing and Sophie really likes being with the other kids in the class. • Sophie loves going down to Juniors on a Friday and we do things with them or we go to the park. Last week, we went to the park and they benefitted a lot as well from seeing different types of people and the inclusiveness of the school. • I think the school is a really inclusive place in terms of support … And inclusive as well in terms of social outings. **Breda, SNA:** • She's very much part of the school community. • I suppose, socially, the class that she's in are a particularly nice group of kids and they have really helped her to integrate into the school community. They're very good. They always include her. • She has been blessed now with the group that she's in because they just accept her as she is. I suppose the fact that she started in Juniors with them, they've seen her go up along. They've seen the different stages. They just accept her. They give her the high-fives. She's very much included as part of the class, you know. • She is very much part of the school and like her classmates are very much fond of her. She is very much included in the school environment.
Positive feelings	**Sophie, Student:** • *What do you like about school?* Having fun. Playing with my friends. • *What do you like to do with Lucy and Sarah?* Playing, dancing … so much fun. **Class Teacher:** • And then you look at the friends that she has and how happy she is when she's interacting with them. • She really enjoys playing with those friends. **Breda, SNA:** • And like, the kids are brilliant as well. Like they'll always be like, "Well done!" And give her a thumbs up and high-fives and she loves

	that. I suppose, in a way, she nearly loves the praise from the kids as much as she loves it from any of the adults on the staff in the school. • I know I say there's days where she doesn't want to do things or whatever but, in general, she is quite happy in school.

Appendix EE: Case Study Report 2

Case Study Report 2

Within Case Analysis

The following section presents the case report for the second case. To explore the classroom context in relation to perceived need satisfaction, data from the *Basic Psychological Needs in the Classroom Scale* (Conesa & Duñabeitia, 2021) were analysed using descriptive analysis. To explore the research question, the data gathered from the PCP activities and the semi-structured interviews were examined in relation to the three psychological needs. Pattern matching (Trochim, 1989) and reflexive thematic analysis (Braun & Clarke, 2022) were used to analyse the data.

Case Overview

Case 2 was conducted in an all-girls mainstream primary school. It has an administrative principal, 16 class teachers, seven support teachers, three special class teachers, and ten SNAs. The school has three special classes for students with autism.

One female student in Fifth Class was invited to partake in the study. The student's classmates, class teacher, and SNA were also invited to participate. In total, consent and assent were obtained from 22 students and their parents/guardians to partake in the case study. All participants were female and ranged in age from ten to eleven years.

Classroom Context: Basic Psychological Need Satisfaction

To explore the classroom context in relation to perceived need satisfaction, data from the *Basic Psychological Needs in the Classroom Scale* (Conesa & Duñabeitia, 2021) were analysed using descriptive analysis. The overall scale and two subscale achieved acceptable values for internal reliability (α = .865 for overall scale; α = .778 for competence satisfaction; α = .81 for relatedness satisfaction). These scores are similar to previous findings reported by Conesa & Duñabeitia (2021) (α = .76 for competence satisfaction; α = .78 for relatedness satisfaction). An alpha value of .626 was obtained for autonomy satisfaction. Given that scores above .7 are considered acceptable (DeVellis, 2017), the findings derived from the autonomy subscale should be interpreted with caution.

The composite scores calculated for participants for each subscale and overall scale were interpreted using a scale of class intervals (Alkharusi, 2022; see Appendix Y). Twenty-one participants completed the questionnaire. The findings for each subscale are represented in Figures 1, 2, and 3 below. The scores for the overall scale are presented in Figure 4.

