Title

What are Primary School Teachers' Attitudes Toward Introversion in Students?

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Abstract

The existing literature suggests a potential implicit social desirability associated with the extrovert personality and as a result, extroverts are accommodated across various work and educational settings, leading to a better person-environment fit and therefore better wellbeing. This study adopted a social constructionist perspective to explore whether teacher attitude to students described in terms of introversion/extroversion, varied as a function of positive and negative framing, as well as teachers' own levels of extraversion.

This was a quantitative mixed design. Participants were 334 primary school teachers. Teachers were presented with vignettes via a web-based survey, depicting hypothetical children displaying typical, extrovert, or introvert behaviours in the classroom and responded to follow-up questions assessing their attitudes. Teachers also completed a self-report measure of extraversion.

The results indicated a relationship between teacher attitude and framing and teacher attitude and student personality type. The findings appear to place the cause of lower attitudinal rating within the teachers' perception of the student themselves rather than the teachers' perception of their own ability to teach introvert students. Attitudinal ratings did not vary with teachers' own level of extraversion. Results are discussed in terms of their educational implications for the social and academic functioning of introvert students. This research provides an original contribution to the field of educational psychology within the Irish context, and offers insights that would benefit the fields of education and psychology, more generally.

Declaration

The work has not previously been accepted for any degree and is not being concurrently submitted for any degree.
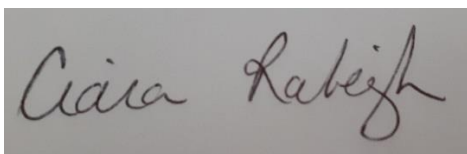
This research is being submitted in fulfilment of the requirements of the Doctorate in Educational and Child Psychology (DECPsy) at Mary Immaculate College.

I hereby declare that I am the sole author of this thesis. Where the use has been made of other people, it has been fully acknowledged and referenced.

I hereby give my permission for my thesis, if accepted, to be available for reading and interlibrary loans, and for the title and summary to be made available to outside organisations.

Name: Ciara Raleigh

Signature:

Date: 25th April 2023

Acknowledgements

Completing a doctoral degree is challenging. This was particularly challenging as I started in September 2020 at the height of the Covid-19 pandemic. To begin, I did a virtual interview for a place on the course days after the first lockdown in March 2020. My interview was peppered with a plethora of IT issues; initially we had no sound and we finished with no video. I moved from room to room to seek a better connection, my children building forts in the background because they too were home due to school closures. We persevered and thankfully Dr. Therese Brophy, Dr. Siobhan O'Sullivan and Peadar Crowley still offered me a place! Thank you all for seeing the positives in this slightly comical situation. I am eternally grateful.

They say PhDs can be lonely endeavours. However, this was very much a team effort. It would have been impossible to complete this Professional Doctorate on my own. The support and encouragement of numerous others were invaluable to me, and I would like to take this opportunity to thank each of them.

Firstly, I wish to thank my supervisors Dr. Therese Brophy and Dr. Paul Mulcahy. Your expertise has been essential in shaping this project and in supporting me to grow and develop as a researcher. Thank you for always being available when I needed guidance and for helping me to refine my skills as a writer and critical thinker.

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List of Abbreviations

a-Glx	glutamate plus glutamine
BPS	British Psychological Society
CAST	Centre for Applied Special Technology
CPD	Continuous Professional Development
DES	Department of Education and Skills
DEIS	Delivering Equality of Opportunity in Schools
DOH	Department of Health
EP	Educational Psychologist
EPSEN Act	Education for Persons' with Special Educational Needs
FFM	Five Factor Model
HSE	Health Service Executive
IPIP	International Personality Item Pool
LAOS	Looking at Our School
MBTI	Myers-Briggs Type Indicator
MIREC	Mary Immaculate Research Ethics Committee
MRS	Magnetic Resonance Spectroscopy
NCCA	National Council for Curriculum and Assessment
PSI	Psychological Society of Ireland
SC	Student Centred
TC	Teacher Centred
UDL	Universal Design for Learning
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WHO	World Health Organisation
WOE	Weight Of Evidence

People empty me. I have to get away to refill.
Bukowski, 2002

Chapter 1 Introduction

There appears to be a paucity of studies that examine the person-environment fit for the introvert student at primary level. Furthermore, no Irish studies were found as part of this review. Most studies examine students' perceptions of introvert/extrovert personality, the introvert student's experience of their learning environment and educational success. This study critically examines the attitudes of teachers. Therefore, this study offers an original contribution to the field of education and educational psychology within the Irish context. Research in this area could inform inclusive teaching practices that would benefit half the student population and all teachers, giving a voice to the quiet student.

The purpose of this research was to explore primary school teacher' attitudes toward introvert students because the transactional process between teacher, student and the learning environment is critical for the wellbeing of the introvert student.

1.1   Rationale

Extroversion/Introversion describes the way in which people interact with the social world around them (Allport, 1961; Jung, 1961). Consideration of this dimension of personality is important as research findings indicate that there is a relationship between the person and their environment and that individuals expend more emotional energy when an environment is not in line with their personality (Barrick et al., 2001; Hogan & Holland, 2003; Touze, 2005). Lawn et al. (2019) contend that aspects of the extrovert personality type are more socially desirable in western cultures and thus are accommodated both in work and educational settings, leading to a better person-environment fit and therefore better wellbeing. Adopting more interactive learning strategies is now the norm in the classroom (Dagar & Yadav, 2016; Golder, 2018; Senthamarai, 2018; Tan, 2016; Trajkovik et al., 2018). With this type of teaching approach, students learn in a different way – instead of being passive listeners, they are actively involved in the learning process by participating in activities, games, discussions. Using interactive techniques and strategies, engages students in learning, it requires learners to think about what they are doing and supports them to retain more information (Senthamarai, 2018). Examples of interactive learning strategies are Think-Pair-Share, debating, role play, case-studies and problem-based learning. Students typically sit in pairs or small groups. Research indicates that these strategies are more suited to the extrovert student and may disproportionately challenge introvert students, leading to inequities in the classroom

(Davidson et al., 2015). As a result of a poor person-environment fit, there may be low expectations for the introvert students because they are misunderstood and their strengths go unrecognised (Medaille & Usinger, 2020; Green et al., 2019; Rosheim 2018). The teacher's ability to understand the needs of the pupil and be flexible in their teaching approaches to meet these needs paves the way for a good person-environment fit (Flood and Bank, 2021; Roberts & Robbins, 2004; Rose, 2000).

1.2   Personal Interest

Today's educational system is highly complex. There is no single learning approach that works for everyone. While I am not a teacher, as an educational and child psychologist one element of my role is to examine how people learn in a variety of settings and to identify approaches and strategies to make learning more effective for all. This involves consideration of the social, emotional and cognitive processes involved in learning and applying these findings to improve the learning process which teachers can then chose to implement in practice. My initial exploration of this topic stems from my interest in identifying and implementing evidence-informed psychological interventions to promote the mental and emotional wellbeing of children and young people which is at the heart of my work as a trainee educational and child psychologist (BPS, 2019). Prior to this doctorate, I conducted a small-scale study into the prevalence of social anxiety among Irish adolescents in post-primary school as part of my MA. During this research study, I explored various overlapping concepts such as shy, quiet and introvert students. The literature highlighted a potential bias, within Western society in particular, that appears to favour extrovert characteristics (Fulmer et al., 2010; Lawn et al., 2019; Myers, 1992). A review of the literature indicates that this appears to have an impact within our classrooms which has costs for the introvert students' academic outcomes and emotional wellbeing (Medaille & Usinger, 2020; Green et al., 2019; Rosheim 2018) both of which are central to my role as an educational and child psychologist. It is the role of an educational psychologist to actively promote inclusion and equity and to take appropriate professional action to redress power imbalances. Furthermore, it is incumbent on me as an EP to redress influences which risk diminishing opportunities for these individuals, to demonstrate knowledge and understanding of stigmatising beliefs and to understand the impact of inequality and the implications of this for access to resources (BPS, 2019). As a result, I conducted more in-depth research into the area of student personality within the classroom, with a particular focus of addressing the lack of research within the Irish context.

1.3   Policy Context

The Irish Constitution recognises the family as the primary educator of the child. Parents must ensure that their children from the age of 6 to the age of 16 attend a recognised school or receive a certain minimum education. Parents are free to provide this education in the home or in school. The Irish education system is made up of primary school, post-primary school (also known as secondary school) and third-level education (university). Children attend primary school for 8 years. Under the Education Welfare Act 2000, governing school attendance, the minimum school leaving age is 16 or until the student has completed three years at post-primary level.

The department of education in Ireland stated that promoting the wellbeing of children and young people is a shared community responsibility (DES, 2018). The mental health and wellbeing of young people is essential to success in school and in life (Department of Education and Skills and HSE, 2013; Weare, 2000). Mental health is defined as "*a state of wellbeing in which the individual realises his or her own abilities…*'' (DES, DOH & HSE, 2013, p.4). According to the National Council for Curriculum and Assessment (NCCA) (2017), a statutory body of the Department of Education, a person experiences wellbeing when they have a sense of belonging and purpose and realise their potential. The Growing up in Ireland study points out that children have different experiences of school and respond in different ways even when they are in the same class (Smyth, 2015). Smyth (2015) states that primary school experiences have a long-term impact on the self-image.

A key facet to promoting student wellbeing is developing positive relationships with teachers and other students. Government policy in Ireland supports the view that a whole school approach to wellbeing is central to best outcomes for students in terms of having a sense of belonging and feeling supported, the voice of the child, teachers and parents is heard, leading to improvements in school culture and ethos, students learn more effectively and have better academic outcomes (DES, 2019; Weare, 2000). The Better Outcomes Brighter Futures National Policy Framework (2014-2020) is one where all government agencies work together to enhance the wellbeing of young people.

Schools play a key role in promoting positive mental health in young people because they can provide a safe environment in which a child has a sense of belonging and learns skills to build resiliency. *The Wellbeing Policy Statement and Framework for Practice* places a high priority on wellbeing promotion and a goal that all schools will take part in a School Self-

Evaluation Wellbeing Promotion Process by 2023 (DES, 2019). Recognising where a student exists on the extroversion introversion continuum, understanding their needs and being flexible in how those needs are met, are important aspects of understanding what constitutes that student's wellbeing. Educational Psychologists (EPs) work with children and young people with a range of social, emotional and mental health needs. The role of an educational psychologist is to appreciate diversity in schools, to promote inclusion and equity, to redress power imbalances and discrimination and to be aware of stigmatising attitudes that may diminish opportunities for certain individuals. It is important for EPs to have an understanding of the needs of introvert students and the obstacles to their learning and wellbeing within the school environment.

1.4   Theoretical perspective

The person-environment fit theory describes the match between attributes of the person and attributes of the environment (Roberts & Robbins, 2004). The basic principles of the person–environment fit theory are that the combination of the person and the environment together are a better predictor of human behaviour than either of them separately and the outcomes are best when personal and environmental attributes are compatible resulting in better wellbeing (Van-Vianen, 2018). Akiba and Alkins (2010) and Pawlowska et al. (2014) purport that the highest level of learning occurs when there is a good person-environment fit and the teacher plays a key role in constructing this.

1.5   Ontological and Epistemological Considerations

A paradigm is the way in which someone looks at the world (Mertens, 2015). The research paradigm is made up of three elements; the ontology (Does a single reality exist within this research?), Epistemology (How is it possible to know whether this reality exists or not?) and Research Methodology (What methods can be used to explore this reality?). According to Mertens (2015) there are four paradigms; Postpositivist, Constructivist, Transformative and Pragmatic. This study falls under the Pragmatic paradigm. In terms of ontology (what is the nature of reality?), pragmatists assert that there is a single reality **<u>and</u>** that all individuals have their own unique interpretation of that reality which allows for a socially constructed view of teacher attitudes to personality.

Under this ontology reality is constantly changing. This is due to the fact that pragmatist epistemology holds that knowledge and perceptions of the world are influenced by an individual's social experiences. Therefore, each person's knowledge is unique.

Epistemologically, this study is concerned with how teachers understand the concept of introversion based on their own social experiences.

There is no specific methodology associated with the pragmatic paradigm. Weaver (2018) purports that this paradigm focuses on what works as opposed to what's true or real. The pragmatic paradigm is useful for guiding research design because the researcher can match methods (qualitative, quantitative or mixed methods) to the specific questions and purposes of research (Mertens, 2015). The study assumes that teacher attitudes to personality are socially constructed. As such, the design looked at how positive and negative framing of student personality influences teacher attitude. This phenomenon was investigated by means of a quantitative design which means that the overarching view of truth, knowledge, and how we come to know, comes from a pragmatic perspective.

This study assumes that attitudes toward personality are socially-constructed. Attitudes are 'constructed' through social interactions with others, beliefs held by society and influenced by our environments. Social constructions that we have about the world each have their implications for different types of action (Hewitt, 2009). Lawn et al. (2019) contend that aspects of the extrovert personality type are more socially desirable in western cultures and thus are more likely to be accommodated both in work and educational settings, leading to a better person-environment fit and therefore better wellbeing. Schools now adopt more interactive learning strategies in the classroom which are more suited to the extrovert student and may disproportionately challenge introvert students leading to inequities in the classroom resulting in a poor person-environment fit for introvert students (Davidson, et al., 2015; Senthamarai, 2018).

1.6 Methodological Approaches

Based on the findings from the systematic review, the empirical study in the thesis assumes that teacher attitude toward student personality is socially constructed and as such, the design looked at how positive and negative framing of student personality influences teacher attitude. The study is a quantitative mixed (between and within subjects) design. Vignettes and surveys were deemed the most appropriate data collection tools for this study (Barnatt et al., 2007; Egleston, 2011; Erfanian et al., 2020; Finch, 1987; Stecher et al., 2006; Lavrakas, 2008; Wu, 2022). Vignettes have been shown to address complex issues effectively and economically with a large number of respondents, that may not be accessible via other sources (Barnatt et al., 2007; Erfanian et al, 2020; Finch, 1987). Additionally, vignettes can contextualise the scenario thereby making the situation familiar to the respondent with the

goal of prompting a reflective response (Morrison et al., 2004; Schoenberg and Ravdal, 2000). A web-based survey was deemed the most appropriate tool for gathering the data for several reasons. This is an under-researched area and the use of a web-based survey ensured access to a large sample and enabled the researcher to reach all primary schools in Ireland via email. It is more time-efficient for the participants and due to its' ease of use and accessibility across multiple platforms there is likely to be a greater response rate. Importantly, through the use of web surveys, the participants can remain anonymous, which is an added layer of confidentiality.

The vignette presented a hypothetical scenario involving students in the classroom. All participants were presented with 3 scenarios; a scenario of a typical student that acted as a baseline. Of the two remaining scenarios, one was positively-framed (presenting the student in a positive light) and one was negatively-framed, one described an introvert student and one an extrovert student. The vignettes were followed by 6 survey questions. Teachers also completed a personality questionnaire to determine if their own personality type influenced their attitude toward introvert students. The survey was conducted using Qualtrics, a web-based survey tool. Data analysis was conducted using SPSS.

1.7 Overview of the Structure of the Thesis

The final thesis is comprised of 4 chapters; this Introductory chapter highlights the rationale for the research and situates it within the field of educational psychology by linking it to the promotion of wellbeing in schools. Furthermore, it provides a brief account of ontological and epistemological considerations, theoretical perspectives that informed the research and methodological approaches undertaken. A systematic review and critique of the literature pertaining to this topic is conducted in the Review Paper (Chapter 2). Chapter 2 also explores controversies and conceptual overlaps. A report on the research carried out for this study, including method, results and discussion is outlined in the Empirical Paper (Chapter 3). The thesis concludes with the Critical Review and Impact Statement (Chapter 4). This final chapter critically reflects on the epistemological position that was adopted, the strengths and weaknesses of the study and implications for future practice and research, see Figure 1.1 for Visual Map of Thesis Structure

Figure 1.1

Visual Image of Thesis Structure

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┌─────────────────────────────────────────────────────────────────────┐
│                        Main Research Question                          │
│  What are Primary School Teachers' Attitudes Toward Introversion in   │
│                              Students?                                 │
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                                   ▼
┌─────────────────────────────────────────────────────────────────────┐
│                          Three Hypotheses                              │
└─────────────────────────────────────────────────────────────────────┘
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1. Framing	2. Student Personality	3. Teacher Extraversion Levels
There will be a higher attitudinal rating for positively framed vignettes compared to negatively framed vignettes.	There will be a higher attitudinal rating for extrovert students compared to introvert students.	Teacher extraversion scores will influence the effects of framing and student personality on vignette ratings.

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                                   ▼
┌─────────────────────────────────────────────────────────────────────┐
│                             Methodology                                │
└─────────────────────────────────────────────────────────────────────┘
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Participants	Data Collection	Data Analysis
Primary school teachers	Vignettes Web-based survey	Factorial ANOVAs using SPSS

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┌─────────────────────────────────────────────────────────────────────┐
│                   Results for Hypotheses 1, 2 and 3.                   │
└─────────────────────────────────────────────────────────────────────┘
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┌─────────────────────────────────────────────────────────────────────┐
│       Critical Reflection, Conclusions and Implications for Practice.  │
└─────────────────────────────────────────────────────────────────────┘
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Chapter 2 Review Paper

2.1 Introduction

Personality refers to individual differences in how an individual thinks, feels and behaves. This encompasses individual differences in personality characteristics, such as sociability or irritability and how these various parts of a person come together as a whole (APA, 2021). Extroversion/introversion is a dimension of human personality as identified by Carl Jung in 1921(Jung, 1927). The Introvert-Extrovert spectrum, like many continuous dimensions, means an individual can be classified in terms of their position on the scale between the two extreme points. Many people will exhibit characteristics of both extroversion and introversion but may lean more towards one than the other (Jung, 1927). The spectrum accommodates those at the extreme ends, highly extrovert or introvert, and every nuance in between. This range in extroversion/introversion is due in part to the influence of both genetics and the environment on an individual's personality. The dimensional perspective enables us to determine where an individual is placed in terms of their behaviour in relation to others. This review paper adopts a dimensional view of personality versus a categorical perspective that puts forth that people are either extrovert or introvert. Therefore, the use of the terms extrovert and introvert throughout this document does not imply a categorical distinction but is shorthand for the dimensional perspective which implies 'an individual that is more extroverted' and 'an individual that is more introverted'.