Figure 1

Autonomy Satisfaction Subscale Findings for Case 2

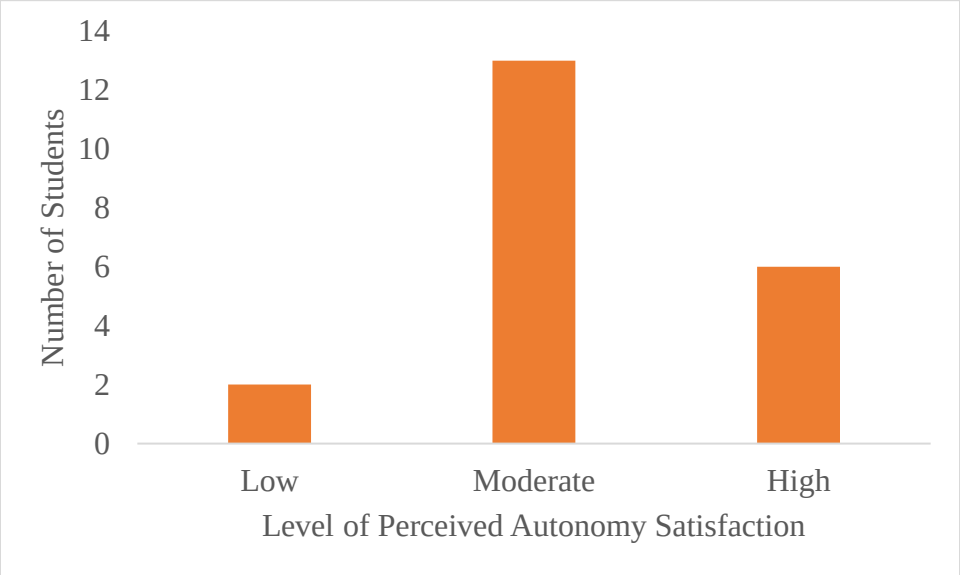


Figure 2

Competence Satisfaction Subscale Findings for Case 2

Figure 3

Relatedness Satisfaction Subscale Findings for Case 2

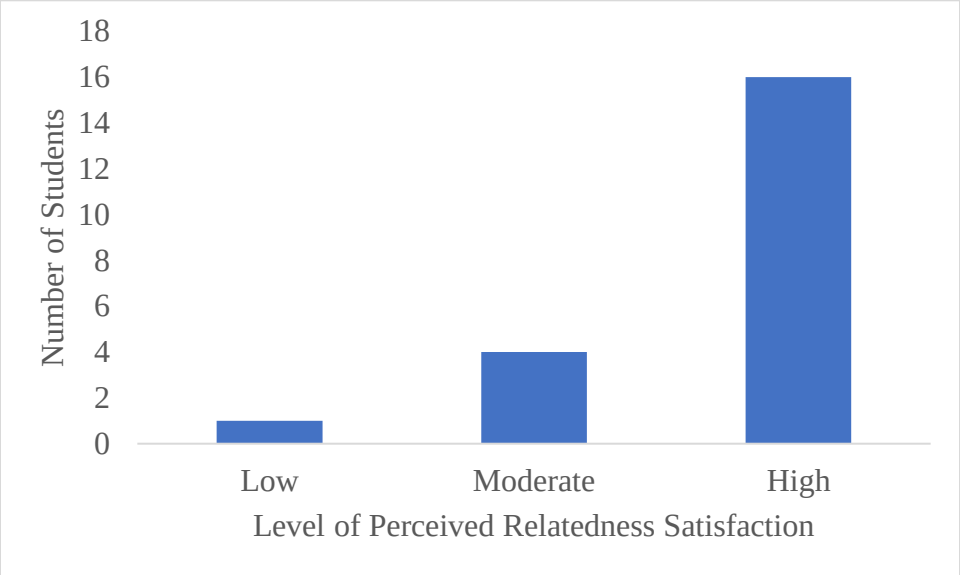
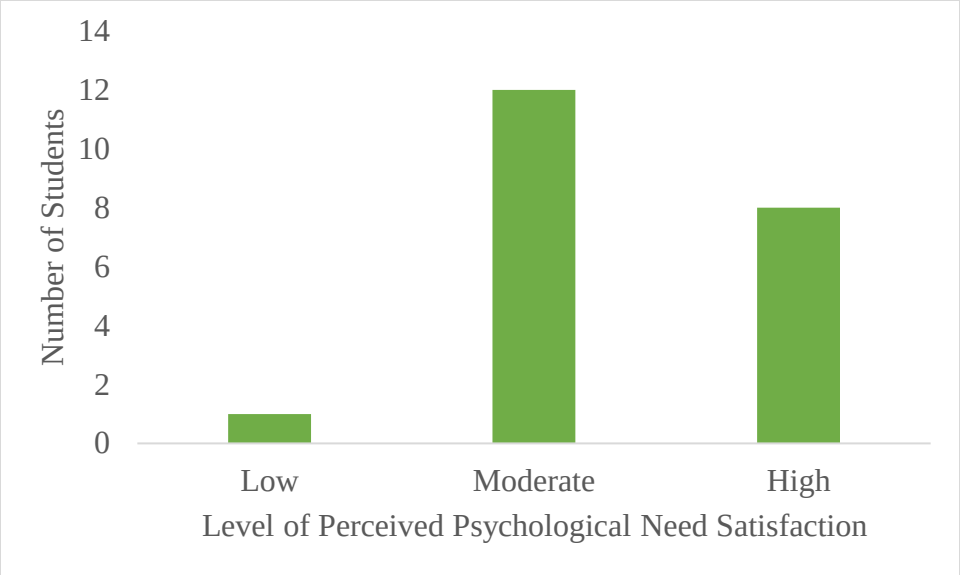


Figure 4

Overall Basic Psychological Need Satisfaction Findings for Case 2



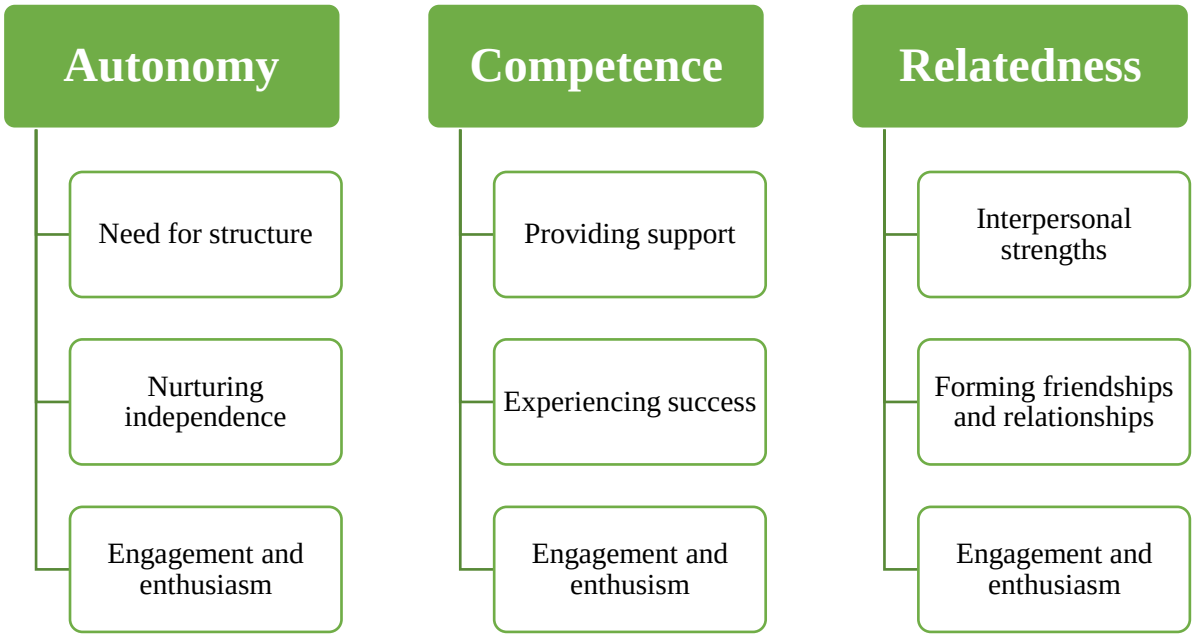
Figures 1 and 2 illustrate that more than half the participants (*n* = 13; 61.9%) reported moderate levels of perceived autonomy and competence satisfaction. For both subscales, six participants reported high levels of perceived need satisfaction while two participants reported low levels of perceived need satisfaction. As demonstrated in Figure 3, the majority of participants (*n* = 16; 76.19%) indicated that they experienced high levels of perceived relatedness satisfaction. One participant reported a low level of perceived relatedness satisfaction. Figure 4 illustrates that more than half the participants (*n* = 12; 57.14%) reported a moderate level in terms of their overall need satisfaction. Less than half the participants (*n* = 8; 38.09%) reported a high level for their overall need satisfaction while one participant obtained a low overall score.

Student's Experiences of the Basic Psychological Needs

The findings from Case 2 will be presented in relation to each of the three psychological needs. For each need, an overview of how the pattern-matching technique was applied to data obtained from the PCP tasks activities and the semi-structured interviews is provided. A summary of the themes pertaining to each need is outlined. A overview of the themes for Case 2 and their related BPNT constructs is presented in Figure 5.

Figure 5

Summary of Themes and Associated BPNT Constructs for Case 2



Analysis of Case 1 Findings for Autonomy

The following sections provide an overview of the analysis of findings in relation to the first proposition which related to autonomy.