Being more extrovert or introvert influences how an individual interacts with others and responds to their environment (Condon & Ruth-Sahd, 2013). Extroverts are outgoing, gregarious, sociable, and openly expressive (APA, 2021). Introverts tend to be more withdrawn, reflect on inner thoughts and feelings and prefer to work independently (APA, 2021). The level of interest in introversion in the popular press (Adams, 2013; Cain, 2013; Clark, 2013) has drawn attention to the valuable attributes of the trait in addition to the negative perception and mistreatment of individuals who demonstrate introvert characteristics, particularly at work (McCord, 2017; McCord & Joseph, 2020). Cain talks about her own personal experience of being an introvert in a world that prizes being sociable and outgoing above all else. She highlights how it can be difficult, even shameful being an introvert (Cain, 2013). She goes on to point out how she became more extrovert to fit in. Cain argues that introverts have different but equally extraordinary strengths that should be

encouraged and celebrated just as in the case of extroverts. Cain has written for the The New York Times, The Atlantic, The Wall Street Journal and many other publications. Her TED Talk, "The power of introverts," went viral and has been viewed more than 30 million times, making it one of the most popular of all time. Interest in this area has also spread into academia. Cain (2013) has been cited by several scientific studies (Lawn et al., 2019; Leikas et al., 2017; Medaille & Usinger, 2019; Xioameng et al., 2017).

Several studies contend that extroverts experience a better person-environment fit across various settings (school and work) and thus greater wellbeing than introverts because aspects of the extrovert personality type are more socially desirable in western cultures (Fulmer et al., 2010; Lawn et al., 2019; Myers, 1992). The purpose of this review is to examine the person-environment fit for the introvert student and how this impacts on their wellbeing and learning in school. This involves gaining an understanding of the introvert student's experience of school and teachers' perspectives of this student. A systematic review was conducted to identify, appraise and synthesise the most relevant literature pertaining to the research question. A search was conducted of multiple databases and Weight of Evidence (WoE) framework was used to evaluate the final seven studies included in this review. A variety of studies were found, therefore different coding protocols were used to evaluate surveys, experiments and qualitative research (Gersten et al., 2005; Gough, 2007; Brantlinger et al., 2005).

2.2   Phase 1: Literature Review – Context and Rationale

2.2.1   Personality Theory

For the purpose of this review, approaches to personality that provide a theoretical background and highlight the development of the extroversion/introversion dimension will be discussed here, for example, Freud and Jung's psychoanalytic approach (Schultz & Schultz, 2017), Allport's approach informed by genetics (Schultz & Schult, 2017), Raymond Cattell's 16 Personality Factors (Cattell & Mead, 2008), Hans Eysenck's three-factor model (Eysenck, 1994) and McCrae & Costa's The Big 5 (McCrae & Costa, 1987).

2.2.1.1 Psychoanalytic Approach. The earliest modern personality theory was proposed by Sigmund Freud through the psychoanalytic approach, at the end of the 19th century (Schultz and Schultz, 2017). Freud divided personality into three levels: The id, the ego and the superego. Psychoanalytic theorists believe that human behaviour is deterministic, meaning it is controlled by biological drives and the unconscious. For Freud, it appears that one's personality is in a constant battle between the biological instincts of the id and the rational and moral compass of the ego and superego based on the demands of reality and social values (Schultz and Schultz, 2017).

Carl Jung was a neo-psychoanalytic theorist. This means that he believed in Freud's system of psychoanalysis but he opposed Freud's deterministic view of personality that all behaviour is determined by internal and external forces over which the individual has no control. Jung believed personality was partly innate and partly learned and he placed more emphasis on the social environment and cultural influences on personality. Jung proposed the concept of Psychological type theory in the 1900s (Schultz and Schultz, 2017). This theory proposes that people have particular qualities or traits associated with certain types of behaviour and thinking. Stemming from this Jung coined the phrases extroversion and introversion. His theory suggests that individuals differ in terms of two mental attitudes; extroversion-introversion. Jung explained introversion/extroversion in terms of how an individual gets energy; extroverts get energy from the external world and introverts draw energy from within (Condon & Ruth-Sahd, 2013). Jung highlighted that everyone has the capacity for both but only one becomes dominant and this dominant attitude tends to direct behaviour and thinking or consciousness. The less dominant attitude still exists and can affect behaviour whereby in some situations if an introverted individual wishes to be more outgoing they can choose to be so (Schultz and Schultz, 2017).

Whether an individual is extrovert or introvert Jung suggested that each individual has a preferred way of dealing with their internal and external world. Jung proposed that there are four basic ways or psychological functions in which people differ; two perceiving functions (Sensing-Intuition) and two judging functions (Thinking-Feeling) (Jung, 1927). Just as one attitude is dominant, only one function can be dominant. Jung then proposed eight personality types based on the two attitudes and four functions, for example Extroverted Sensing, Extroverted Intuiting, Extroverted Thinking, Extroverted Feeling and the same for Introverted. Jung did not determine that one attitude was 'better' than the other, he simply

highlighted how they were different. However, he did point out that people are frequently forced to wear a mask (persona) or put on a public face to present to others in order to succeed in school or work and to get along with others. He pointed out that while this can be helpful it is also ultimately harmful. Jung believed that for optimal mental health there needed to be a balance between elements of the personality.

Both Freud and Jung were motivated to explore personality in order to help their patients and they used case studies to inform their theories which were not controlled or systematic in their approach. The Myers-Briggs Type Indicator (MBTI) is the most widely used psychometric tool to measure Jung's theory of personality (Matoon & Davis, 1995). However, the MBTI's validity and re-test reliability have been called into question (Cranton & Knoop, 1995; Pittinger, 1993). Jung's theory of personality typology has stimulated a lot of research through the use of various psychometric tools such as the MBTI, gray-wheelwrights Jungian type survey, PET Type Check and The Singer-Loomis Inventory of Personality but with only partial success (Hernandez et al, 2017). Some studies suggest the instruments may be to blame through failure to correctly assess the types (Loomis, 1982; Hernandez et al., 2017). Others suggest that failure to produce empirical support may be due to the structure of Jung's typology that makes it difficult to operationalise and thus test (Metzner et al., 1981; Hernanedez et al., 2017). Allport, Cattell, Eysenck and McCrae & Costa adopted a more empirically grounded approach to personality theory. They were not attempting to treat patients but wanted to develop a formal and systematic study of personality and identify a more empirical way to predict behaviour and operationalise these concepts.

2.2.1.2 Genetics Approach. The trait approach to personality began with Gordon Allport and has become central to the study of personality (Schultz and Schultz, 2017). Traits allow people to describe others by selecting a specific characteristic that sums up that individual such as 'she is very competitive' or 'she is easy going'. Allport adopted the lexical approach, which purports that the most important individual differences will become encoded into language. Therefore, in the 1930s, Allport extracted 18,000 words from the dictionary that described personality, which he then reduced to 4,500 words. These are what he concluded were observable and relatively permanent personality traits. He then divided these into three levels; Cardinal traits, Central traits and Secondary traits. Cardinal traits shape a person's sense of self, emotional makeup, attitudes, and behaviour, and often define the person's personality e.g. sociability. Central traits are more common traits such as kindness, friendly, shy, honest. Finally, Secondary traits are inconsistent traits, unreliable and determined by circumstances, e.g. an assertive individual may be submissive in specific situations (Schultz and Schultz, 2017).

Allport believed that genetics were largely responsible for personality and that each individual's personality was unique due to the interaction of personal and situational factors. He defined personality as 'the dynamic organization within the individual of those psychophysical systems that determine his unique adjustments to the environment'

(Allport, 1961, p. 28). While he believed that some traits are hereditary, he argued that there are others that are evoked by a social situation therefore highlighting the importance of the interaction between the person and their environment. He proposed two types of traits: individual and common. Individual traits are unique to the person (personal dispositions) and common traits are shared by a number of people, for example, different cultures may have common traits particular to that culture, such as, Western cultures may be considered more extrovert than Asian cultures (Spence and Rapee, 2016). He highlighted that traits vary with the situation (e.g. an individual may be anxious in one situation but not in another) and are thus subject to social, environmental and cultural influences. Allport also argued that traits are predispositions that influence behaviour. For example, an introvert individual may seek out small groups and avoid large groups. Traits are not merely a response to stimuli but in fact motivate people to seek out certain stimuli and in conjunction with environmental factors, this leads to specific behaviours. This is in line with Jung's theory of how extrovert and introvert individuals derive energy; extroverts get energy from the external world and

thus seek out others, this is what motivates them and introverts on the other hand draw energy from within and in fact can feel overstimulated and fatigued by a busy external environment which has consequences on behaviour. Unlike the MBTI, the lexical approach is a dimensional rather than a categorical approach.

In the 1940s, Raymond Cattell, another lexically-based personality theorist, went on to reduce Allport's number of observable traits from 4,500 to 171, removing uncommon traits combining others. Unlike the previous theorists, he adopted a rigorous, scientific approach to determine common factors among groups of individuals using factor analysis (Schultz and Schultz, 2017). He referred to these factors as traits and just like Allport, Cattell claimed these were the basic elements that made up personality. He went on to identify what he called 16 source traits that could summarise personality characteristics (stable and permanent traits that cause behaviours). These source traits give rise to surface traits (personality characteristics that correlate with each other), e.g. the source traits of shyness, being quiet and disliking crowds may combine to form the surface trait of introversion. The 16PF Questionnaire is supported by a lot of empirical research and is embedded in a well-established theory of individual differences (Ashton, 2013; Cattell & Mead, 2008). However, Cattell's 16PF model has been criticised for being difficult to replicate and it has been argued that interpretation is quite complex and requires advanced training (Eysenck & Eysenck, 1987; Noller et al., 1987).

Hans Eysenck agreed with Cattell and Allport that personality was composed of traits. Eysenck and Cattell looked at personality measurement at different levels within the hierarchical trait model; Cattell concentrated on primary factors believing a large number of factors was required to get a complete picture of an individual. However, Eysenck reduced the number of traits focussing on broader secondary dimensions (Schultz and Schultz, 2017). While interviewing soldiers that were being assessed for neurotic disorders, Eysenck discovered that their answers for one question linked naturally with other answers. This suggested to Eysenck that a number of personality traits were being revealed in the soldiers' answers. Like Cattell, Eysenck also reduced behaviour to a number of factors using factor analysis. These factors were grouped together under separate dimensions. Eysenck went on to develop a personality theory with just three dimensions; PEN - (E) - Extroversion versus Introversion, (N) – Neuroticism versus emotional stability and (P) – Psychoticism versus impulse control (or superego functioning). According to Eysenck these traits remain stable across the lifespan despite different situational factors, for example the introvert or extrovert

child maintains this personality type in adulthood (Gale et al., 2013; Ganiban et al., 2008; Schultz & Schultz, 2017). He believed that personality was largely controlled by genetics but he also recognised the influence of environmental factors on personality. Eysenck's three dimensions of personality have been supported in many cross-cultural studies, however it was highlighted that Eysenck's model and dimensions do not easily accommodate various traits such as honesty, reliability or creativity (Hur, 2009; Tellegen et al., 1988; Schultz & Schultz, 2017). Therefore, while Cattell's 16 Personality Factor model may be unwieldy, Eysenck's may be too limiting.

Robert McCrae and Paul Costa developed the theory of personality further by identifying five factors, known as The Big Five Factors (McCrae & Costa, 1985). McCrae & Costa conducted a cluster analysis of Cattell's 16 Personality Factor Questionnaire. They identified three clusters; two of these were similar to Eysenck's "neuroticism" and "extraversion" and a third called "openness to experience''. They later revised it to include agreeableness and conscientiousness as these variables occurred time and again in previous models.

Costa and McCrae (1992) propose that under the Big Five theory of personality, there are five dimensions of personality; extraversion, agreeableness, conscientiousness, emotional stability and openness to experience. Despite some suggestions that the factors that emerge can be subject to bias and sensitive to variable selection, this five-dimension model of personality has been identified across different cultures and personality has been found to be stable over time within this framework (Buss & Hawley, 2010). The Big Five Factors have been validated through a number of assessment techniques. McCrae & Costa developed a personality test, the NEO personality Inventory, to measure personality and a shorter version has been developed for use in internet-mediated research (Buchanan, Johnson & Goldberg, 2005).

Cattell, Eysenck and McCrae & Costa agreed that personality was made up of various traits but each model grouped traits in different ways. All of these theorists, including Freud and Jung, despite adopting a genetics approach to personality, acknowledged the social, environmental and cultural influences on personality and the importance of the interaction between the person and their environment. It is worth noting Freud's overlapping concept of the superego as the moral compass guiding behaviour, influenced by parental and societal values. In fact, Allport highlighted that traits determine how an individual adjusts to their

environment. He also referred to common traits that may differ between cultures. In some western cultures being extrovert is seen as the ideal personality type (Lawn et al., 2019).

Several cross-cultural studies have demonstrated the extent of cultural influence on personality development. For example, Japanese emigrants in America became more 'American' in their personalities over time (Güngör et al., 2013). Chinese immigrants exposed to western culture for 10 years or more scored higher in extroversion than those who immigrated more recently or participants who remained in Hong Kong (McCrae et al. 1998). Studies comparing experiences of Asian-American students with European-American students found that Asian-American students experienced greater anxiety and a higher number of negative emotions in social situations than their counterparts (McCrae et al., 1998; Schultz and Schultz, 2017). Conversely, there are fewer reports of social anxiety disorder in Asian countries such as Japan (Spence and Rapee, 2016). Cultural differences can influence how social anxiety is expressed and thresholds at which the clinical disorder, Social Anxiety Disorder (SAD), is diagnosed and this impacts the prevalence of the disorder. Cultural differences can also influence social reactions to withdrawn behaviour (Spence and Rapee, 2016). For example, shyness and traits more commonly associated with introversion are not viewed negatively in some Asian cultures such as Japan and thus these individuals do not have to conform to cultural ideals that are not aligned with their personality orientation. To use Jung's phrase, they do not have to wear a 'mask'. Extroverts may have to wear a mask in these cultures as introversion may be somewhat idealised here. This is a possible open question. Research on social categorization purports that the tendency to categorize our social world into similar and dissimilar individuals and placing a higher value on those who are similar has a functional basis. Ensuring similarities among a group leads to better social relationships, greater cooperation and thus greater certainty and control. Therefore, people seek out environments that are consistent with their own needs and values (Van Vienen, 2018). While individuals can and must at times adapt to fit into their environment, this can have harmful consequences for their wellbeing (Dewe et al., 2012; Edwards & Rothbard, 1999; Van Vianen, 2018).

2.2.2 *Controversies and Conceptual Overlaps*

Shyness, introversion and *quiet* are terms that are used interchangeably in everyday language (Briggs, 1988; Cain, 2013). Shyness as a construct is conceptually distinct from introversion (Briggs, 1988). Shyness is:

The tendency to feel awkward, worried or tense during social encounters, especially with unfamiliar people. Shy people may have negative feelings about themselves, worries about how others view them and as a result, may have a tendency to withdraw from social interactions. (APA, 2022, Shyness definition).

Introversion is defined as:

An orientation toward the internal private world of one's self and one's inner thoughts and feelings, rather than toward the outer world of people and things. Introversion is a broad personality trait and, like extraversion, exists on a continuum of attitudes and behaviours. Introverts are relatively more withdrawn, retiring, reserved, quiet, and deliberate; they may tend to mute or guard expression of positive affect, adopt more sceptical views or positions, and prefer to work independently. (APA, 2022, Introversion Definition)

Shyness is a trait construct, therefore, it is important to understand it relative to other dimensions of personality. Eysenck advocated a hierarchical approach to the study of traits. Within this, the highest level is that of the super-factors, extraversion, neuroticism, and psychoticism (PEN) as mentioned previously, which are comprised of many subordinate trait constructs. At the bottom of the hierarchy are the primary factors and these give meaning to the super-factors. In this model, the trait of shyness is subsumed by the construct of neuroticism (Briggs, 1988). The Five Factor model, also a hierarchical model, is in line with Eysenck's three-factor model whereby shyness is substantially correlated with neuroticism and low extraversion (Bratko, 2002). The overlap and interchangeable use of the terms introversion and shyness is understandable as they are often seen together in the literature. For example, Guildford, (1940) included social introversion (described as shy, keeps in the background on social occasions), as one of the factor traits (S) in his Inventory of Factors. Eysenck (1956) analysed Guildford's introversion factor and found this 'S' factor to be correlated with introversion and neuroticism. Eysenck (1956) proposed one reason for this may be that two types of shyness exist; introverted social shyness and neurotic social shyness. He hypothesised that the neurotic individual may avoid social encounters to avoid the negative feelings they bring up but at the same time may also desire to be more sociable

(Briggs, 1988). The introvert on the other hand does not withdraw because they feel judged by others but because they want to be alone and unlike the neurotic can take part in social situations if need be (Briggs,1988). Introvert individuals' desire to interact with others is low and this may make them appear shy. Cheek and Buss (1981) study of social interaction compared measures of shyness and sociability. Their shy-sociable participants are similar to Eysenck's description of neurotic social shyness and their shy-unsociable participants are similar to Eysenck's description of introverted social shyness. Henjum (1982) also proposed two broad categories of introverts; (Type A) those who are self-sufficient, confident, and self-actualizing and (Type B) those who are shy, withdrawn, and who have a low self-concept.

Shyness and introversion are conceptually distinct. Even when they are linked by Guildford, Eysenck and Henjum, it is rooted in the introvert's low levels of social interaction which is driven by a desire to be alone rather than fear of social judgement. This is what makes introversion conceptually distinct from shyness. Despite being conceptually distinct, due to the need/desire for low levels of social interaction that exist for both, there may also be overlap in the discomfort these students experience in social settings e.g. feeling under pressure to participate in school or work and to conform to the more extrovert personality type. See Table 2.1 for similarities and differences between introversion and shyness.

Table 2.1

Introversion and Shyness; Similarities and Differences

Introversion	Shyness
A broad personality trait in the hierarchy models of personality (Eysenck, 1956).	Lower level trait subsumed by the higher levels (Briggs, 1988).
Behavioural inhibition due to naturally high cortical arousal levels (Gale, et al., 2001).	Behavioural Inhibition due to fear of social judgement (Kerr et al. 1994)
Low level of social interaction due to desire to be alone (Briggs, 1988).	Low level of social interaction due to fear of social judgement.

Thinker more than a talker. Needs more time to process information (Stahl & Rammsayer, 2008).	Talk less due to fear of judgment (Bratko et al., 2002)
Traits arise from preference not due to fear (Jung, 1927).	Traits arise from discomfort due to fear of judgement by others (APA, 2022).
Reticent	Reticent (Bratko et al., 2002)
Often feel uncomfortable around others. Don't like to draw attention to themselves and stays in the background due to preference to be alone or for quiet (IPIP).	Often feel uncomfortable around others. Don't like to draw attention to themselves and stays in the background due to fear of judgement
Reacts slowly and needs time to think.	This may not be the case for someone who is only shy but not introverted.

Note: The items in each of the preliminary IPIP Scales measure constructs similar to those in the NEO-PI-R https://ipip.ori.org/newNEOKey.htm#Extraversion.

Henjum (1982) contends that teachers and parents, with the best intentions, try to mould young people into sociable and outgoing individuals without considering the innate nature of their personality. Being told that they are too quiet or that they need to participate or speak up more, may be enough for an individual to feel inadequate or have negative feelings about themselves. In addition, they may feel that they are not meeting cultural or societal standards of the ideal personality, whereby extroversion is valued over introversion. Shyness has been found to be highly correlated with high introversion (Afshan et al., 2015). Due to the stigma around introversion (Pannapacker, 2012), shyness (negative feelings about the self and worries about how others view them) may develop in introverts.

2.2.3 *Classroom Environment*

Students spend almost 20,000 hours in classrooms by the time they receive a third level education (Fraser, 2001). Therefore, a student's experience of school and their learning environment is critical for their educational outcomes and general wellbeing. Learning environment refers to the social and psychological setting, the physical classroom and

teaching methods (Fraser, 2001). In the move to a constructivist learning paradigm, more student engagement is now becoming the norm in most classrooms worldwide promoting collaboration and social activities to enhance students' learning (Dagar & Yadav, 2016; Golder, 2018; Tan, 2016; Trajkovik et al., 2018). Bloom's taxonomy suggests that learning through interaction develops a deeper understanding of the material being learned by all students (Adams, 2015). On a group level, active learning (students engaging with their own learning through discussion, typically working in pairs or groups, collaborating, making decisions, explaining ideas) produces better results in assessments than traditional lecturing across all personality types (Beckerson et al., 2020; Morosan et al., 2017; Hsiu-Ting Hung, 2015). However, research suggests that extroverts perform significantly better than introverts in exams when material is covered via group-based active learning classes (Beckerson et al., 2020). Therefore, adopting more interactive learning strategies in the classroom may disproportionately challenge introvert students (Davidson et al., 2015). Studies suggest this type of learning environment is exhausting for introverts, can leave them feeling over-stimulated, over-whelmed and likely to avoid classes altogether (Green et al, 2019; Colley et al., 2019). Aptly put by the poet and introvert Charles Bukowski "People empty me. I have to get away to refill'' (Bukowski, 2002). In order to address participation inequities in class it is important to comprehend how opportunities for participation are constructed and availed of within class. It is important to find a balance in order to create not just a comfortable learning environment but a tolerable one.

2.2.4 Teacher Perspective

According to UNESCO's institute for educational planning, one of the key components of a positive psychosocial learning environment is positive student and teacher relationships (UNESCO, 2021). A student's sense of connectedness to their teacher is important for their emotional wellbeing and this connectedness is created in a school environment where the teacher understands the needs of the pupil and is flexible in their teaching approaches to meet these needs (Garcia-Moya et al, 2015; Fraire et al., 2013). However, teachers sometimes focus on the external behaviour believing the student is uninterested or unmotivated. Tanner (2013) suggests that educators often focus on what they are teaching and how they are teaching rather than who they are teaching. Educators believe active learning is student-centred because the student has more choice in what and how they learn (Lumpkin et al., 2015). Research suggests that teachers can sometimes have low expectations of quiet children and believe they are less intelligent and will fare less well

academically than the more talkative and active students (Cain & Klein, 2015; Coplan et al., 2011). Some teachers assume a quiet student is shy and therefore use inappropriate support strategies such as encouraging them to speak up more in class or partnering them with a more extrovert peer (Mjelve et al., 2019; Deng, 2017; Rosheim, 2018). This support is inappropriate because it is a failure to recognise that listening and reflecting are a form of engagement and that the introvert student requires time to think before they speak. This negative perception of a student can influence how a student views themselves as a learner (Rosenthal, 2002). This could have implications for their sense of self and impact their confidence. In a review of class-based engagement and cooperative learning, the authors of one study state that "Silent students are uninvolved students who are certainly not contributing to the learning of others and may not be contributing to their own learning (Smith et al., 2015; p.95)". The implication is that verbal participation is valued more than other forms of engagement typical of the introvert, such as listening, writing or thinking.

2.2.5 Biological Roots

Using Proton magnetic resonance spectroscopy (H MRS), a non-invasive technique for measuring in vivo concentrations of neurotransmitter in the brain, Xu et al., (2005) found that introverts have a much higher level of a-Glx (glutamate plus glutamine) in the anterior cingulate gyrus than extroverts. The Anterior cingulate gyrus is involved in emotional arousal, learning, and autonomic nervous system activation. This makes the area especially important for emotional learning. It has also been suggested that the anterior cingulate gyrus is involved in an individual's adjusting and adapting behaviour to the environment (Xu et al., 2005). Higher levels of a-Glx in the anterior cingulate gyrus indicates introverts have higher arousal levels than extroverts meaning they do not need much stimulation to push them beyond the threshold of relaxation and into the realm of feeling overwhelmed. This highlighted that personality traits are related to the concentration of neurochemicals in the brain.

Electroencephalogram (EEG) has provided a popular operational measure of cortical arousal (Gale et al., 2001). As indicated by EEG in task-related arousal, introverts have a naturally high cortical arousal level in comparison to extroverts and are therefore more likely to get stressed or overwhelmed in situations that would not impact an extrovert (Gale, et al., 2001). Cortical arousal refers to the firing patterns of the neurons of the cerebral cortex. As the frequency of the EEG pattern gets lower, the level of cortical arousal diminishes. As the level of arousal diminishes, the EEG pattern gets higher in amplitude. Gale et al. (2001)

found that extraverts displayed higher amplitude voltages thus confirming previous literature that extraverts are less cortically aroused. These sensory sensitivities may explain the introvert's preference for quiet and solitude and their need to withdraw as a coping strategy.

Other studies show that extroverts produce more dopamine in response to external reward situations. This dopamine surge motivates extroverts to work toward certain goals and rewards, such as food, money, social interactions. The dopamine also facilitates memories associated with these rewards. This was assessed by measuring changes in participants working memory, motor speed at a finger-tapping task and positive emotions (all known to be influenced by dopamine). It has been concluded that this may explain why extroverts, who produce more dopamine, may be energised and motivated by external events such as social situations but introverts may be less motivated or rewarded and thus left feeling exhausted and needing to withdraw (Depue & Fu, 2013). Cohen et al. (2005) also found that there was greater activation in brain areas which are densely innervated with dopaminergic neurons during reward-related tasks, and found that the pattern of activation differs in extroverts and introverts. Using brain imaging (fMRI), they show that individual differences in extraversion and the presence of the A1 allele on the dopamine D2 receptor gene predict activation magnitudes in the brain's reward system during a gambling task.

There is also research evidence to suggest that introverts are more sensitive to noise and therefore more susceptible to distraction or to sensory overload than extroverts in a noisy classroom (Geen, 1984). Furthermore, Stahl & Rammsayer (2008) suggest that introverts may need more time to process information than extroverts and take more time to understand information before moving on to new ideas as indicated in slower motor-processing speeds for introverts. For these biological reasons the introvert may need quiet, solitude and time to think. However, because this biological influence on personality is largely invisible and not understood by the majority, these behaviours are misinterpreted by the observer and they are more likely to commit a fundamental attribution error. In this way the observer has a cognitive bias in assuming what kind of person the introvert student is, such as socially withdrawn, shy, unmotivated and less intelligent as opposed to considering influential social, situational and importantly, biological factors (Mjelve, 2019; Coplan et al., 2011). An important implication of these findings is that different environmental designs might best fit the needs of extroverts and introverts (Cervone & Pervane, 2008).

2.2.6   Social-Construction of Identity

Identity refers to the qualities, beliefs, <u>personality traits</u>, appearance and expressions that characterize a person or group (Covington, 2008). According to this definition, personality is one aspect of identity, however, Cheek et al. (1986) purport that the term "identity" is typically used to describe the traits that make an individual unique. According to Weinreich (1986), identities are strongly associated with self-concept, self-image, self-esteem, and individuality. Identities are 'constructed' through social interactions with others, beliefs held by society and influenced by our environments. The term looking-glass self, refers to how an individual's self-concept and identity is developed in response to the opinions and reactions of others and how the individual internalises how they perceive others to evaluate them (Cooley, 1902). The self emerges based on what others tell you about who you are. There is a two-way interaction and the individual also plays an active role in shaping how others think about them (Cooley, 1902). Bronfenbrenner's Ecological System's Theory of human development highlights the transactional process between the individual and others and offers a comprehensive systems-based understanding of how an individual's wellbeing is embedded in the social context of their relationships (DES, 2019; Erikson et al., 2018). The ecological systems theory has yielded positive outcomes in practice, however, as it is difficult to test empirically, it is not always clear that such outcomes were caused by the application of the ecological systems theory. Several aspects of self-concept play a role in wellbeing such as self-image (how an individual sees themselves), self-esteem (how they value themselves) and finally the ideal self (how they imagine their best self) (Bailey, 2003; Epstein, 1973). There are several risk and protective factors that influence an individual's wellbeing and these exist at the individual, relational, cultural and societal levels (DES, 2019).

Social constructions that we have about the world each have their implications for different types of action (Hewitt, 2009). The World Health Organisation (2014) has identified inequality, discrimination and oppression in society as significant risk factors increasing an individual's vulnerability thus leading to a decrease in their wellbeing. This can be mapped to the societal expectations and pressure placed on individuals to be more extrovert. The impact of these expectations on the introvert individual's wellbeing is that they may minimise their own strengths which has costs for their health, personal lives, and sense of self (Medaille & Usinger, 2020; Green et al., 2019; Rosheim 2018). Wellbeing is enhanced when an individual's own behaviour is perceived to be consistent with one's true self. Henjum (1982) contends that it is difficult being introvert in a society where the concept of

the 'ideal' personality is outgoing, sociable and participatory. Pannapacker (2012) speculates that 'fit' and personality take on magnified importance in work and academic settings. For example, he cites two-day on campus interviews, that involve high-stake meetings, public lectures and teaching demonstrations. Pannapacker (2012) concludes this process favours extroverts and selects out introverts. It has also been suggested that introversion is a maladaptive behavioural pattern. It has been reported that in 2012 the American Psychiatric Association attempted to list introversion in the DSM-V (Ancowitz, 2012; Allen, 2015; Buelow, 2012; Colley, 2019). This was prevented due to major objections by professionals and the general public but it highlights how introversion is seen by many as a pathology as opposed to a state of being that encompasses strengths and weaknesses just as extroversion does. Therefore, despite the many positive traits associated with introverts, such as ability to work independently, introspective, reflective and analytical, being called an introvert may not be seen as complimentary in today's society and in fact based on western cultural ideals, introverts may experience subtle rejection by others due to their low sociability (Henjum, 1982).

In summary, equality and respect for differences within any society, have been highlighted as significant protective factors in the development of wellbeing (DES, HSE & DOH, 2013, 2015). However, in the current climate, introverts may believe that they do not fit the mould of the ideal personality and therefore they do not 'fit in'.

2.2.7   *Person-Environment Fit*

The person-environment fit theory describes the match between attributes of the person and attributes of the environment (Roberts & Robbins, 2004). The relationship between the person and their environment has been researched for decades within the field of organisational psychology (Barrick et al., 2001; Hogan & Holland, 2003; Touze, 2005). The basic principles of person–environment fit theory are that the combination of the person and the environment together are a better predictor of human behaviour than either of them separately and the outcomes are best when personal and environmental attributes are compatible (Van-Vianen, 2018). Being out of sync with one's environment (a poor-person environment fit) leads to negative emotions which means introverts and extroverts expend more emotional energy when in an environment that is not in line with their orientation (Lawn et al., 2019; Van-Vianen, 2018).

According to Akiba and Alkins (2010) and Pawlowska et al. (2014), the highest level of learning occurs when there is a good person-environment fit and the teacher plays a key role in constructing this. In terms of the person-environment fit, the person is comprised of psychological characteristics such as their personality, personal preferences, needs and abilities. The environment (school) is made up of such elements as teacher attitude, teacher behaviour, lesson structure and lesson delivery. The teacher's ability to understand the needs of the pupil and be flexible in their teaching approaches to meet these needs paves the way for a good person-environment fit (Flood and Bank, 2021; Roberts & Robbins, 2004; Rose, 2000). If teachers are not open to various forms of participation and engagement this may lead to incorrect representations of a student's (introvert/extrovert) behaviour and teachers may use inappropriate support strategies. People have an innate need to fit their environments and to seek out environments that are in line with their individual characteristics (Van Vianen, 2018). This can be seen in lower assessment results for introverts in active versus traditional/passive learning environments (Beckerson et al., 2020) and in the negative impact on wellbeing (Colley, 2019; Green et al., 2019). It is therefore important to consider any stereotype or prejudice that may exist and could impact the introvert students' wellbeing.

2.2.7.1 Wellbeing in Schools. There are many interpretations of what wellbeing is across various disciplines. The health perspective defines wellbeing as the absence of negative conditions, and the psychological perspective defines wellbeing as the prevalence of positive attributes. Therefore, it may be best defined as a balance between the resources an individual can draw on and the challenges they face (CESE, 2015).

Smyth (2015) draws on insights from the Growing up in Ireland study and points out that children can have different experiences of school even when they are in the same class. She goes on to state that children's experiences of primary school, especially their relationship with their teacher, can have a long-term impact on their self-image. Therefore, fostering positive relationships with teachers is a key aspect to promoting student wellbeing. Government policy in Ireland supports the view that a whole school approach to wellbeing is central to best outcomes for students in terms of having a sense of belonging and feeling supported, the voice of the child, teachers and parents is heard leading to improvements in school culture and ethos, students learn more effectively and have better academic outcomes (DES, 2019; Weare, 2000). Part of fostering a positive teacher/student relationship is about building rapport with a young person. A key function of developing rapport with a student is

to establish trust and respect (BPS, 2019). The three key elements of building rapport are recognition that the other person has their own model of the world (that is not the same as our own), reassurance that this is a safe place for them and that they will be respected in this space (Beaver, 2011). The present literature investigates whether these key elements appear to be in place for introvert students.

Schools now have support teams, the Social, Personal and Health Education (SPHE) curriculum, as well as guidelines to ensure the wellbeing of their students, highlighting the key role schools play in developing the emotional wellbeing of young people (DES, 2014; 2016). Schools are a great way to promote positive mental health in young people as they can reach the majority of young people in one setting. They can foster a sense of connectedness, build resilience and they may be the only safe environment that some children have. Mental health is defined as "***a state of wellbeing in which the individual realises his or her own abilities***, *can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community*" (DES, DOH & HSE, 2013, p.4). Wellbeing exists when a person feels connected to others, has a sense of purpose and realises their potential (NCCA, 2017).

2.2.7.2 Wellbeing and Mental Health.   The mental health and wellbeing of young people is a vital part of succeeding in school and in life in general (DES & HSE, 2013; Weare, 2000). Therefore, the Department of Education, Health Service Executive and Department of Health have published guidelines on how to promote mental health and well-being in schools both primary and post-primary (DES, DOH & HSE, 2013). The Better Outcomes Brighter Futures National Policy Framework (2014-2020) sets out that all government agencies (statutory, voluntary and community organisations) work together to promote wellbeing in children. Wellbeing is now a key part of the junior cycle in schools, in line with the UN Convention on the Rights of the Child which states that every child has a right to reach their full potential (NCCA, 2017; UN, 1989).

2.2.7.3 Wellbeing Policy Statement & Framework.   The Wellbeing Policy Statement and Framework for Practice was first published in 2018 and revised in October 2019. This policy is for everyone who wishes to promote wellbeing in educational settings (schools, government and non-government agencies, parents and young people; DES, 2019). It has set a goal that all schools will engage in a School Self-Evaluation Wellbeing Promotion Process by 2023. It was informed by existing policies and guidelines (Circular 32/2021

Arrangements for Inspectorate Engagement with Primary and Special Schools 2021/2022; Circular 42/2018 Best Practice guidance for Primary Schools) and international research and best practice. The Department of Education and the Health Service Executive (HSE) has provided a Catalogue of Resources to support schools in promoting wellbeing. This catalogue organises resources under four key areas of wellbeing promotion: Culture & Environment, Curriculum (Teaching & Learning), Policy & Planning and Relationships & Partnerships, see Figure 2.1 for Whole School Approach - Four Key Areas of Wellbeing Promotion (DES, 2019). The Directory of Continuous Professional Development (CPD) lists relevant CPD to support the promotion of wellbeing in educational settings and the Continuum of Support provides a framework within which schools can address the needs of all, both educational and wellbeing, see Figure 2.2 Continuum of Support. All of these resources are designed to build resilience.

Figure 2.1

Whole School Approach – Four Key Areas of Wellbeing Promotion

Note. From *Wellbeing Policy Statement and Framework for Practice (p.16)* by DES, 2019. In the public domain.