Section 1: Criteria for Interpreting Proposition 1

Proposition	**PCP Activity 1 – *Building the Ideal Classroom* and *Salmon Line Technique***	**PCP Activity 2 – *Building the Ideal School Playground* and *Salmon Line Technique***	**Semi-Structured Interviews with Teacher and SNA**
Proposition 1 For a student with DS, autonomy satisfaction will be associated with feelings of happiness, enjoyment, and interest, whereas autonomy frustration will	**Pattern-Matching:** Elements of models/drawings or comments that link students' opportunities to make choices/ decisions or self-direct learning/ behaviour with feelings of happiness, enjoyment, and	**Pattern-Matching:** Elements of models/drawings or comments that link students' opportunities to make choices/ decisions or self-direct learning/ behaviour with feelings of happiness, enjoyment, and interest in school or the opposite.	**Pattern-Matching:** Interview responses that link students' opportunities to make choices/ decisions or self-direct learning/ behaviour with feelings of happiness, enjoyment, and interest in school or the opposite.

be associated with feelings of unhappiness and disengagement.	interest in school or the opposite. **Reflexive Thematic Analysis:** Themes and patterns within the data set that refer to autonomy in school.	**Reflexive Thematic Analysis:** Themes and patterns within the data set that refer to autonomy in school.	**Reflexive Thematic Analysis:** Themes and patterns within the data set that refer to autonomy in school.

Section 2: Pattern-Matching for Proposition 1

Table 1 below outlines the pattern-matching codes applied to data in relation to Proposition 1.

Table 1

Pattern-Matching Codes

Proposition	Codes Applied to Data	Colour Code
For a student with DS, autonomy satisfaction will be associated with feelings of happiness, enjoyment, and interest, whereas autonomy frustration will be associated with feelings of unhappiness and disengagement.	choices/decisions	bright green
	self-directing learning and/or behaviour	red
	happiness/enjoyment and/or interest	yellow
	lack/limited opportunity	dark grey
	lack/limited happiness, enjoyment or interest	dark red

Section 2.1: Pattern-Matching Applied to PCP Activities for Proposition 1

Participant	Salmon Line Technique	Quote
Emma, Student		*What's happening in this picture?* Everyone is happy. *Yes, the children are happy and are having fun in school. What about this picture?* The boy is sad. *Yes, he's feeling sad and bored in school. Which one is more like you?* Happy [points to 'having fun']. Like them. *In this classroom, the teacher lets the little girl choose what she does in school and in this classroom, the teacher tells the girl what to do. Which is more like you?* Sometimes

	this one and something this one. That's just like my teacher. *If you had a magic wish, which would you prefer?* I like to choose.
	*In this classroom, the girl gets to pick what she'd like to do and, in this classroom, the girl doesn't get to pick what to do. Which is more like you?* This one [points to 'gets to pick']. That's so nice. *If you had a magic wish, which would you like?* I'd like this one [points to 'gets to pick'].

Section 2.2: Pattern-Matching Applied to Semi-Structured Interviews for Proposition 1

Participant	Quote
Niamh, Class Teacher	*What would feel are the three most important things to consider when working with a child with Down syndrome?* Having a little checklist and things like that. I find they really keep her on track and focused … *Could you tell me a little bit more about that?* … So what I did for her is I made this little visual timetable and it has words and pictures and it was a checklist and she would tick the list off. So, in the afternoons, she knows she has to do her typing because that's one of her targets. So, she knows, "Oh, I have that." So she'd go, "Ms, can I go and get my iPad now?" So, she's doing little things, grabbing her iPad, grabbing her keyboard. She's telling me what she wants or needs and I'm going with that.
Niamh, Class Teacher	In her timetable, I have a slot for free choice time. So, every day, once she gets all her work completed, there's a little slot where she can have her free choice time and now, she often likes to play one of her English games on the iPad or she might want to do a bit of art or she loves wordsearches. I have a bundle of activities that she can choose from and that's on her timetable every day … Yes, I know. And it's all just so simple but so effective. I've heard people talking about how good a timetable is and these visuals and now I know.
Niamh, Class Teacher	Yeah, I mean we're trying to give her a bit more independence, like when she's out on yard, like, "Who do you want to play with? What games do you want to play?" It's all about giving her the choice. And she confidently says what she wants to do, who she wants to play with.