Figure 2.2

Best Practice: Continuum of Support

ACADEMIC COMPETENCE

SOCIAL, EMOTIONAL & BEHAVIOURAL COMPETENCE

Individualised & Specialist Support

School Support Plus (for a Few)

Response to Groups and Individuals

School Support (for Some)

Preventative & Proactive Approaches

Whole-School & Classroom Support (for All)

A Continuum of Support
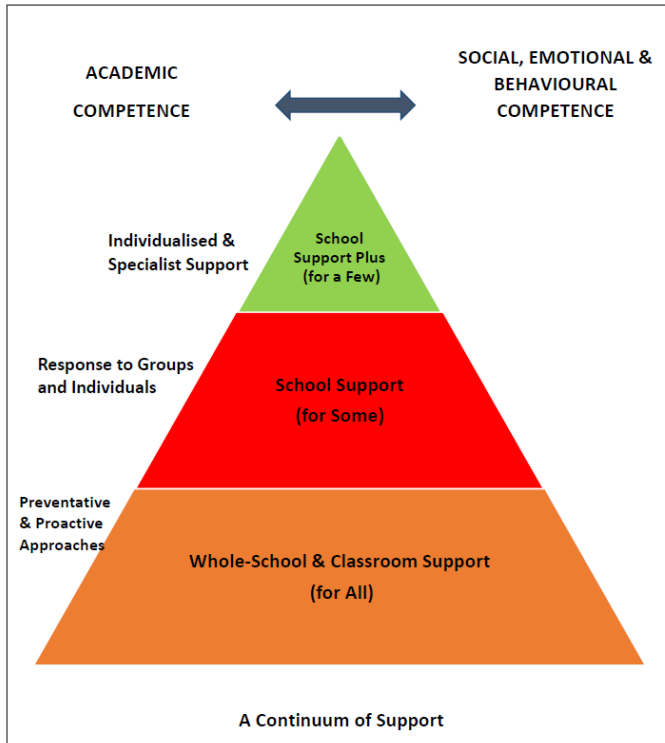
2.2.7.4 Influence of Social Desirability on Student Wellbeing.   Despite the best intentions of schools and teachers to promote wellbeing they are susceptible to societal and cultural influences. Research findings indicate that traits typically associated with extroversion such as, gregarious, sociable and outgoing, were given higher ratings by members of the public than those typically associated with introversion such as, quiet, inner directed and withdrawn (Hampson et al., 1987; Norman, 1967). There is a strong history of society favouring extrovert traits as highlighted in the stability over 20 years in the social desirability values as expressed in Norman (1967) and Hampson et al., (1987). Lawn et al. (2019) purports that as a result of society favouring these traits, extroverts experience a better person-environment fit across settings and therefore better wellbeing. It is important to acknowledge participation inequities in class and find a balance within the learning environment and via pedagogical practices that will keep all students along the introversion/extroversion continuum engaged with their learning.

A number of studies have found that one of the strongest correlates of wellbeing is extraversion (Costa & McCrae, 1980; Margolis & Lyobomirsky, 2021). One study found that individuals can alter the extent to which they behave in an extroverted or introverted way and those who behaved in an extroverted way demonstrated an increase in wellbeing compared to those who behaved in an introverted way (Margolis & Lyobomirsky, 2021). It is possible that all those who participated were extrovert or it may be that society responded more favourably to those acting more extrovert. Hudson & Fraley (2017) point out that this association was found to be stronger in individuals who wish to be more extrovert. Nowadays it is the general consensus that connections to other people and relationships are what give meaning and purpose to life and thus increase wellbeing (Seligman, 2011). However, Spencer (2022) argues that this is the view through the extrovert prism and that recognising where a student exists on the extroversion-introversion continuum is an important aspect of understanding what constitutes that student's wellbeing. Therefore, in conjunction with promoting wellbeing, schools may need to consider any unconscious bias and examine their own implicit perspectives of introverts, and how they are taking their wellbeing into account.

2.2.7.5 Curriculum Development - Universal Design For Learning.
A Universal Design for Learning (UDL) approach has the flexibility to accommodate individual differences in a learning supportive way. UDL was designed by CAST (Centre for Applied Special Technology) and is based on research from the field of neuroscience. UDL is

a set of principles for curriculum development that ensures equal opportunity for all to access that curriculum. The aim of UDL is to cater for the diversity of learners by improving the educational experience of all students through more flexible methods of teaching and assessment. Whatever way information is presented, it will create barriers and obstacles for some and will benefit others. The key to UDL is to provide various options rather than a one-size-fits-all (Flood and Bank, 2021; Rose, 2000). UDL proposes that it is essential to build flexibility in at the design stage in order to enable all students to capitalise on their own, individual strengths. This is in line with the basic principles of the continuum of support, see figure 2.3. It gives students choices around how they learn and how they demonstrate what they have learned (Flood & Banks, 2021). UDL proposes three principles: multiple forms of engagement (e.g. group work, individual roles, remote work, written), multiple forms of representation (e.g. different types of media to support learning that are accessible to all) and multiple forms of expression (e.g. providing a choice of assessment instruments). Teachers practicing UDL think about the diversity of learners and question how they conceptualise and articulate the lesson while considering learning goals, learning materials, teaching methods and assessments. A study conducted in America of over 100,000 students found an equal number of introverted and extroverted students across most courses (Schaubhut & Thompson, 2008). This was supported by a survey conducted by researchers at the Centre for Applications of Psychological Type in the US between 2007-2010 indicating that third level students were comprised of 40.6% introverts (Condon & Ruth-Sahd, 2013). Most of the literature on UDL only relates to the third level sector. There has been little discussion about the role UDL can play at primary and post-primary level, despite Ireland's policy commitment to inclusive education (Flood & Banks, 2021). If many third level students are comprised of introverts, these same students will have come through primary and secondary school. Therefore, it is essential that the needs of introvert students are considered at all levels of education.

Figure 2.3

UDL & The Continuum of Supports

LEVEL 4
Personal Assistant

LEVEL 3
Individual accommodation

LEVEL 2
Students with similar needs

LEVEL 1
Universal Design
for the majority
of students

SPECIAL

GENERAL
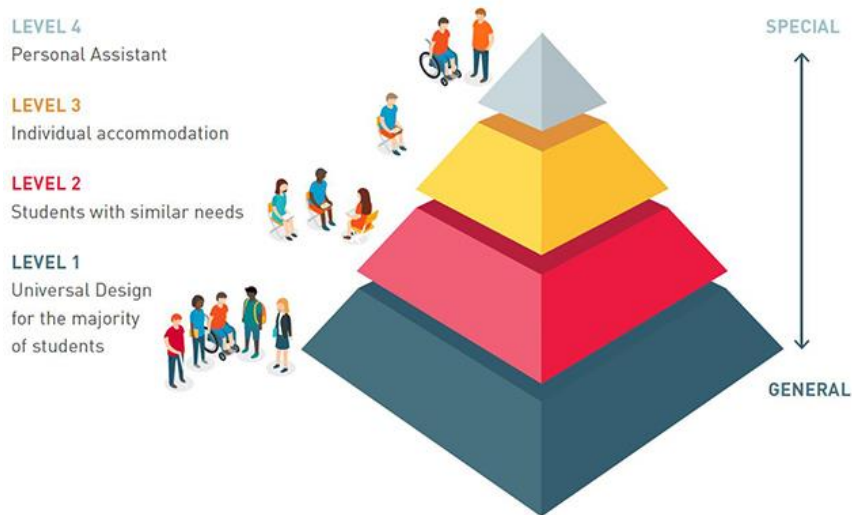
2.2.8 Rationale

Extroversion/Introversion describes the way in which people interact with the world around them. Research findings indicate that there is a relationship between the person and their environment and that individuals expend more energy when an environment is not in line with their personality (Barrick et al., 2001; Hogan & Holland, 2003; Touze, 2005). Lawn et al. (2019) contends that aspects of the extrovert personality type are more socially desirable in western cultures and thus are accommodated both in work and educational settings, leading to a better person-environment fit and therefore better wellbeing. Schools now adopt more interactive learning strategies in the classroom which are more suited to the extrovert student and may disproportionately challenge introvert students leading to inequities in the classroom. As a result of a poor person-environment fit, there may be low expectations for the introvert students because they are misunderstood and their strengths go unrecognised (Medaille & Usinger, 2020; Green et al., 2019; Rosheim, 2018).

A microsystem refers to the immediate contact in a child's life and school is a vital microsystem. The relationships and interactions a child experiences as part of this serve as protective or risk factors. These can influence a child's ability to function in the school environment and impact their cognitive, social, emotional and behavioural wellbeing.

Educational Psychologists (EPs) work with children with a range of social, emotional and mental health needs. It is important for EPs to have an understanding of the needs of introvert students and the obstacles to their learning and wellbeing within the school environment. The teacher's ability to understand the needs of the pupil and be flexible in their teaching approaches to meet these needs (through the use of UDL) paves the way for a good person-environment fit.

The next section will systematically review the empirical evidence on the introvert student's experience of the educational environment. A systematic review of the literature was conducted to synthesise existing knowledge and identify any gaps in the literature.

2.3 Phase 2: Literature Review - A Systematic Approach

2.3.1 Search Strategy

A search was carried out between 17th June 2021 and 29th July 2022, and at regular intervals thereafter in case of new literature, both published and unpublished, in the area, to identify relevant studies and background information on the following databases: ERIC, Education Source, Education Full Text, APA PsychArticles, APA PsychInfo, Academic Search Complete and Medline. The search strategy was not limited to specific study designs to ensure a broad review of the literature. Reports, articles and reference lists of included studies were also reviewed and a bibliographic search of all the included studies was carried out. In the initial search there were no date parameters, however this was ultimately limited to year of publication (2000-present). The search items included refer to the various descriptors that may be used for the key terms and to ensure the inclusion of all of the relevant literature in the area. See Table 2.2 for a list of terms searched.

Table 2.2

Search Terms

Database	Search Terms	Number of Results
Education Source	'Extroversion' 'Extraversion' 'Introversion' 'Extrovert OR Extravert Learning Style' 'Introvert Learning Style'	20

	'Quiet, Student teacher perception', 'quiet student' AND 'Teachers attitudes or thoughts or perception or opinion' AND 'Introversion'	
ERIC	'Extroversion' 'Extraversion' 'Introversion' 'Extrovert OR Extravert Learning Style' 'Introvert Learning Style'	80
	'Quiet, Student teacher perception', 'quiet student' AND 'Teachers attitudes or thoughts or perception or opinion' AND 'Introversion'	
APA PsychArticles	'Extroversion' 'Extraversion' 'Introversion' 'Extrovert OR Extravert Learning Style' 'Introvert Learning Style'	16
	'Quiet, Student teacher perception', 'quiet student' AND 'Teachers attitudes or thoughts or perception or opinion' AND 'Introversion'	
Academic Search Complete	'Extroversion' 'Extraversion' 'Introversion' 'Extrovert OR Extravert Learning Style' 'Introvert Learning Style'	130
	'Quiet, Student teacher perception', 'quiet student' AND 'Teachers attitudes or thoughts or perception or opinion' AND 'Introversion'	

Educational Full Text	'Extroversion' 'Extraversion' 'Introversion' 'Extrovert OR Extravert Learning Style' 'Introvert Learning Style'	7
	'Quiet, Student teacher perception', 'quiet student' AND 'Teachers attitudes or thoughts or perception or opinion' AND 'Introversion'	
Medline	'Extroversion' 'Extraversion' 'Introversion' 'Extrovert OR Extravert Learning Style' 'Introvert Learning Style'	3
	'Quiet, Student teacher perception', 'quiet student' AND 'Teachers attitudes or thoughts or perception or opinion' AND 'Introversion'	
APA PsychInfo	'Extroversion' 'Extraversion' 'Introversion' 'Extrovert OR Extravert Learning Style' 'Introvert Learning Style'	5
	'Quiet, Student teacher perception', 'quiet student' AND 'Teachers attitudes or thoughts or perception or opinion' AND 'Introversion'	

Table 2.3 presents the Inclusion and Exclusion criteria used to screen the 262 articles found. This study included a search for studies that could include the terms extraversion/extroversion and introversion. However, for the scope of this review the focus

was on refining the search to look at anti-introversion bias as several studies already exist that highlight the pro-extrovert bias (Hampson et al., 1987; Lawn et al., 2019; Norman, 1967). The Prisma flow diagram (Figure 4) depicts the different phases of the systematic literature review. It maps out the number of studies identified, duplicates, studies included and excluded. The inclusion of relevant terms such as teacher, educator, teacher attitude, perception, opinion, student learning style, quiet, introvert and extrovert students ensured a comprehensive search of all possible journals within the fields of psychology and education including teacher education, see Table 2.2. There is limited research in this area, and the search and screening process resulted in the identification of seven studies for the final review; three quantitative, three qualitative and one mixed-methods, see Table 4. The most relevant studies were selected for this review and this resulted in a combination of quantitative and qualitative evidence both of which contribute to understanding the introvert student's experience of educational settings. By using various forms of evidence from different types of research, a mixed-methods review can maximize the findings and use those findings to inform policy and practice. Further details of these studies can be seen in Table A1 and A2 Mapping of the Field, see Appendix A. The articles that were excluded and reasons for exclusion are detailed in Appendix B.

Table 2.3

Inclusion and Exclusion Criteria

	Criteria	Inclusion Criteria	Exclusion Criteria	Rationale
1.	**Publication Type**	Peer reviewed journals or reports.	Non-peer reviewed studies.	Non-peer reviewed journal, articles and reports included in initial search as they provided deeper understanding of the topic. However, only peer reviewed articles were included in the final review as these ensure some degree of academic rigour.
2.	**Date**	All studies were included in initial search. Only studies published since 2000 included in final review.	Any studies prior to 2000	The focus was on studies over the past 20 years ensuring that all relevant information pertaining to the topic of interest. Older studies were included in the introduction or context/rationale.

3.	**Population/Exposure of Interest**	The introvert/quiet student's experience of school	Studies that do not focus on introvert student. Studies that solely looked at shyness or social anxiety.	I included quiet in my search as this descriptor was commonly used as part of the introvert profile. There are many reasons a student may be quiet in class e.g. social anxiety and shyness. These are distinctly different concepts to introversion so it was important to avoid papers that only looked at shyness or social anxiety.
4.	**Setting**	Educational settings; primary, secondary or third level and informal educational settings e.g. group lessons outside of the formal school setting.	Any settings other than educational settings, e.g. work settings, clinics, only e-learning.	To determine the introvert student's experience of a learning environment and the teacher's perspective of the introvert student.
5.	**Participants**	Children, young people and young adults, Students, teachers/educators	Studies that solely focussed on adults over the age of 25 years of age. Anyone other than students or educators.	The EPSEN Act (2004) provides for the education of children aged under 18 years with special educational needs. However, some of the final studies were conducted

				at third level colleges and included older participants. These studies were included in this review if relevant to the introvert student's experience.
6.	**Language**	English Only	All other languages	To ensure clear understanding of the study.

Figure 2.4

Prisma Flow Diagram
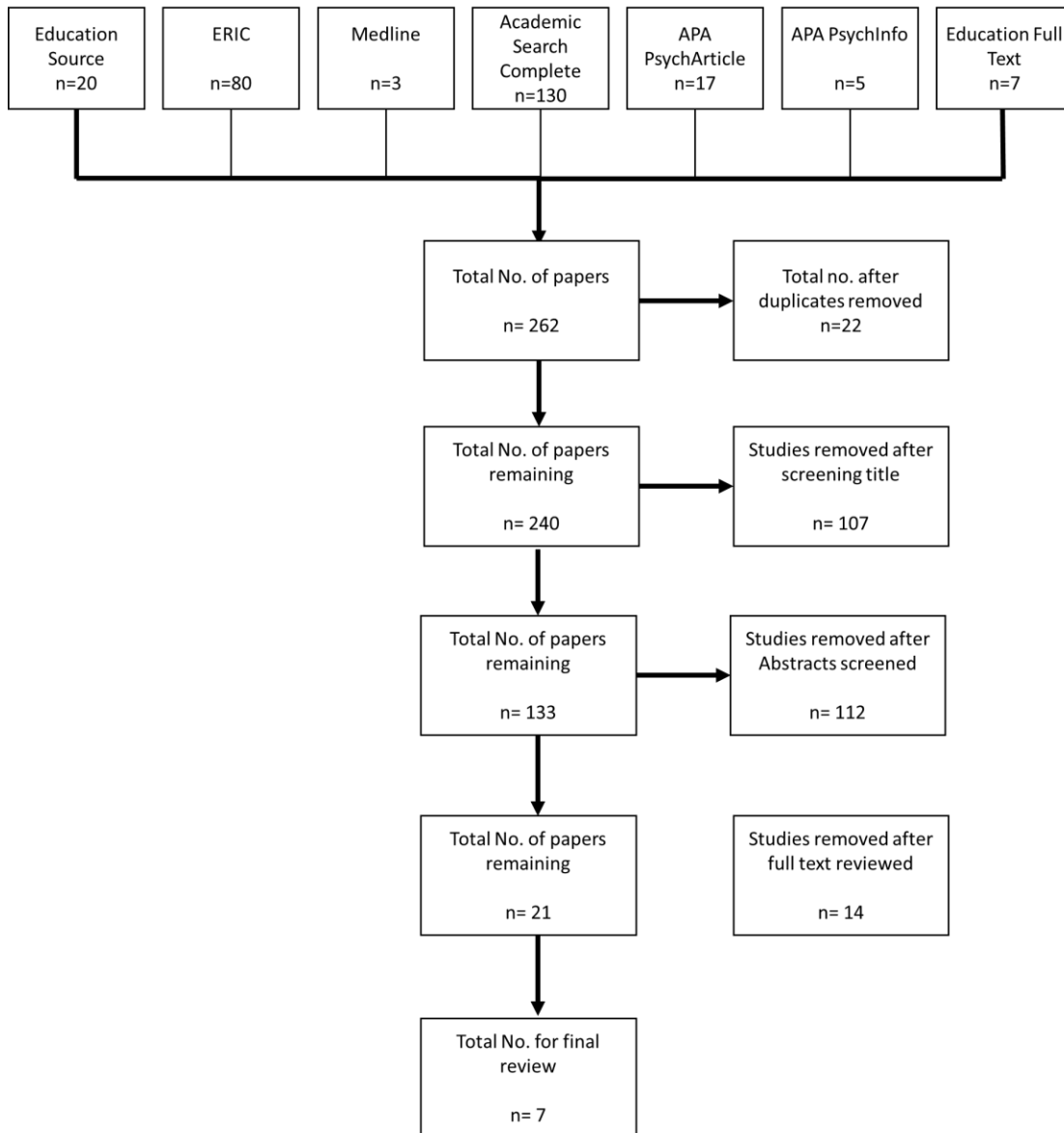
Table 2.4

Final seven studies for Systematic Review

Beckerson, W. C., Anderson, J. O., Perpich, J. D., & Yoder-Himes, D. (2020). An
    Introvert's perspective: Analyzing the impact of active learning on multiple levels
    of class social personalities in an upper level biology course. *Journal of College*
    Science Teaching, 49(3), 47–57. https://doi-org/10.2505/4/jcst20_049_03_47

Brown, Nicholas R.; Terry Jr., Robert; Kelsey, Kathleen D. (2013). The impact
    of learning styles on learning outcomes at FFA camp: What campers retain over
    time. *Journal of Agricultural Education,* 2013, 54 (4), p206-220, 15p; DOI:
    10.5032/jae.2013.04206

Colley, S. L. (2019). Voices of quiet students: Introverted nursing students' perceptions of
    educational experiences and leadership preparation. *International Journal of*
    Nursing Education Scholarship, 15(1). https://doi-org /10.1515/ijnes-2018-0056.

Green, R. L., Milacci, F., & Richards, J. (2019). Breaking the silence: A phenomenological
    study of introverted undergraduate students' experiences in an active learning
    English classroom. *Journal of Ethnographic & Qualitative Research, 14*(1), 12-24.

Henriksson, F., Küller, L.E., Schad, E. (2019). Well-being and stress among upper
    secondary school pupils in Sweden. *Psychology in Russia*. State of the Art. Vol. 12
    Issue 4, p172-195. 24p. DOI: 10.11621/pir.2019.0411.

Rosheim, K. C. (2018). A cautionary tale about using the word "shy": An action research
    study of how three quiet learners demonstrated participation beyond
    speech. *Journal of Adolescent & Adult Literacy*, 61(6), 663–670.
    https://doi.org/10.1002/jaal.729.

Tuovinen, S., Tang, X. and Salmela-Aro, K. (2020). Introversion and social engagement:
    Scale validation, their interaction, and positive association with self-esteem.
    Frontiers in Psychology. 11:590748. doi: 10.3389/fpsyg.2020.590748

2.3.2 Systematic Review of the Literature

Gough's (2007) Weight of Evidence (WoE) framework was used to evaluate the seven studies in this review. This was done by assigning a rating to each study according to three main areas: WoE A, B and C. WoE A assesses methodological quality of the study. Gersten et al's. (2005) methodological quality coding protocol for experimental research was deemed suitable to evaluate WoE A for the quantitative studies. This coding protocol judges studies according to *Essential Quality Criteria* such as how a study describes the participants and how the outcomes were measured and *Desirable Quality criteria* such as attrition rates and validity measures, see Appendix C for a sample. Brantlinger et al. (2005) was used to code the qualitative studies. This coding protocol judges studies based on *Credibility Measures* such as Triangulation Researcher Reflexivity and *Quality Indicators* such as measures to transcribe interviews and confidentiality measures, see Appendix D for a sample. Hong et al., (2018) was used to code the mixed methods study. This permits the coding of qualitative and quantitative methodology using one coding protocol that ensures standards are met within both areas of research, see Appendix E for a sample. WoE B assesses the appropriateness of the design of the study for this review question and WoE C assesses the relevance of the study overall to answer this review question. Each WoE provides a score for each study and the study is then rated, High, Medium or Low quality. A table summarising WoE A, B and C is provided in Appendix F. WoE D calculates an overall weighting for each study by summing up the scores for WoE A, B & C and getting an average score; Low = 1-1.6, Medium = 1.7-2.3 and High = 2.4-3, see Table 2.5.

Table 2.5

WoE Ratings for each Study

Author	WoE A	WoE B	WoE C	WoE D	Quality Rating
Beckerson et al. (2020)	3	1.5	2	2.1	Medium
Brown et al. (2013)	3	1	2	2	Medium
Colley (2019)	1.31	2	2	1.77	Medium

Green (2019)	2.63	2	2	2.21	Medium
Henriksson (2019)	2	3	2	2.3	Medium
Rosheim (2018)	1.72	2	3	2.24	Medium
Tuovinen et al. (2020)	2	3	3	2.6	High

2.3.3   Participants

The number and type of participant in each study varied. The sample size ranged from 3 to 10 participants in the qualitative studies and from 194 to 1045 participants in the quantitative studies. The participants in the final seven studies are representative of the student community spanning elementary/primary school (Rosheim, 2018), secondary/post-primary school (Brown & Terry, 2013; Henriksson et al., 2019; Tuovinen et al., 2020) and college/third level education (Beckerson et al., 2020; Colley, 2019; Green et al., 2019)The majority of the studies produced from the search terms focused on college students including three of the studies included in the final review. Of the seven studies, five were conducted in the US across primary, post-primary and third level education; a US elementary school, racially & linguistically diverse in a suburban midwestern US district (Rosheim, 2018), 8th-12th grade students attending an FFA agricultural camp in Oklahoma (Brown & Terry, 2013), a US community college setting (Green et al., 2019), microbiology students in the university of Louisville (Beckerson et al., 2020) and registered nurses completing a Bachelor of Science in Nursing in the US (Colley, 2019). Of the two remaining studies, one was conducted with 16-17year olds in four Upper secondary schools in Southern Sweden (Henriksson et al., 2019) and the other involved ninth grade students from urban comprehensive schools in Southern Finland (Tuovinen et al., 2020). In terms of the cultural context pertaining to this research, these studies are all embedded within Western culture and therefore, the findings of these studies are relevant to the Irish context. Extant literature indicates that aspects of the extrovert personality type are more socially desirable within Western cultures and schools now adopt more interactive learning strategies in the classroom which are more suited to the extrovert student (Fulmer et al., 2010; Lawn et al., 2019; Myers, 1992). As mentioned previously, Western cultures are considered more extrovert than Asian cultures (Spence & Rapee, 2016). Were these studies conducted in Asian countries, such as China or Japan,

where shyness and traits more commonly associated with introversion are not viewed negatively, the findings may have been different.

Two of the studies did not provide a breakdown of the participant type by gender or ethnic background (Beckerson et al, 2020; Brown & Terry, 2013). However, they did conduct power analysis to ensure they had a sufficient number of participants to generalise to the population. The remaining five studies provided a break down by gender; one study had female participants only (Colley, 2019). Henriksson et al. (2019) used a web-based survey to reach seven different schools (1045 participants) and had a relative equal balance of female and male participants, with slight majority of females; 54% and 44% respectively. Tuovinen et al. (2020) included 862 participants again with a slight female majority at 59% and they did not refer to ethnic breakdown. Two qualitative studies provided ethnic breakdown for the participants (Colley et al., 2019; Rosheim, 2018). Out of a total of 10 participants, six were Caucasian, with the remainder made up of two Hispanic, one Mexican, one second generation Laotian. One qualitative study stated that various ethnicities were equally represented but did not provide a detailed breakdown (Green et al., 2019). Finally, the three quantitative and one mixed-methods studies did not provide ethnic background for the participants (Beckerson et al, 2020; Brown & Terry, 2013; Henriksson et al., 2019; Tuovinen et al., 2020).

Colley (2019) and Rosheim (2018) only included seven and three participants respectively. Both of these studies conducted observation or interview thus requiring an in-depth analysis which justified the small number of participants (Vasileiou et al., 2018). It has been recommended that phenomenological studies that focus on the essence of experiences should include about six participants (Sandelowski, 1995). Although Rosheim (2018) only included three participants, the researcher worked with the participants over a long period of time, one year, therefore engaging in repeated, in-depth interviews and observations. The final study, Green et al. (2019) ensured that they matched the demographics of the college as much as possible by including a mix of male (4) and female (6) participants and various ethnicities were equally represented. Furthermore, they point out that they reached data saturation with the participants. The principle of saturation is the most common justification for sample size in most studies (Vasileiou, 2018).

Green et al (2019) state that they used purposeful sampling and the MBTI to specifically target introvert students in active learning environments. Vasileiou (2018) contends that for qualitative studies purposive sampling is more efficient than random

sampling. Clarke & Braun (2013) and Guest et al. (2006) recommend that a minimum sample size of at least 12 is required to reach data saturation in qualitative studies. The three qualitative studies in this review used between 3 and 10 participants.

2.3.4 Method

There was a mix of designs; three quantitative studies (Brown & Terry, 2013; Henriksson et al., 2019; Tuovinen et al., 2020), three qualitative studies (Colley, 2019; Green et al., 2019; Rosheim, 2018) and one mixed-methods (Beckerson et al., 2020). Each design uses methodologies that answered their specific questions and to suit their aims and theyall contribute valuable knowledge and enhance the understanding of this topic. WoE A measured methodology quality and appropriateness to the study in question and WoE B measured methodology quality and appropriateness to this research question. Some studies were weaker than others based on their methodology, as can be seen in WoE A (Table 5 and Appendix F).

Colley (2019) and Rosheim (2018) received the two lowest scores in WoE A, 1.31 and 1.72 respectively. Both Colley (2019) and Rosheim (2018) had a small number of participants relative to those recommended for qualitative research, seven and three. Colley (2019) only used one method of data collection, online interviews and there was no reference to bracketing (researcher suspending their own biases or preconceptions) by the author in this study and no other methods of data collection to counteract any bias. Green et al. (2019) and Rosheim (2018) ensured that there was triangulation of data by various means; interviews, online student discussion forums or written reflections. Green received a high score in WoE A due to various factors such as use of multiple researchers, member checks and external auditors. All three studies received a medium score in WoE B for their qualitative designs which was deemed potentially appropriate for this research question.

Beckerson et al. (2020) and Brown et al. (2013) received a high WoE A as they used robust mixed methods and quantitative studies that were clearly outlined and answered their research questions. They also used multiple methods of data collection across different conditions. Henriksson et al. (2019) and Tuovinen et al. (2020) received a medium score in WoE A because they only used one method of data collection.

For the purpose of this review question, surveys received a higher rating than other designs as is evident in WoE B where Henriksson et al. (2019) and Tuovinen et al. (2020) received the highest scores. Different research questions require different methodologies (Petticrew & Roberts, 2003). Qualitative studies that used multiple methods of data collection

to capture the voice or experience of the participant received high ratings for WoE A because it suited those research questions. While a mixed methods approach in general is considered more robust it is important to consider if more than one method is necessary to answer the research question and if it provides additional information.

Another key factor is the measure used to determine a participant's level of introversion/extroversion. Six of the seven studies met this criteria and each study used a different measurement; The International Personality Item Pool (Beckerson et al., 2020), The Paragon Learning Style inventory (Brown & Terry, 2013), Cain's 10 questions based on a continuum of introversion-extroversion (Colley, 2019; Rosheim, 2018), The Myers Briggs Type Indicator (Green et al., 2019) and The Big Five personality traits (Tuovinen et al., 2020). Three of the studies used measures that were either not scientifically validated (Colley, 2019; Rosheim, 2018) or used a measure whereby its' validity has been questioned (Green et al, 2019) and this was taken into account in WoE C.

2.3.5   Data Analysis

The standard of the data analysis in the seven studies was high and as such all of them contribute to a higher understanding of the relationship between learning style/preference and personality type and the relationship between personality type and the active learning environment. Four of the studies used statistical analysis using tools such as SPSS to carry out ANOVAs to test for significant effect between test scores based on active or passive learning and personality type (Beckerson et al., 2019). Split-plot factorial analysis was used to test for differences between learning styles and test outcomes at different points in time and one-way ANOVA to test for a relationship between the student's learning style and their attitude toward the learning environment (Brown & Terry, 2013). In this study, learning-style served as a proxy for extroversion-introversion. Shindler and Yang (2003) point out that extroversion versus introversion and sensation versus intuition influence how an individual learns and performs in an academic setting, and they outline four learning styles associated with the two type dimensions; Action Oriented Realists (Extroverted/Sensate), Action Oriented Innovators (Extraverted/Intuitive), Thoughtful Realists (Introverted/Sensate) and Thoughtful Innovators (Introverted/Intuitive). The Paragon Learning Style Inventory (PLSI) was used in this study to measure learning style. Jung's (1971) four dimensions of personality inform the theoretical basis of the PLSI (Brown & Terry, 2013). Only two of the seven studies measured academic outcomes based on the specific aims of their studies (Beckerson et al., 2019; Brown & Terry, 2013); the purpose of Beckerson et al.'s (2020) study was to

determine if active learning environments promote improved exam scores in the class as a whole and to characterize the relationship between personality and performance on exam questions during active learning settings versus passive learning settings. Students attended 4 modules, two used active learning and two used more traditional passive learning. At the end of each unit, students were given a multiple-choice test of the material. Brown & Terry (2013) explored the interaction between learning outcomes and learning style to determine if an individual's learning style affected their level of cognitive gain and retention of material taught during small group breakout sessions. An original instrument was created to assess camper's cognitive gain of concepts associated with the curriculum taught during camp. The instrument, Camp Communications Content Examination (CCCE), was a criterion-referenced test, reviewed for face and content reliability.

The remaining studies focussed on student reports of wellbeing and their experience of their learning environment and one study also included student reflective diaries and observations of students in class (Rosheim, 2018).

T-tests were used to examine relationships between the student's wellbeing, their experience of the learning environment and any stress experienced based on their personality type (Henriksson et al., 2019). Descriptive statistics and correlations were obtained from all the variables, confirmatory factor analysis was used to test the validity of the social engagement scale and hierarchical multiple regression analysis was used to test the moderator effects of social engagement on the relationship with introversion and wellbeing, for example with self-esteem, schoolwork engagement, and school burnout (Tuovinen et al., 2020). These were appropriate measurements relevant to these studies and were rated accordingly in WoE A. The remaining three studies were qualitative and so they analysed the data in a more descriptive way using a variety of analyses to explore concepts and phenomena while also, importantly, capturing the voice of the student e.g., thematic analysis (Green et al.; Colley, 2019), horizontilisation and structural analysis (Colley, 2019); Multimodal analysis to capture communication other than language, such as gestures, facial expressions, volume, pauses, and tone (Rosheim, 2018), Discourse analysis (Rosheim, 2018) and written reflections (Green et al., 2019; Rosheim, 2018). All of the qualitative studies received a high score for data analysis, however, Green et al (2019) received the highest score followed by Rosheim (2018) as can be seen in WoE A. They achieved a high rating because they ensured that the results were coded in a systematic and meaningful way. They also documented the methods they used in a clear fashion. These studies included multiple quotes from participants to support

their conclusions and made connections to related research. Importantly, they demonstrated reflection about their own personal position (Green et al., 2019; Rosheim, 2018).

2.3.6 Findings

Schools now adopt more interactive learning strategies in the classroom which may be more suited to the extrovert student and may disproportionately challenge introvert students leading to inequities in the classroom. The purpose of this review was to establish an understanding of the introvert student's experience of their learning environment. School is an important microsystem in a child's life and can play an influential role in their cognitive, social, emotional and behavioural wellbeing (DES, 2019). The teacher's ability to understand the needs of the pupil and be flexible in their teaching approaches to meet these needs paves the way for a good person-environment fit (Flood and Bank, 2021; Roberts & Robbins, 2004; Rose, 2000). A number of overlapping themes were identified in the seven studies in this review, such as a need for alternative forms of class participation, negative perceptions of introvert students, expectations on the introvert student to conform, the role of teacher support, a poor person-environment fit and student wellbeing. These are discussed in more detail below. A summary of findings is also presented in Table A1, Appendix A.

2.3.6.1 Alternative Forms of Participation in Class. Touvinen et al. (2020) & Rosheim (2018) stated that various types of class participation are necessary. Beckerson et al. (2020) found that an individual's performance in an active learning environment can be significantly impacted by that individual's level of extraversion and that introverts perform worse in group environments. Brown et al. (2013) found that while introverts did not perform less well academically than extroverts in a group setting, extroverts rated their experience of the group setting more positively and therefore benefit more in the affective domain based on their learning style preferences. Touvinen et al. (2020) concluded that less importance should be placed on students participating in class discussion. This is in line with Rosheim's (2018) finding that communication and participation in the classroom was largely based on verbal participation and there is a need for recognition of other forms of engagement such as thinking, writing, listening which are more in line with the introvert student's learning style. The general finding from several of the studies was that quiet or non-verbal engagement is not recognised or valued and therefore various forms of participation must be considered (Colley, 2019; Rosheim, 2018; Tuovinen et al., 2020). For example, Rosheim (2018) noted how one of her students appeared disengaged and withdrawn because he was not speaking to others but on closer inspection, she noticed he was taking notes and when she spoke to him

directly, he knew his classmates' perspectives on a poem and responded with thoughtful details. Colley (2019) and Rosheim (2018) highlighted that introvert students want and need time to observe what is happening in class prior to participation rather than feeling under pressure to participate in spontaneous group discussions. It is possible that the issue of low verbal production does not reside with introvert students, but rather is the result of inequitable participation processes in the classroom environment.

2.3.6.2 Negative Perception of Introvert Students.   The misinterpretation and lack of understanding of quiet engagement can lead to a negative perception of the introvert student by others (peers and teachers) leading to low expectations of these students (Colley, 2019; Rosheim, 2018). Green et al. (2019) highlighted that the participants in their qualitative study expressed embarrassment and negative feelings about themselves based on how their peers perceived them due to their hesitancy and inability to add to a classroom discussion. Several admitted it put them off attending class. Tuovinen et al. (2020) in their quantitative study found that introversion and social disengagement have a positive relation. However, they also pointed out that this does not mean that all introverts are unsocial and highlighted that many introverts are socially engaged but may not share their ideas or demonstrate interest in their peers' ideas. Touvinen et al. (2020) highlighted that because the extrovert traits are favoured in Western cultures, these findings indicate that it would be useful for introverts to communicate more and demonstrate interest in others to avoid or prevent negative perceptions by others.

2.3.6.3 Expectations to Conform. The external pressure to perform in a more

extrovert way may explain the significant emotional energy expenditure reported by introvert students, a theme highlighted by Green et al., (2019) and Rosheim (2018). Most active learning involves paired or small-group interactions to encourage students to become original thinkers, to evaluate and analyse information and engage in higher order learning. Participants expressed feelings of trepidation before a class in anticipation of what is expected of them and of having to 'put themselves out there' and then they are left feeling fatigued and drained after the class. Green et al. (2019) reported that some introvert students suggested that they shut down mentally and physically when the active learning classroom environment became too much for them and many highlighted a need to rest after class. This is supported in the other studies where participants reported feeling pressure to perform

(Colley, 2019, Rosheim, 2018). This is in line with Jung's theory that individuals wear a mask to perform in public, which he purports to be harmful to the individual.

2.3.6.4   Role of Teacher Support. Rosheim (2018) noted a positive shift in identity over the period of the study for all of the participants when the teacher created a better learning environment for them by providing support, recognising the student's strengths and showing an understanding of their learning preferences. This is in line with the social construction of identity and highlights the importance of the teacher's role in paving the way to a good person-environment fit. Green et al (2019) found that spontaneity in the classroom felt invasive for introvert students because they believed the professor would ask for feedback without giving them an opportunity to reflect ahead of time. Rosheim refers to teachers misreading silence for lack of engagement and Green highlights that introvert students worry how professors interpret their silence. Colley (2019) also highlighted the negative impact of a poor teacher-student relationship as a major theme. Brown & Terry (2013) concluded that educators need to attend better to the unique social needs of introverts. Based on their findings that introversion is positively related to social disengagement, Tuovinen et al. (2020) highlighted that teachers need to support introvert students by creating a learning environment that encompasses these diverse needs and alternative ways to participate. Several of the studies recommended that future research needs to look at teaching approaches and the effects of these on the introvert student's engagement and learning. Furthermore, these studies recommended that further research should consider teachers' attitude toward introvert students and the impact that this has on academic and emotional outcomes and how to reconcile the students' needs with the active learning environment (Colley, 2019; Green et al., 2019).