Section 3: Thematic Analysis for Proposition 1

Theme	Illustrative Quotes **Student, Class Teacher, SNA**
Nurturing independence	**Emma, Student:** *(Discussing Salmon Line scales)* • *In this classroom, the girl gets to pick what she'd like to do and, in this classroom, the girl doesn't get to pick what to do. Which is more like you?* This one [point to picture for 'gets to pick']. That's so nice. *If you had a magic wish, which would you like?* I'd like this one [points to picture for 'gets to pick']. • *What about these pictures? This girl does her work by herself and this girl needs some help with her work? Are you more like this girl or this girl?* This one [points to 'works alone']. I can do it myself. *And if you had a magic wish, which would you be like?* All by myself. **Niamh, Class Teacher:** • She was crying out for a lot of independence this year. • She would say, "Oh I can do this myself. I don't need your help here." … I made this little visual timetable and it has words and pictures and it is a checklist and she ticks the list off. So in the afternoons, she knows she has to do her typing because that's one of her targets. So she knows, *Oh, I have that.* So she'd go, "Ms, can I go and get my iPad now?" So she's doing little things, grabbing her iPad, grabbing her keyboard. She is telling me what she wants or needs and I'm going with that. • When she's out on yard, like, "Who do you want to play with? What games do you want to play?" It's all about giving her the choice. • In her timetable, I have a slot for free choice time … Once she gets all her work completed, there's a little slot where she can have her free choice time. **Anne, SNA:** • We set our targets. So, one of our targets was to come in independently from the yard and join the line with the others in her class. • It's at the stage now that I have to close my eyes while she's doing it on her own, you know? • Listening rather than, you know, directing. You're listening to what the child wants to say or do. Bringing Emma along with you and listening to her little thoughts rather than just telling her what to do.
Need for structure	**Emma, Student:** *(Discussion a Salmon Line scale)* • *In this classroom, the teacher lets the girl choose what she does in school and in this classroom, the teacher tells the girl what to do. Which is more like you?* Sometimes this one [points to 'student gets to choose'] and sometimes this one [points to 'teacher tells

	student what to do]. That's just like my teacher [points to picture of teacher]. **Niamh, Class Teacher:** • I feel like having a structure, a really good routine and these visual timetables, it is such a help and she has been able to have a little bit more independence. • I felt like she didn't know what she was doing until she was told. Whereas, this gave her a bit more independence and she knew what was ahead of her each day. • There are other areas though that we definitely still need to keep an eye on like she's a flight risk … Now, she won't go out onto the road or anything like that but she might flee to the toilet … you can't fully leave her independently … We've just had to have chats with her about the rules and what's okay and what's not okay. **Anne, SNA:** • She's a flight risk as well so therefore you still have to be aware that she's doing this on her own but you'd still have to be there to check but I always supervise in the yard, you know?
Engagement and enthusiasm	**Niamh, Class Teacher** • Having a little checklist and things like that. I find they really keep her on track and focused. • She has such a great work ethic … Like she is ploughing through her work now. Like she's really focused now, *This is on my list, I'm going to get it done now.* So, her work ethic is really strong. All back to her checklist. • And she confidently says what she wants to do, who she wants to play with. **Anne, SNA:** • She just loves being able to do things by herself. So, it's great for her to be lining up on her own like the others.

Analysis of Findings for Competence

The following sections provide an overview of the analysis of findings in relation to the second proposition which pertained to competence.

Section 1: Criteria for Interpreting Proposition 2

Proposition	**PCP Activity 1 – *Building the Ideal Classroom* and *Salmon Line Technique***	**PCP Activity 2 – *Building the Ideal School Playground* and *Salmon Line Technique***	**Semi-Structured Interviews with Teacher and SNA**

Proposition 2 For a student with DS, competence satisfaction will be associated with feelings of happiness, enjoyment, and interest, whereas competence frustration will be associated with feelings of unhappiness and disengagement.	**Pattern-Matching:** Elements of models/drawings or comments that link students' opportunities to experience success/ achievement and mastery/ progress with feelings of happiness, enjoyment, and interest in school and vice versa. **Reflexive Thematic Analysis:** Themes and patterns within the data set that refer to competence in school.	**Pattern-Matching:** Elements of models/drawings or comments that link students' opportunities to experience success/ achievement and mastery/ progress with feelings of happiness, enjoyment, and interest in school and vice versa. **Reflexive Thematic Analysis:** Themes and patterns within the data set that refer to competence in school.	**Pattern-Matching:** Interview responses that link students' opportunities to experience success/ achievement and mastery/ progress with feelings of happiness, enjoyment, and interest in school and vice versa. **Reflexive Thematic Analysis:** Themes and patterns within the data set that refer to competence in school.

Section 2: Pattern-Matching

Table 1 below outlines the pattern-matching codes applied to data in relation to Proposition 2.

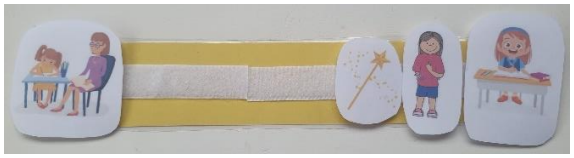
Table 1

Pattern-Matching Codes

Proposition	Codes Applied to Data	Colour Code
For a student with DS, competence satisfaction will be associated with feelings of happiness, enjoyment, and interest, whereas competence frustration will be associated with feelings of unhappiness and disengagement.	success/achievement	turquoise
	mastery/progress	pink
	happiness/enjoyment and/or interest	yellow
	lack/limited opportunity	dark grey
	lack/limited happiness, enjoyment or interest	dark red

Section 2.1: Pattern-Matching Applied to PCP Activities

Participant	LEGO Model/Salmon Line Technique	Quote

Emma, Student		*Look at these pictures. This girl finds her work easy and this boy finds his work hard. Are you more like this person or this person?* Really easy. *If you had a magic wish, would you prefer to be more like the boy who finds the work hard or the girl who finds the work easy?* Really easy.
		*What about these pictures? This girl does her work by herself and this girl needs some help with her work? Are you more like this girl or this girl?* This one [points to 'does work alone']. I can do it myself. *And if you had a magic wish, which would you be like?* All by myself.

Section 2.2: Pattern-Matching Applied to Semi-Structured Interviews

Participant	Quote
Niamh, Class Teacher	Yes, like that. Like her English and Maths are at her own level … … You know what, she has such a great work ethic … I just feel like she has progressed so much. Like she is ploughing through her work now. Like she's really focused now, *This is on my list, I'm going to get it done now.* So, her work ethic is really strong. All back to her checklist. A lot of things are stemming from that.
Anne, SNA	*Are there any particular examples that come to mind when you think about opportunities to experience success?* … We'll say, with any of the targets we set, I would always say to her, "Well done." The first thing she does is jump up and down but the way I would acknowledge and praise that is by saying, "Well done, see how independent you're getting now. You are twelve. You are getting so big now and look how independent you are getting." You know? Feed the praise and the encouragement.
Anne, SNA	… And her work is suited to her level. It has to be. She feels so good when she gets her work done. When I got back to the classroom earlier, she had her work finished and I had to close my eyes see what she had completed. You know? Things like that. And that's another feel-good factor for her too. So it's really about praising and acknowledging and giving hope.
Anne, SNA	*Can you tell me more about how you try to develop her independence?* Well, you see, this is that we would have started. We set our targets. So one of our targets was to come in independently from the yard and join

	the line with the others in her class. But, you see, she's a flight risk as well so therefore you still have to be aware that she's doing this on her own but you'd still have to be there to check but I always supervise in the yard, you know? So, we'll say, that's one target. And she just loves being able to do things by herself. So it's great for her to be lining up on her own like the others.

Section 3: Thematic Analysis for Proposition 2

Theme	**Illustrative Quotes** **Student, Class Teacher, SNA**
Providing support	**Niamh, Class Teacher** • *How is Emma supported to reach her full potential?* SNA support and lots of encouragement for movement breaks. SET hours obviously. It is so important for Emma to get that one-to-one support. • *Is there anything else that you feel is important to mention or anything else that you would like to add?* … Keeping in mind what works for the child, what kind of a learner they are. Like, with Emma, she's a visual learner so I feel it's very helpful when you work with their strengths and how best they learner – what techniques to use. **Anne, SNA:** • *How is Emma supported to reach her full potential in school?* … We have classroom support and resource support outside class, you know, where she would go to the SET teachers for resource. Every time and facility that can be given to her is given, you know? • She would have her own certain worksheets to do but as much as possible, we try and keep her in line, integrated with the class, you know? Like with art, we would do that together as a class. Music, PE, as much as possible, she will do all those subjects with the class. • And the work she does is suited to her level. It has to be.
Experiencing success	**Emma, Student:** *(Discussing Salmon Line scales)* • *Look at these pictures. This girl finds her work easy and this boy finds his work hard. Are you more like this person or this person?* Really easy. *If you had a magic wish, would you prefer to be more like the boy who finds the work hard or the girl who finds the work easy?* Really easy. • *This pupil gets their work right. And this pupil doesn't get their work right. Which are you more like?* I'm able to do my work. *And if you had a magic wish, which would you like?* This one here [points to picture for 'gets work right']. • *Tell me three things you like about school.* Tests. I love tests. *Wow, that's great, Emma. Why do you like tests?* Like getting them all right. **Niamh, Class Teacher:**