2.3.6.5   Poor Person Environment Fit. Some participants reported that they each made choices about how to minimize challenges such as classroom noise, interactions, and distractions within their environments (Rosheim, 2018). This is in line with one of the main themes that emerged in the Green et al. (2019) study that the active learning classroom is not aligned with the participant's preferred mode of learning (desire to observe prior to participation, to read, listen, time to reflect and process information prior to participation) and as a result introverts employed coping mechanisms which enabled them to perform at their typical academic level. This is supported by Beckerson et al. (2020) who suggest that an active learning environment is not a one-size-fits-all solution. When the test outcomes from

learning in an active learning environment were compared with the test scores from a traditional, passive learning environment, it was found that introverts had better test outcomes when the same material was taught in the traditional, passive learning environment (Beckerson, et al., 2020). Furthermore, extroverts rated their experience of the active learning environment higher than introverts (Henriksson, 2019; Brown & Terry, 2013). This may be due to the fact that they do not have to employ coping mechanisms to manage their environment (dealing with challenges such as noisy classroom, lack of time to process thoughts, constant interactions) while also trying to learn (Green et al., 2019; Rosheim, 2018). Tuovinen et al. (2020) found that introversion is positively related to social disengagement and that social engagement has a high positive relation with schoolwork engagement. In line with this, they found that social disengagement has a negative relation with schoolwork engagement and a positive relation with school burnout. Therefore, they pointed out that in order for introvert students to feel comfortable it requires a socially supportive environment in which introvert students feel that they belong and are accepted by teachers and peers.

2.3.6.6   Wellbeing. Due to being misunderstood and feeling under pressure to conform and be more extrovert, there is a negative impact on the introvert student's confidence (Colley, 2019; Green et al., 2019; Rosheim, 2018). Some of the participants in these studies indicate this social judgement leads to negative feelings about themselves causing anxiety and they feel embarrassment when under pressure to 'perform on the spot' in front of others (Green et al., 2019). Their physical and emotional wellbeing is compromised due to the discomfort they experience in class (Colley, 2019, Green et al., 2019). Some participants reported that they experience headaches and feel unwell as a result of the stress and the expectations that are placed on them (Colley, 2019; Rosheim, 2018). Henrikkson's (2019) and Tuovinen et al.'s (2020) findings indicate that introversion is a risk factor for wellbeing and stress. This is most likely not due to introversion in and of itself but as a result of society's negative perception of introversion due to a preference for extrovert characteristics. It is important to take caution when labelling students as it can determine their positioning and limit their opportunities. Negative perceptions of introversion is not just happening in classrooms but in society in general (Lawn et al., 2019; Spence & Rapee, 2016).

2.4   Conclusion

Society's construction of the 'ideal' personality means that extroverts are accommodated in work and educational settings (Lawn et. al., 2019). This bias has led to negative perceptions of the introvert student, creating barriers to learning which has an impact on both their physical and emotional wellbeing (Colley, 2019; Green et al., 2019; Rosheim, 2018; Tuovinen et al, 2020). There is a perception that verbal participation, engaging with the teacher and peers, is more valued than other forms of participation in the classroom. This is better suited to the extrovert student who gets their energy from the external world (Jung, 1927). The opposite is true for introverts. Introvert students need quiet time out from the noisy classroom environment. In addition, they must employ coping mechanisms to manage the classroom environment so that they can perform at their typical academic level, leaving them feeling fatigued, overwhelmed and stressed (Beckerson et al, 2020; Brown & Terry, 2013; Colley, 2019; Green et al., 2019; Henriksson, 2019; Rosheim, 2018; Tuovinen et al., 2020).

Studies have found that active learning leads to better results at a group level for all students (Morosan et al., 2017; Hsiu-Ting Hung, 2015). However, it has also been found that while introverts' learning can improve within the active learning setting, their results are significantly better when they learn the same material in a traditional classroom setting which incorporates passive learning (listening, reading, reflecting) (Beckerson et al., 2019). The active learning classroom does not match the introvert student's preferred way of learning (Green et al., 2019). The inverse has been found for extroverts, who receive better results from active learning (Beckerson et al., 2019). Therefore, there is evidence to suggest that the active learning environment is biased in favour of certain students (extrovert) and unfairly challenges others (introverts) leading to an inequitable learning environment.

The purpose of highlighting these findings is not to discourage the use of active learning strategies but to bring an awareness that students engage differently. If teachers are not open to various forms of participation and engagement, they may have incorrect representations and negative perceptions of the introvert student's behaviour (Medaille & Usinger, 2020; Rosheim, 2018). These negative perceptions result in low expectations in school for these students (Cain & Klein, 2015; Coplan et al., 2011). This may contribute to a negative sense of self for the introvert student (Medaille & Usinger, 2020; Colley, 2019; Rosheim, 2018). Fostering positive relationships with teachers is a key aspect to promoting

wellbeing in school (DES, 2019). This relationship in turn has an impact on the transactional process between the teacher, student and the learning environment which determines the person-environment fit.

The findings from the seven studies in this review suggest that there is a poor person-environment fit for introvert students across all levels of education (Beckerson et al, 2020; Brown & Terry, 2013; Colley, 2019; Green et al., 2019; Henriksson, 2019; Rosheim, 2018; Tuovinen et al., 2020). There is evidence to suggest that poor person environment fit may be associated with a misunderstanding and negative perceptions, at all levels (cultural, societal and individual), of what it means to be introvert. Failure to recognise alternative ways to participate and demonstrate learning, has led to a mismatch between the active learning environment and the quiet, introspective, reflective nature of the introvert student. It is difficult for introvert students to realise their abilities in a society that does not value their specific strengths but in fact promotes and expects them to conform to something that is not in line with their orientation. Student centred education means putting students' individual needs and interests at the forefront of instructors' teaching practices. UDL offers a potential framework to address and optimise teaching and learning by removing barriers in the school environment. As stated previously, a US survey conducted by researchers at the Centre for Applications of Psychological Type between 2007-2010 indicated that third level students were comprised 40.6% introverts (Condon & Ruth-Sahd, 2013). Active learning is not student centred if it only accommodates the needs of some.

The purpose of this review was to establish an understanding of the experience of the introvert student within their learning environment and gain an insight into teachers' perspectives and attitudes toward these students. Through a mix of qualitative and quantitative studies it provides a deeper understanding of how the transactional process between the teacher, the student and the learning environment may create a poor person-environment fit for these students who in turn must employ various mechanisms to cope within and adapt to a learning environment that is at odds with their personality. Almost half of the studies in this review focussed on undergraduate students (Beckerson et al., 2020; Colley, 2019; Green et al., 2019), three studies focussed on high school students (Brown & Terry, 2013; Henriksson, 2019; Tuovinen et al., 2020) and one study focused on primary level students (Rosheim, 2018). Rosheim (2018) provided great insight into the experience of the introvert student and teacher attitude.

Three of the studies in this review reference teacher attitudes toward introvert students and this was only through the eyes of the students. Only one study provided a first-hand account of a teacher's perspective (Rosheim, 2018). In this study a positive shift in identity was noted for all of the introvert students when the teacher created a better learning environment for them by recognising their strengths and preferred learning styles. Several of the studies in this review recommended that further research should consider teachers' attitudes toward introvert students as they play a key role in student wellbeing. This review was broad because it also looked at introversion-related characteristics such as quietness, and as such there is limited direct research in this field. Wellbeing of young people is essential to success in school (Department of Education and Skills and HSE, 2013; Weare, 2000). The Wellbeing Policy Statement and Framework for Practice is for all professionals with an interest in the promotion of wellbeing in education (DES, 2019). Therefore, it is important for EPs to have an understanding of the needs of introvert students and the obstacles to their learning and wellbeing within the school environment.

However, there appears to be a paucity of studies that examine the person-environment fit for the introvert student at primary level. Furthermore, no Irish studies were found as part of this review. Research in this area could inform inclusive teaching practices that would benefit half the student population and all teachers, giving a voice to the quiet student. The teacher's ability to understand the needs of the pupil and be flexible in their teaching approaches to meet these needs paves the way for a good person-environment fit. Schools and teachers may need to examine their own implicit perspectives of introverts and how they are taking their wellbeing into account. Based on the findings from the literature and systematic review, the main research question for this study is: *What are primary school teachers' attitudes toward introversion in students?* The study assumes that teacher attitudes to personality are socially constructed. Taking into consideration the influence of societal and cultural norms and perceptions of introversion and extroversion as highlighted in previous research, the design, as outlined in chapter 3, looks at how positive and negative framing of student personality influences teacher attitude.

Chapter 3 Empirical Paper

3.1 Introduction

The key aim of this study is to explore primary school teachers' attitudes toward introvert students because the transactional process between teacher, student and the learning environment is critical for the wellbeing of the introvert student.

Extant literature indicates that schools now adopt more interactive learning strategies in the classroom which are more suited to the extrovert student, and may disproportionately challenge introvert students leading to potential inequities in the classroom. Research findings indicate that extroverts perform significantly better than introverts in exams when material is covered via group-based active learning classes (Beckerson et al., 2020). As a result of this, there may be low expectations for the introvert students because they are misunderstood and their strengths go unrecognised (Medaille & Usinger, 2020; Green et al., 2019; Rosheim 2018).

Teachers sometimes focus on the external behaviour of a student, believing the student is not interested or unmotivated. Some studies highlight that teachers can have low expectations of quiet children and believe they are less intelligent, and will fare less well academically than the more talkative and active students (Cain & Klein, 2015; Coplan et al., 2011). These social constructions of introversion may lead introvert students to overlook their own strengths which has costs for their health, personal lives, and sense of self. Several aspects of self-concept play a role in wellbeing (Bailey, 2003; Epstein, 1973). The term looking-glass self, refers to how an individual's self-concept and identity is developed in response to the opinions and reactions of others and how the individual internalises how they perceive others to evaluate them (Cooley, 1902). Bronfenbrenner's Ecological Systems theory highlights (Bronfenbrenner, 1979) the transactional process between the individual and others, providing a comprehensive systems-based understanding of how an individual's wellbeing is embedded in the social context of their relationships (DES, 2019; Erikson et al., 2018).

3.2 Policy and Context

The Department of Education (DES) Wellbeing Policy Statement and Framework for Practice, revised in October 2019 places a high priority on wellbeing promotion in all educational settings (DES, 2019). Fostering positive relationships with teachers, school staff and peers is a key aspect to promoting student wellbeing. Government policy in Ireland

supports the view that a whole school approach to wellbeing is central to best outcomes for students in terms of having a sense of belonging and feeling supported (DES, 2019; Weare, 2000). The National Council for Curriculum and Assessment (NCCA) suggests that wellbeing is present when a person realises their potential, has a sense of purpose, connection and belonging to a wider community (NCCA, 2017).

The teacher's ability to understand the needs of the pupil and be flexible in their teaching approaches to meet these needs paves the way for a good person-environment fit (Flood and Bank, 2021; Roberts & Robbins, 2004; Rose, 2000). Studies show that a good person-environment fit leads to higher levels of learning (Akiba and Alkins, 2010; Pawlowska et al., 2014) and student wellbeing (Lawn et al., 2019; Van-Vianen, 2018). There is a history of society favouring extrovert traits, for example someone who is gregarious, sociable and outgoing as reported in scientific studies (Hampson et al., 1987; Norman, 1967) and in the popular media (Adams, 2013; Cain, 2013; Clark, 2013). Schools and teachers are susceptible to societal and cultural influences. It is therefore important to consider any potential participation inequities that may arise in class as a result of this. Based on the reviewed literature, there appears to be a paucity of research into the experiences of the introvert student in primary school both at international and national levels. Furthermore, there is a lack of research into teachers' attitudes toward introvert students as explicitly stated in several of the studies (Brown et al., 2013; Colley, 2019; Green et al., 2019; Rosheim, 2018; Tuovinen et al., 2020). Based on research findings and DES guidelines that state that the transactional process between the teacher, student and the learning environment is critical for the wellbeing of all students and taking into account the influence of societal and cultural norms and perceptions of introversion, the purpose of this study is to explore primary school teachers' attitudes toward introvert students.

3.3   Research Question

Based on the findings from the Literature and Systematic review, the main research question for this study is:

What are primary school teachers' attitudes toward introversion in students?

The study assumes that teacher attitudes to personality are socially constructed. Taking into consideration the influence of societal and cultural norms and perceptions of introversion and extroversion as highlighted in previous research, the design looked at how positive and negative framing of student personality influences teacher attitude. This study

also explores whether teachers' own level of extroversion impacts their attitude to student personality. There are three manipulated variables in the research design leading to three hypotheses to explore the research question:

> **H1: Framing:** There will be a higher attitudinal rating for positively framed vignettes compared to negatively framed vignettes.
>
> **H2: Student Personality:** There will be a higher attitudinal rating for extrovert students compared to introvert students.
>
> **H3: Teacher Levels of Extraversion:** Teacher introversion/extroversion scores will influence the effects of framing and student personality on vignette ratings.

3.4   Methodology

3.4.1   Research Paradigm

This study falls under the Pragmatic paradigm. Pragmatists assert that there is a single reality and that all individuals have their own unique interpretation of that reality which, in the current study, allows for a socially constructed view of teacher attitudes to personality. A key aspect of pragmatist epistemology is that an individual's perceptions of the world are influenced by their social experiences. Each person's knowledge is unique as it is created by their unique experiences. This study is concerned with how teachers understand the concept of introversion based on their own social experiences. The study assumes that teacher attitudes to personality are socially constructed.

Identities are 'constructed' through social interactions with others, beliefs held by society and influenced by our environments. Social constructions that we have about the world each have their implications for different types of action (Hewitt, 2009). The social constructions that teachers have about introvert and extrovert students has implications as it may determine their expectations of and attitudes toward these students.

3.4.2   Theoretical Framework

The Person-Environment Fit theory (P-E Fit theory) describes the match between attributes of the person and attributes of the environment (Roberts & Robbins, 2004). P-EFit theory originates from Kurt Lewin's equation of behaviour (1951). Lewin suggested that behaviour is a function of the person and the environment and that the fit between the person and the environment predicts human behaviour rather than the person and the environment separately. According to Lawton's (1983) theory of the person-environment fit, the physical

and social environments and the person's behaviour are shaped by one another in a constant ever-changing process, similar to Bronfenbrenner's ecological system's theory. There are three basic principles of the P-E fit theory; (a) the person and the environment **together** predict human behaviour better than they each do individually, (b) outcomes are optimal when personal and environmental attributes are compatible and (c) the direction of any misfit between person and environmental attributes does not matter, for example whether the environment offers too much or too little of what a person needs, the same negative outcome will occur (van Vianen, 2018). P-E Fit theory puts forward that people have an innate need to fit their environments and will seek out environments that match their own characteristics (van Vianen, 2018). Hogg (2000) purports that individuals strive for certainty and predictability, which can be achieved if their own beliefs, attitudes, and behaviours converge with those of others. There is a strong history of western society favouring extrovert traits, such as gregarious, sociable and outgoing over those typically associated with introversion such as quiet, inner directed and withdrawn (Hampson et al., 1987; Norman, 1967). Lawn et al. (2019) and Fulmer et al. (2010) contend that the extrovert personality type is more socially desirable in western cultures and are therefore more likely to be accommodated and thus experience a better person-environment fit across various settings (school and work). According to Akiba and Alkins (2010) and Pawlowska et al. (2014), the highest level of learning occurs when there is a good person-environment fit and the teacher plays a key role in constructing this, see Figure 3.1.

Figure 3.1

Person-Environment Fit
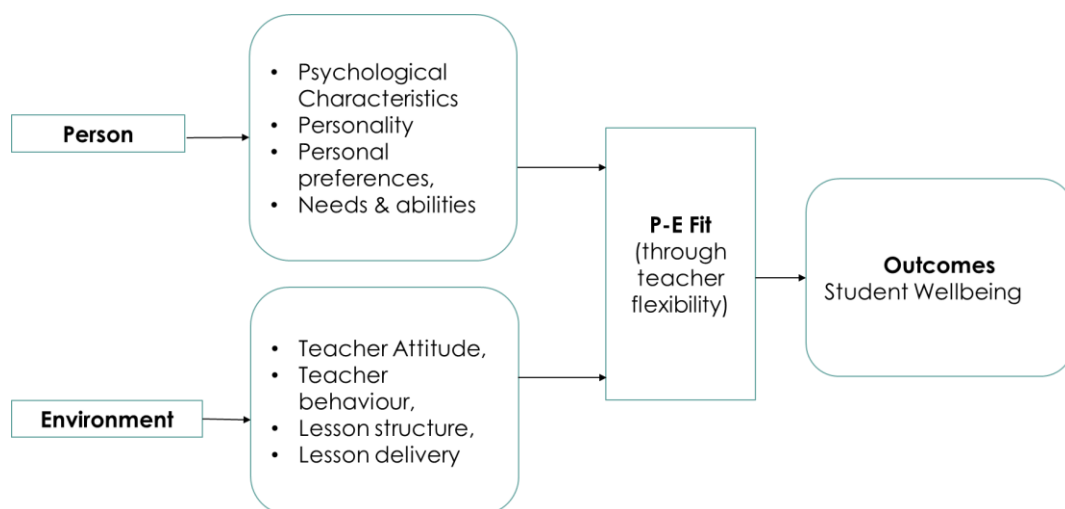
3.4.3   Study Design

The study assumes that teacher attitudes to personality are socially constructed. As such, the design looked at how positive and negative framing of student personality influences teacher attitude. This was a quantitative mixed (between and within subjects) design. Vignettes were used to present a hypothetical scenario involving students in the classroom and surveys were then employed to gather information using relevant questions. There were three independent variables; student personality (typical/introvert/extrovert), framing (typical/positive/negative) and the order and combination in which student personality and framing was presented to the participant. Student personality and framing were within-subject's factors and the order and combination of vignettes was a between-subjects factor. Teachers' level of extraversion was included as a covariate in the design, as this could be a confounding variable and may affect the outcome. This approach allowed the study to examine the main effects of student personality and framing as well as the interaction between them, while statistically controlling for teachers' own levels of extraversion. See Figure 3.2 for design flow-chart.

Figure 3.2

Design Flow-Chart
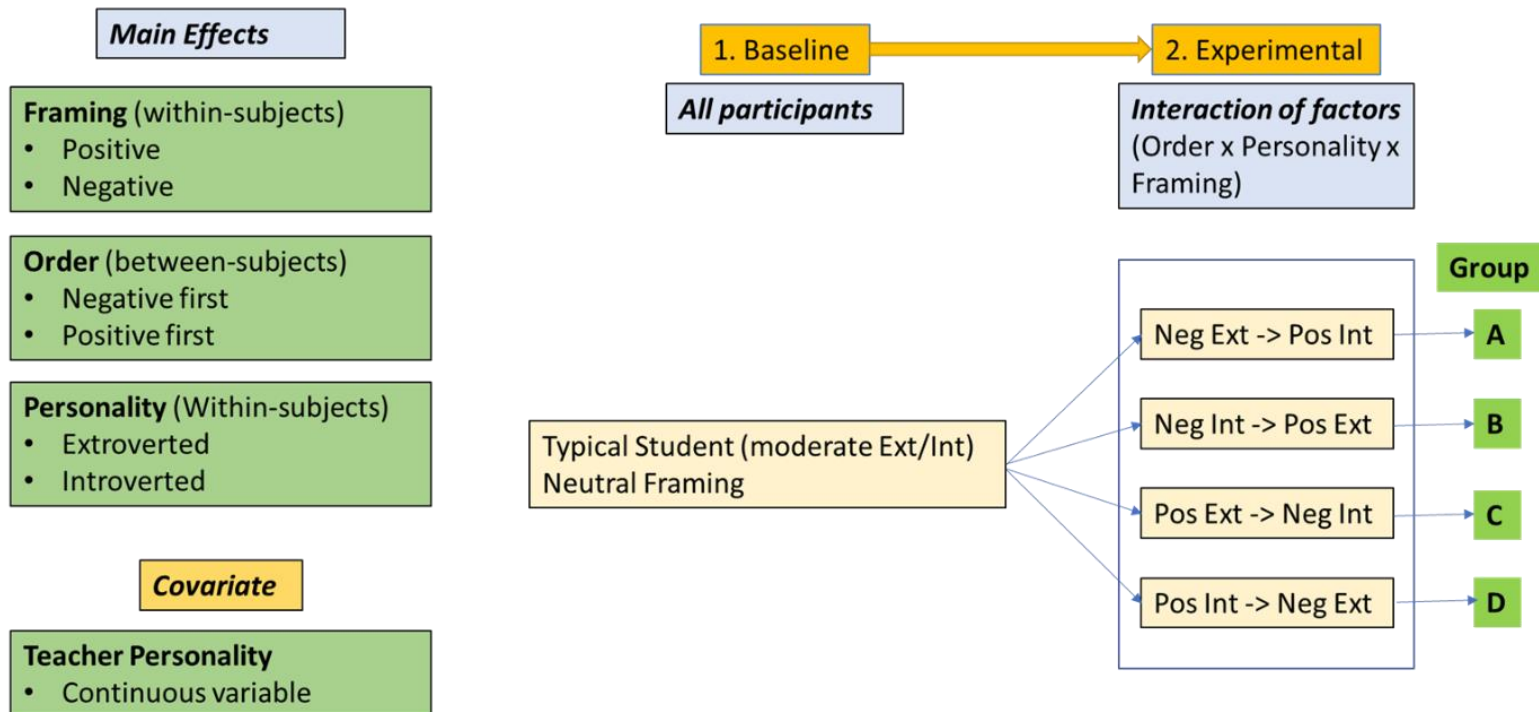
3.4.4 **Participants**

3.4.4.1   Sampling Strategy. The purpose of this study was to explore primary school teachers' attitudes toward introvert students in the classroom environment. Therefore, primary school teachers working in mainstream primary schools in Ireland were the population of interest for this study. This research used purposeful sampling as it focussed on primary school teachers (Creswell & Poth, 2018). This is a form of non-probability sampling in which the researcher uses their own judgment to choose individuals to participate in a survey. Random sampling was also used to ensure that the results can represent the wider population of teachers. This study used simple-random sampling which means that random teachers from a state-level list of teachers were surveyed. During the course of the recruitment process it became apparent that it would not be enough to email schools and principals to recruit the number of teachers required for this study within the time constraints of this research. Therefore, it also involved snowball sampling, whereby teachers and families of teachers known to the researcher were asked to recruit other participants from among their acquaintances and work colleagues.

3.4.4.2   Sampling Size. Using G-Power, F Tests were selected to represent factorial design (Faul et al., 2007). An effect size of 0.25 or more is considered favourable (Cohen, 1988). Therefore, with an effect size of 0.25, evaluated using Cohen's d method, an error probability of 0.05 and a statistical power of 0.80, the total sample size was set at 263 (Cohen, 1988). In addition to this, a Qualtrics calculator was used to calculate a representative sample size using the population of primary school teachers in Ireland (38,604). This figure was taken from education indicators as set out by the department of education in December 2021(DES, 2021). According to this calculation, with a confidence interval of 90% and margin of error of 5%, a minimum of 269 participants were required to respond to this survey in order to generalise to the whole primary school teaching population. 334 primary school teachers completed the survey therefore, the targets set by both above methods of estimating required sample were met. The pilot study population was the same as the main study. The literature recommends at least 12 participants for pilot studies (Moore et al., 2011).

3.4.5 *Measures*

Vignettes and surveys were deemed the most appropriate data collection tools for this study. Stecher et al. (2006) conducted research that provided cautious support for vignettes as a valid means of measuring behaviours that are consistent with data gathered via classroom observations. Vignettes have also been shown to address complex issues effectively and economically with a large number of respondents, that may not be accessible via other sources (Barnatt et al., 2007; Erfanian et al, 2020; Finch, 1987). Furthermore, vignettes can contextualise the scenario thereby making the situation familiar to the respondent with the goal of prompting a reflective response (Morrison et al., 2004; Schoenberg and Ravdal, 2000).

A web-based survey was deemed the most appropriate tool for gathering the data for several reasons. This is an under-researched area and the use of a web-based survey ensured access to a large sample and enabled the researcher to reach all primary schools in Ireland via email. It is more time-efficient for the participants and due to its' ease of use and accessibility across multiple platforms there is likely to be a greater response rate. A crucially important advantage of web surveys is that the participants can remain anonymous, which is an added layer of confidentiality. The purpose of the survey was to gather information from primary school teachers regarding their attitude toward hypothetical students in their classroom. The survey consisted of two sections; in the first section each participant received three vignettes, each of the vignettes was followed by the same six questions measuring teacher attitude. The second section entailed the extraversion 20 item trait scale (in the survey this was called Teacher Questionnaire).

The Teacher Questionnaire was made up of a 20 item Extraversion Trait Scale selected from the International Personality Item Pool (IPIP), see Appendix G (Goldberg et al., 2006). The IPIP scales have good internal consistency and relate strongly to major dimensions of personality (Gow et al., 2005). The 20-item scale is based on the Neuroticism, Extraversion, Openness Personality Inventory-Revised (NEO-PI-R; Costa & McCrae, 1992) standard questionnaire measure of the Five Factor Model (FFM). This scale is previously shown to have very good internal consistency ($\alpha = .91$; Goldberg et al, 2006), and this was also shown in the present study ($\alpha = .904$).

The vignettes were also developed for the purposes of the study using the FFM (Goldberg et al, 2006). The FFM has designed statements to measure levels of extraversion

under the following headings: Friendliness, Gregariousness, Assertiveness, Activity Level, Excitement Seeking and Cheerfulness. There are +keyed items which indicate higher levels of extraversion and –keyed items indicate lower levels of extraversion i.e. introversion, see Appendix H for a complete list of + and – keyed items. The use of these headings and statements ensured consistency across each vignette. In total five vignettes were developed; one depicted a typical student that acted as a baseline. The four remaining vignettes consisted of positive and negative framing of introvert and extrovert students. The vignettes were created using items from one of several versions of the five-factor model of personality from the International Personality Item Pool (IPIP); specifically the set of items which aligns with Costa & McRae's (1992) NEO-PI-R (Golderberg 1999). See Table 3.1 for a break-down of each vignette (framing x personality) line-by-line using the IPIP scales. See Appendix I for all vignettes as they appeared in the survey.

Table 3.1

Vignettes Line-by-Line Using IPIP Scales For Extraversion

Scenario	Typical	Positive Introvert	Positive Extravert	Negative Introvert	Negative Extravert
Friendliness	This student is friendly with others at school.	This student takes time to make friends.	This student makes friends easily.	This student is hard to get to know and has limited interest in others.	This student is always chatting to others in the class.
Gregariousness	They display a typical pattern of verbal participation in class.	They prefer to work independently or in small groups.	They thrive working in big groups.	They prefer to complete work alone.	They can sometimes find it difficult to work independently.
Activity Level	They volunteer to speak in class on a regular basis, and typically put up their hand before talking.	They need time to answer a question in class because they like to think about their answer.	They are first to volunteer to speak and enjoy class discussions as they can think while speaking.	They react slowly when asked a question in class and take time to answer.	Because they are so talkative, they can often take over classroom discussions.
Assertiveness	Although they are not necessarily a group leader, they are often an active participant and contributor to group activities.	This student listens, observes and reflects on what has been said before they contribute to class discussions.	This student can take charge and assume a leadership role in group activities.	This student has little to say in class and generally remains in the background.	They tend to take control and can dominate in group activities.
Excitement Seeking	They enjoy a range of activities in the classroom from quiet to more stimulating.	This student favours a quiet learning environment.	They love the energy of a busy and active classroom environment.	This student does not like the energy of a busy and active classroom environment.	This student is usually involved in any noise or disruption in the classroom.
Cheerfulness	This student also enjoys humour and fun with their classmates.	This student enjoys humour and fun with small groups of friends, and expresses amusement thoughtfully and quietly.	They enjoy being at the centre of humour and fun in the classroom.	This student is not easily amused.	They are easily amused and like to play up to an audience.

Each vignette was followed by the same six questions to measure teacher attitude toward a specific hypothetical student. In their book, The Psychology of Attitudes, Eagly and Chaiken (1993, p. 1) define an attitude as 'a psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disfavor'. According to Eagly and Chaiken (1003) an attitude involves an evaluative judgement and importantly, attitudes can differ in valence (positive or negative) and in strength (strongly agree, strongly disagree or neutral). The three-component model of attitude conceptualises attitudes as evaluations made up of affective, cognitive and behavioural components. Attitudes reflect a set of emotions, beliefs, and behaviours toward a particular person or object (Eagly and Chaiken, 1993).

In order to ensure that the teacher's attitude specifically was measured, the three-component model of attitude was used to frame the questions. The evaluation of teacher attitude included three types of responses based on the three-component model of attitude: (1) the affective component (feelings toward the student); what are teachers' feelings toward the introvert student?. Brewster (1947) stated that when measuring attitude it is important to measure the direction and intensity of that feeling; is it favourable or unfavourable?; (2) the cognitive component (thoughts, knowledge and beliefs about the student). This question takes into account the teacher's understanding of introversion, what picture of introversion the teacher has formed for themselves and the beliefs held about introvert students' academic ability and (3) the behavioural component (intended behaviour toward the student;), this represents the teacher's confidence in their ability to provide interventions to include introvert students and their attitude toward introvert students to engage with these interventions. The three components collectively form the teacher's attitude toward the student (Eagly and Chaiken, 1993). There were two questions for each component; one was student-centred (SC) evaluating the teacher's attitude toward the student as a learner and the other was teacher-centred (TC), related to a teachers' sense of self-efficacy to teach introvert students, both of which have consequences for the student's person-environment fit and thus their wellbeing. See Table 3.2 for a breakdown of the six survey questions by attitude component and question type. A five-point likert scale was used to evaluate teacher attitudes with 1 being 'Strongly Agree' and 5 being 'Strongly disagree' (Qualtrics XM, 2022). These were reverse-coded for analysis so that greater agreement with the probe items indicates more positive evaluations.

Cronbach's alpha indicated good reliability across all vignette probe items for each category, with values ranging from α = .748 to .805.

Table 3.2

Teacher- and Student-Centred Survey Questions by Attitude Component

	Survey Question	Attitude Component	Teacher (TC) or Student Centred (SC)
1.	I would feel energised teaching this student.	Affective	TC
2.	I think this student is likely to feel happy in their classroom.	Affective	SC
3.	I would find it easy to develop an understanding of this child's behaviour.	Cognitive	TC
4.	I would expect this student to do well academically relative to their peers.	Cognitive	SC
5.	I would feel confident to create ways for this student to participate in class.	Behavioural	TC
6.	This student is likely to engage with strategies to help them integrate into the classroom activities	Behavioural	SC

3.4.6 Procedure

A list of all primary schools in Ireland, 3106 in total, was downloaded from www.gov.ie. The list included details such as school name, address, principal name and contact information, Delivering Equality of Opportunity in Schools (DEIS) status, ethos and number of male/female students. In line with Moore et al.'s (2011) recommendations when planning pilot studies, the principals of six primary schools were contacted by email in an effort to acquire a minimum of 12 participants as part of this pilot study. Schools from across Ireland were selected to ensure regional spread. Other factors taken in to account to ensure balance were urban versus rural schools, school size and girls, boys or mixed schools. A cover letter was emailed to the school principal requesting that they circulate an information

sheet to the teachers in their school inviting them to take part in the study, see cover letter in Appendix J. The information sheet outlined the purpose of the study, approximate duration of the survey, the participant's right to confidentiality and anonymity, consent and participant's right to withdraw at any time without consequence, see Information Sheet Appendix K.

Once the participant clicked on the survey, another short information sheet preceded the vignettes, see Appendix L. All participants were presented with a vignette of a typical student that acted as a baseline. The vignette is a short story, approximately 50 words and presented a hypothetical scenario involving students in the classroom. Subsequent to the typical/baseline vignette, all participants received two additional vignettes to read and respond to. One vignette was positively-framed (i.e. presenting the student in a positive light) and one was negatively-framed. In addition, for each participant one of these vignettes described an introverted student and one described an extroverted student. Counterbalancing the order of presentation of the framing (negative first or positive first), as well as which of the two vignettes was positive or negative (introvert or extrovert) meant that there were four possible combinations, thereby requiring random assignment of each participant to one of four groups. This was not a purely within-subjects design. All participants did not receive all of the vignettes. The reason for this was to avoid participant fatigue and possible transfer effects. Teachers also completed the Teacher Questionnaire(the extroversion trait questionnaire) to determine if their own personality type influenced their attitude toward introvert students.

When the survey was completed, it was immediately followed by a debrief page, see Appendix M. Completion of the survey indicated participants' consent to participate in this study. There was no compensation for responding to the survey.

The outcome from the pilot study provided information about whether the full-scale study was manageable for participants and yielded relevant data to answer the research question. One amendment was identified after a number of teachers in the pilot study contacted the researcher to highlight that the survey only took 10 minutes duration versus the 20 minutes that was advised. The information sheet was amended accordingly for the full study.

Once the pilot study was complete all schools on the list were contacted via email. A six-month expiration date was set on the Qualtrics survey to ensure all principals and teachers had sufficient time to complete the survey. This also set a time-limit on the survey to ensure that responses did not continue to come in post data analysis. A default message was set after this time to indicate that the survey link had expired. Qualtrics provides several means to distribute a survey. For the purposes of this study a reusable survey link was selected as the same link could be sent to all of the participants. There was also a built-in feature that prevented this link being used more than once on the same device thereby guarding against participants completing the survey several times. If a participant started the survey, it would remain open for 3 months to allow them to complete it. After this time, it would be rendered incomplete. All data from the surveys were collected in Qualtrics, then transferred to Microsoft Excel for data cleaning and exported to SPSS for analysis.

3.4.7   Ethical Considerations

The Ethical approval was sought and obtained from the Mary Immaculate College Research Ethics Committee (MIREC) in December 2021. As a trainee psychologist it was incumbent upon the researcher to adhere to the Code of Professional Ethics as set out by the Psychological Society of Ireland (PSI, 2019). Psychologists accept that codes of ethics are necessary to protect the interests of clients and prevent misuse of psychological knowledge. In joining the PSI, the researcher agrees to comply with the Code's provisions. This related to the recruitment process, data collection, and ensuring participant confidentiality and anonymity. The participating schools and recruited participants were made fully aware of the aims and goals of the research project and were provided with an information and debrief sheet. The information sheet informed the participants that their participation was voluntary, and that they could withdraw at any stage. The participants were not required to provide any personal or identifying information so that anonymity was guaranteed. Participants were informed of how the research outcomes would be used. Furthermore, all research activities were conducted on a password protected computer.

3.5   Results

The main analyses used to test the hypotheses were factorial ANOVAs, therefore standard assumptions of this test, as per Field (2018), were checked. Inspection of boxplots of

each of the main variables of interest (vignette ratings, teacher extroversion scores) showed that there was one extreme outlier, and this case was removed from all subsequent analysis, leading to a final sample size of 333. For the remainder of the variable outliers, inspection of z-scores indicated that outliers were moderate and fewer than 5% were +/- 1.96 *SD's* from the mean for all variables so all data (absent the extreme outlier) were retained for analysis, as per Field (2018).

A variety of methods (Kolmogorov–Smirnov and Shapiro-Wilk's tests of normality, evaluation of skew and kurtosis, and visual inspection of plots) were used in this study to explore the normality of the data. For teacher extroversion scores, the data were shown to be normally distributed; Kolmogorov–Smirnov $D = .038$, $p = .200$ and Shapiro-Wilk $W = .994$, $p = .181$ (see Table 3.3). The results of the normality tests were supported by visual inspection of histogram and q-q plot (see Figures 3.3 & 3.4).