	• We were learning about Mexico, that was really difficult for her to grasp and research so she researched a few basic things at her level and then focused on the flag of Mexico. She got to present her project to the class like everyone else and she really enjoyed that. She was so proud. Lots of things are differentiated for her. • I just feel like she has progressed so much. Like she is ploughing through her work now. **Anne, SNA:** • She just loves being able to do things by herself. So it's great for her to be lining up on her own like the others. • I think all children love to experience success, but especially children with Down syndrome. You could see an expression on Emma's face that will tell you so much. • She would be aware, we'll say, with any of the targets we set, I would always say to her, "Well done." The first thing she does is jump up and down but the way I would acknowledge and praise that is by saying, "Well done, see how independent you're getting now." • She feels so good when she gets her work done. When I got back to the classroom earlier, she had her work finished and I had to close my eyes see what she had completed. Things like that. And that's another feel-good factor for her too.
Engagement and enthusiasm	**Emma, Student:** *(Discussing a Salmon Line scale)* • *Look at these pictures. In this picture, the girl likes doing her work in school. In this picture, the girl doesn't like doing her work. Which one is more like you?* Let me think! I pick this one [points to 'likes doing work']. *What kind of work do you like doing?* I like doing my typing, spellings, stuff like that. **Niamh, Class Teacher:** • She's on two kinds of rewards systems. One like a sticker chart that she has and it helps with her work ethic as well. Like depending on her standard of work and behaviour, she'll get her stickers on her chart and then if she gets so many stickers, she gets a homework pass. But also, we've a whole class initiative … So those little initiative keeps her driving on, keeps her focused. **Anne, SNA:** • She enjoys all areas in school. • She loves doing things with the class.

Analysis of Findings for Relatedness

The following sections provide an overview of the analysis of findings in relation to the third proposition which pertained to relatedness.

Section 1: Criteria for Interpreting Proposition 2

Proposition	PCP Activity 1 – *Building the Ideal Classroom* and *Salmon Line Technique*	PCP Activity 2 – *Building the Ideal School Playground* and *Salmon Line Technique*	Semi-Structured Interviews with Teacher and SNA
Proposition 3 For a student with DS, relatedness satisfaction will be associated with feelings of happiness, enjoyment, and interest, whereas relatedness frustration will be associated with feelings of unhappiness and disengagement.	**Pattern-Matching:** Elements of models/drawings or comments that link students' opportunities to form friendships/ relationships with others and experience a sense of belonging/connection with feelings of happiness, enjoyment, and interest in school and vice versa. **Reflexive Thematic Analysis:** Themes and patterns within the data set that refer to relatedness in school.	**Pattern-Matching:** Elements of models/drawings or comments that link students' opportunities to form friendships/ relationships with others and experience a sense of belonging/connection with feelings of happiness, enjoyment, and interest in school and vice versa. **Reflexive Thematic Analysis:** Themes and patterns within the data set that refer to relatedness in school.	**Pattern-Matching:** Interview responses that link students' opportunities to form friendships/ relationships with others and experience a sense of belonging/connection with feelings of happiness, enjoyment, and interest in school and vice versa. **Reflexive Thematic Analysis:** Themes and patterns within the data set that refer to relatedness in school.

Section 2: Pattern-Matching

Table 1 below outlines the pattern-matching codes applied to data in relation to Proposition 3.

Table 1

Pattern-Matching Codes

Proposition	Codes Applied to Data	Colour Code
For a student with DS, relatedness satisfaction will be associated with feelings of happiness, enjoyment, and interest, whereas relatedness frustration will be associated with feelings of unhappiness and disengagement.	friendships/relationships	teal
	belonging/connection	dark yellow
	happiness/enjoyment and/or interest	yellow
	lack/limited opportunity	dark grey
	lack/limited happiness, enjoyment or interest	dark red

Section 2.1: Pattern-Matching Applied to PCP Activities

Participant	Salmon Line Technique	Quote
Emma, Student		*What are these people doing in this picture?* Playing in a group. *Yes, the children are playing together. What's happening in this picture?* Playing on her own. *Yes, the little girl is playing on her own. Which picture is more like you?* This one right here [points to 'children playing together']. *If you had a magic wand, which would you prefer to be?* Here playing with the girls.
		*… Look at these pictures. What happening in this picture?* Playing in a group. *Yes. Look, in this picture, somebody was left out. Which is more like your playground?* Playing together. Stick it near that picture. *What do you like doing in your playground?* Playing with Kate and Zoe. It's great fun.

Section 2.2: Pattern-Matching Applied to Semi-Structured Interviews

Participant	Quote
Niamh, Class Teacher	*And from what you've learned from your experience so far, what would feel are the three most important things to consider when working with a child with Down syndrome?* Well, building a relationship is always number one for me. And, that's for every kid in the classroom. That's number one …
Niamh, Class Teacher	*I'm just wondering what opportunities Emma might have to develop friendships in school?* Oh yeah, she's a really good network of friends. That's something again I find like giving her choices about what she can do with her friends and things but she has a really good network of friends and she loves being with them … the friends that are around her are really good.
Niamh, Class Teacher	She's formed lots of relationships with adults in the school. Even when you're going through the corridor in the school, you can see that she's got a relationship with all of her past teachers or even the caretaker! … You see her going up to her past SNA's hugging them. Like, her past teacher from last year, any time she's going past her, "Hello, Ms!" And giving her a hug.

Anne, SNA	… she is happy once she gets into the classroom, sees the friends. She has one or two very good friends and I can safely say, even on yard, she has progressed from playing alone to joining in with everyone in the class.
Anne, SNA	… Well, I have to say the class are amazing. They've been with her since Junior Infants. They are amazing with her. And she is so bubbly and affectionate towards her friends and the others in the class.

Section 3: Thematic Analysis and Relatedness

Theme	**Illustrative Quotes (from at least two participants)** **Student, Class Teacher, SNA**
Interpersonal strengths	**Niamh, Class Teacher** • She's just a very social person. Like she's a jokester, she's very kind, very loving. • But, that's because she's so warm and so friendly. Like she brings such a sparkle to the room. She really does. • The girls just love Emma. She is an asset to our class. She really is. Like she just brings so much brightness to it and fun. **Anne, SNA:** • Her people skills are strong. They are very strong. • *And does she enjoy participating in activities with the class?* She does. She loves doing things with the class. And she's not a bit shy. She's very bubbly and sharp. • Well, anyone that meets Emma – She is so bubbly and affectionate towards her friends and the others in the class. • She would chat to anyone.
Forming friendships and relationships	**Emma, Student:** • *What class are you in?* Fifth Class. Kate is my friend. And Zoe. • *If you were in this classroom [pointing to Dream Classroom Model], where would you sit?* Here, that's me and Grace [point to two chairs at table]. *I wonder if you walked into the classroom, how would you feel?* I know. This one [points to happy face]. • *Look at these pictures. What happening in this picture?* Playing in a group. *Yes. Look, in this picture, somebody was left out. Which is more like your playground?* Playing together. Stick it near that picture. **Niamh, Class Teacher:** • Building a relationship is always number one for me. And, that's for every kid in the classroom. That's number one. • *Could you tell me about any opportunities that Emma might have had to developed relationships in school?* Yeah, she's formed lots of relationships with adults in the school. Even when you're going through the corridor in the school, you can see that she's got a relationship with all of her past teachers or even the caretaker! But yeah, I suppose that's down to the

	teachers building that relationship with her but she doesn't disconnect every year from the teacher, you know? • The friends that are around her are really good. The girls in the class, even though they mightn't be in her close circle, they're really friendly with her and just so warm. **Anne, SNA:** • She has one or two very good friends. • With Emma, I imagine she would be friendly with all of the class but there would still be one or two that she would be extremely close with. • I have to say that class are amazing. They've been with her since Junior Infants. They are amazing with her.
Engagement and enthusiasm	**Emma, Student:** • *What do you like doing in your playground?* Playing with Kate and Zoe. It's great fun. *What games do you like playing with your friends?* We do hip hop. **Niamh: Class Teacher** • She has a really good network of friends and she loves being with them. **Anne, SNA:** • I would imagine with Emma, she is happy once she gets into the classroom, sees the friends.