Table 3.3

Test of Normality Kolmogorov-Smirnov and Shapiro-Wilk

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig	Statistic	df	Sig
Mean scores for teacher extraversion	.038	334	.200	.994	334	.181
Introvert total	.086	334	<.001	.968	334	<.001
Extrovert total	.117	334	<.001	.948	334	<.001
Typical total	.188	334	<.001	.789	334	<.001

Figure 3.3

Histogram Depicting Normal Distribution of Sample

Histogram
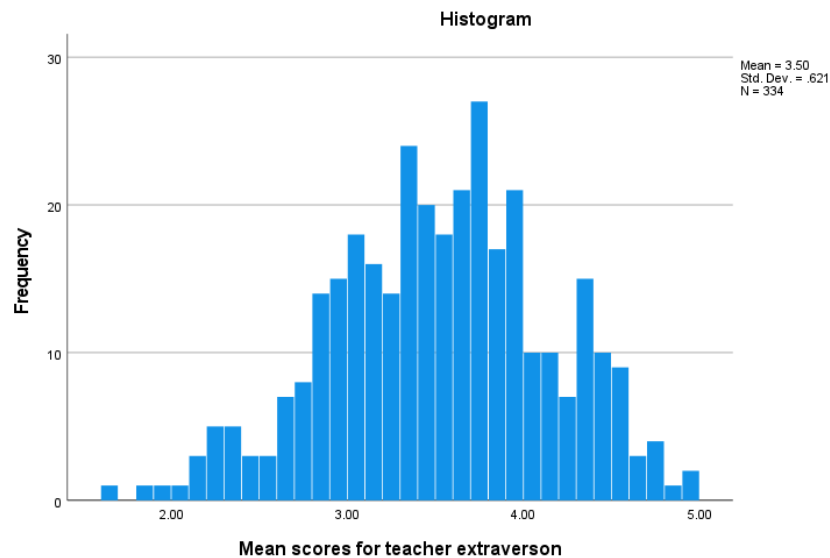
Figure 3.4

Q-Q Plot Normal Distribution - Expected and Observed Scores Aligned

Normal Q-Q Plot of Mean scores for teacher extraverson
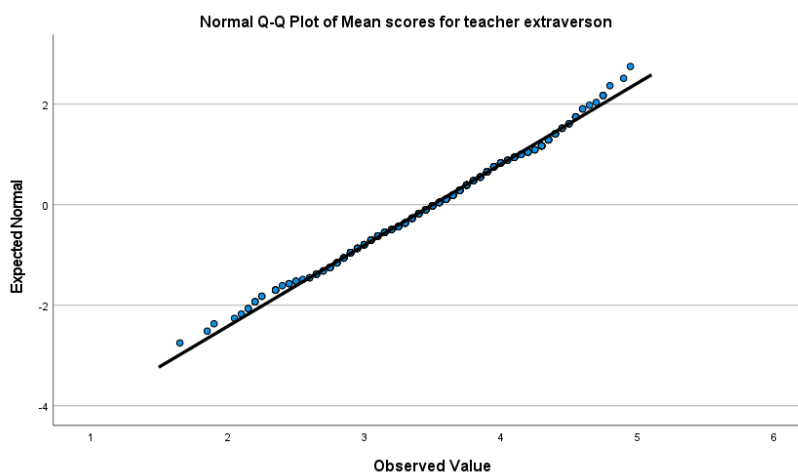
The dependent variables of interest in the present study, mean teacher ratings for introvert, extrovert, and typical vignettes were inspected for normality, and were indicated to be significantly non-normal (introvert ratings $D = .085$, $p < .001$, $W = .968$, $p < .001$; extrovert ratings $D = .116$, $p < .001$, $W = .949$, $p < .001$; typical ratings $D = .183$, $p < .001$, $W = .853$, p

<.001). Visual inspection of histogram and q-q plots also indicated that extrovert and introvert data were not obviously non-normal, however it was noted that there was more prominent negative skew in the typical vignette ratings (see Figures 3.5 - 3.8).

Figure 3.5

Histogram Depicting Normal Distribution of Sample
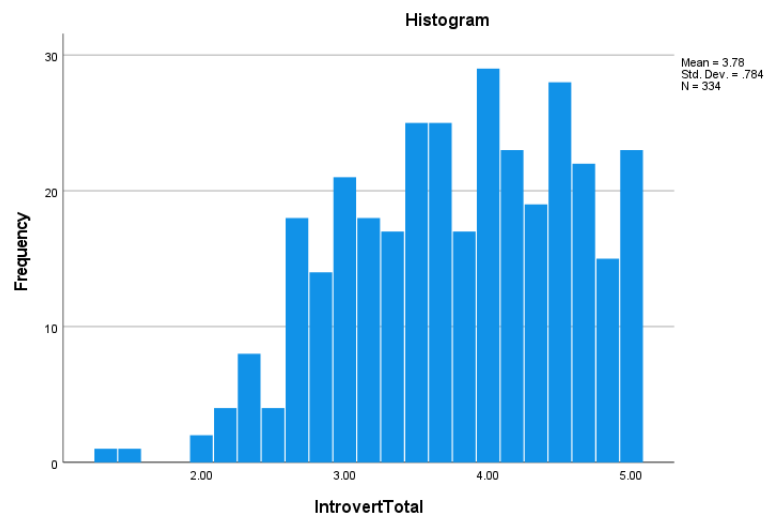
Note. Something like a ceiling effect here. Teachers rating introvert students overall as high and belief in their ability to teach introvert students is high. Enough of a mode here to be comparable to normal distribution.

Figure 3.6

Q-Q Plot Normal Distribution - Expected and Observed Scores Aligned

Normal Q-Q Plot of IntrovertTotal
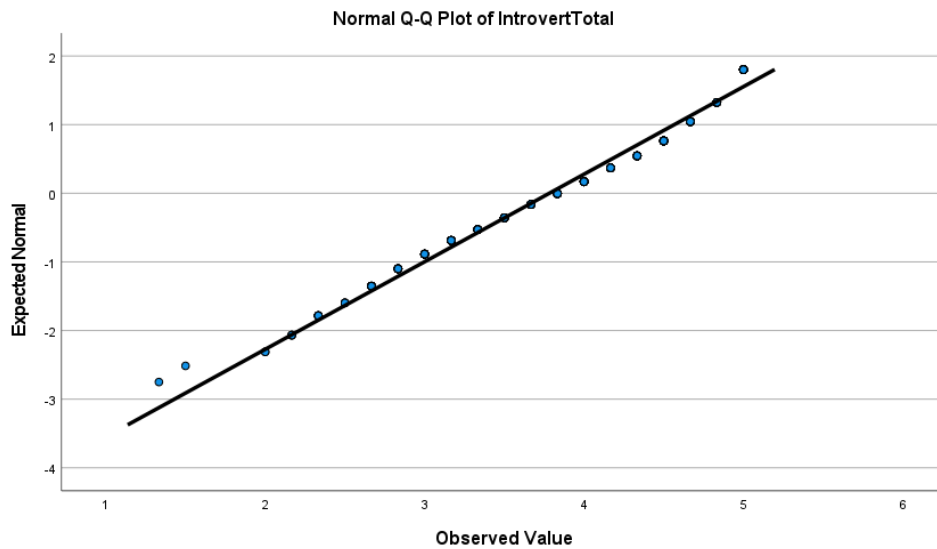
Figure 3.7

Histogram Depicting Normal Distribution of Sample
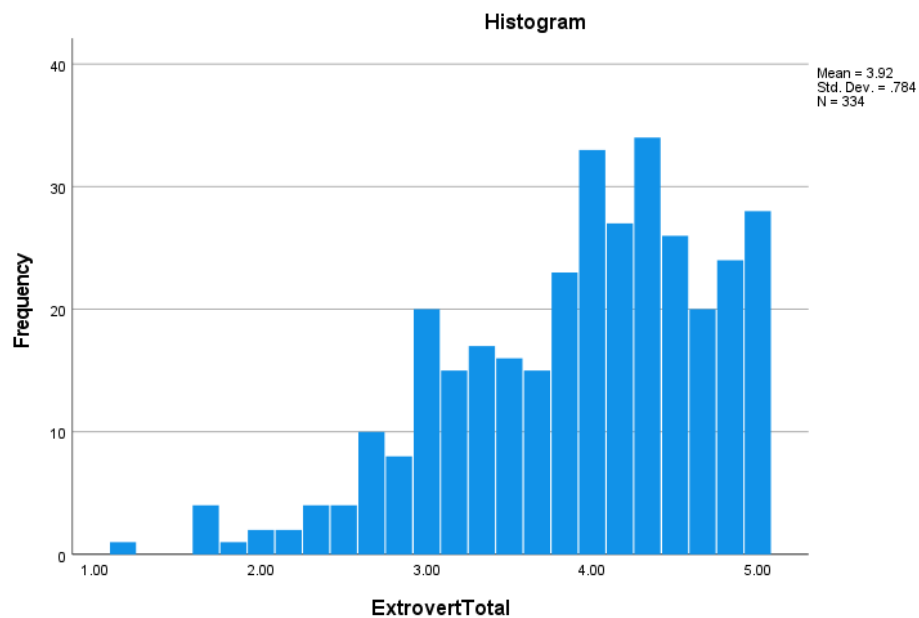
Histogram

Note. Same as IntrovertTotal histogram. Generally, teachers want to rate students well and they want to rate their own ability to teach as high. It is slightly skewed to the right but it is tapering off implying that if there were more participants this histogram would adopt a bell shaped curve.

Figure 3.8

Q-Q Plot Normal Distribution - Expected and Observed Scores Aligned

Normal Q-Q Plot of ExtrovertTotal
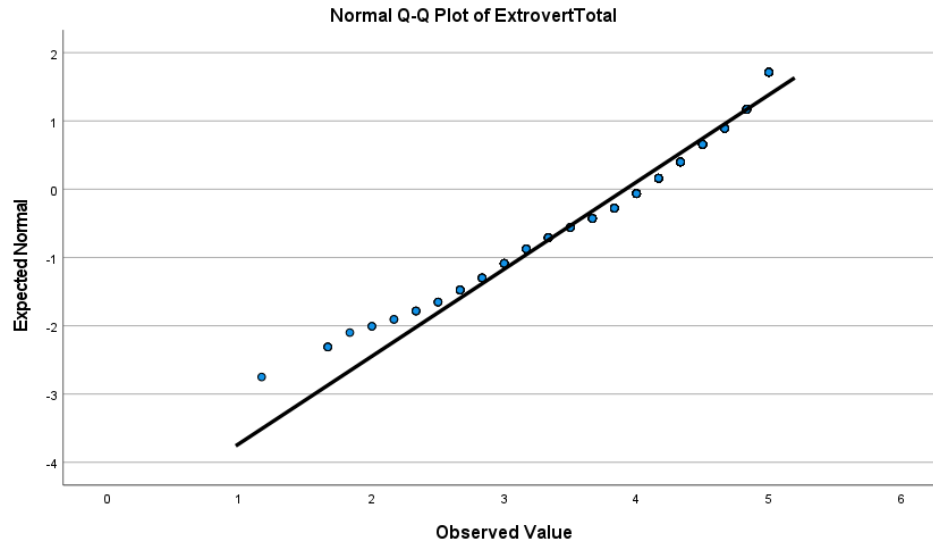
However, these tests tend to be very conservative for larger samples (e.g. Field, 2018), values of skewness and kurtosis were inspected and shown to be between -2 and 2, which indicates approximate normality, see Table 3.4 (George & Mallery, 2010). In addition, given the large sample the central limit theorem applies and the data for all variables are therefore considered suitable for parametric analysis (e.g. Field, 2018). Effect size estimates are interpreted in line with standard criteria. For $\eta 2$ and partial $\eta 2$, 0.01 indicates a small effect; 0.06 indicates a medium effect; and 0.14 indicates a large effect (Cohen, 1988).

Table 3.4

Mean, SD, Skewness and Kurtosis

			Standard Error
Teacher extraversion	Mean	3.5	.033
	Standard deviation	.62	
	Skewness	-.180	.133
	Kurtosis	-.280	.266
Introvert	Mean	3.78	.042
	Standard deviation	.78	

	Skewness	-.322	.133
	Kurtosis	-.607	.266
Extravert	Mean	3.92	.043
	Standard deviation	.78	
	Skewness	-.710	.133
	Kurtosis	.120	.266
Typical	Mean	4.61	.023
	Standard deviation	.431	
	Skewness	-2.43	.133
	Kurtosis	12.48	.266

Note. Hair et al. (2010) and Bryne (2010) argued that data is considered to be normal if skewness is between -2 to +2 and kurtosis is between -7 to +7. All scores for skewness and kurtosis in this study fall within this range.

3.5.1 Preliminary Analysis of Order Effects

All participants received three vignettes; a typical vignette which acted as a baseline (i.e. a benchmark for evaluation of subsequent descriptions of introverted and extroverted students), followed by two other vignettes; positive or negative, introvert or extrovert. Counterbalancing the order of presentation of the framing (negative first or positive first), as well as which of the two vignettes is positive or negative (introvert first or extrovert first) means that there were four possible combinations, thereby requiring random assignment of each participant to one of four groups. In order to confirm that typical vignettes provide a functional baseline for the other vignettes, a one-way independent (between-subjects) ANOVA was conducted with these scores as the DV in order to determine if groups differed for their responses to this vignette type. Levene's test was non-significant ($p = .32$), indicating homogeneity of variance. There was no effect of counterbalancing group, $F(3, 329) = .334$, $p = .801$, $\eta2 = .003$, indicating that typical scores were comparable across groups. This indicates that these scores provide a good basis for comparison across vignettes in each group.

3.5.2 Effect of Student Personality and Order of Presentation

The main area of interest of the present study was in the relative scoring for introvert and extrovert vignettes (both in relation to each other and in relation to the typical vignettes).

However, prior to exploring this in more detail and in relation to vignette framing, it was necessary to determine if the effect of student personality description was affected by the order in which the extrovert and introvert vignettes were presented.

A 3x2 mixed ANOVA was conducted, with student personality from each vignette as the within-subjects factor with three levels (typical, introvert, extrovert) and order as the between-subjects factor with two levels, indicating the order of presentation of introvert and extrovert vignettes (typical-extrovert-introvert or typical-introvert-extrovert). Mauchly's test of sphericity was significant, which indicated that the assumption of sphericity had been violated ($W = .527$, $\chi2(2) = 211.5$, $p < .001$). Therefore, a correction (epsilon) was adopted. If estimated epsilon is less than 0.75 Greenhouse-Geisser is adopted as per Maxwell & Delaney (2004), as was the case in this study ($\varepsilon = 0.679$). For the between-subjects factor of order, Levene's test was non-significant for any vignette type (all p's $> .05$), indicating homogeneity of variance.

There was a large main effect of student personality, $F(1.36, 449.37) = 143.46$, $p < .001$, partial $\eta2 = .302$. Bonferroni-corrected post hoc comparisons indicated that typical scores were significantly higher than introvert and extrovert vignette ratings (both p's $< .001$), but that introvert and extrovert vignette ratings did not differ from each other ($p = .144$). There was no interaction of student personality and order $F(1.36, 449.37) = .084$, $p = .845$, partial $\eta2 < .001$), indicating that the pattern of difference across vignette ratings was not affected by the order in which introvert or extrovert ratings were obtained, see Figure 3.3.

Figure 3.9

Effect of Student Personality and Order of Presentation
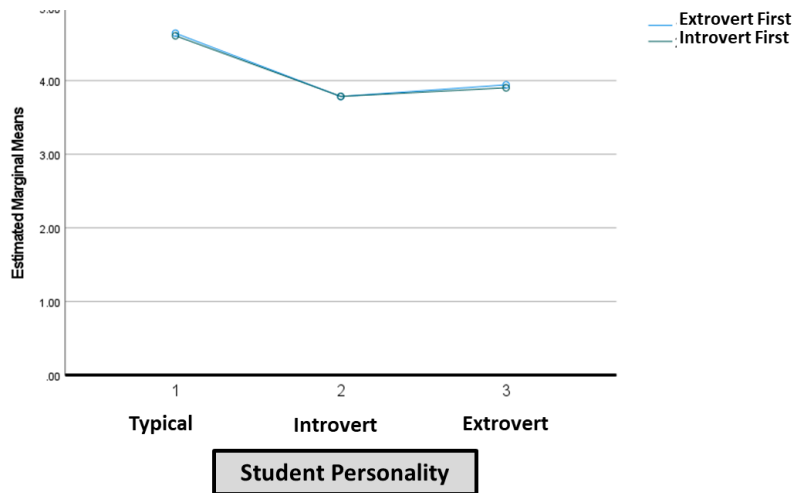
3.5.3 *Effect of Framing and Order of Presentation*

A similar approach was taken to determine if there were order effects for vignette framing; a 3x2 mixed ANOVA was conducted, with framing of each vignette as the within-subjects factor with three levels (typical/neutral, positive, and negative) and order as the between-subjects factor with two levels, indicating the order of presentation of positive and negative vignettes (typical/neutral-positive-negative or typical/neutral-negative-positive) Mauchly's test of sphericity indicated that the assumption of sphericity had been violated for the within-subjects factor of framing, ($W = .662$, $\chi2(2) = 136.25$, $p <.001$). A Greenhouse-Geisser correction ($\varepsilon = .747$) was adopted. Results indicated a main effect of framing, $F(1.5, 494.68) = 676.08$, $p <.001$, partial $\eta2 = .671$. Bonferroni-corrected pairwise comparisons indicated that typical/neutral ratings were significantly higher than both positively- and negatively-framed vignette ratings, and that positively-framed vignettes received significantly higher ratings than negatively-framed vignettes (all p's $<.001$)

There was a non-significant interaction of framing and order, $F(1.5, 494.68) = 1.66$, $p = .197$, partial $\eta2 = .005$), implying that scores differed across vignette framing conditions,

but this difference was not affected by order of presentation of the negative and positive vignettes, see Figure 3.4.

Figure 3.10

Effect of Framing and Order of Presentation
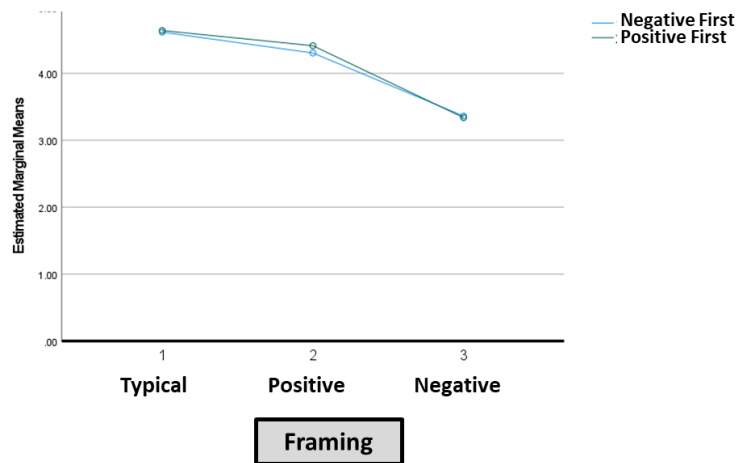
3.5.4   Impact of Framing and Framing Group on Teacher Attitude

Main effects of student personality and framing were obtained, and a lack of interaction effects with order of presentation indicated that the experimental manipulation of vignette content had produced different responses to the vignette categories without being confounded by order effects. In relation to the present study, these results also provided a preliminary test of the hypothesis that there would be a pro-extrovert bias in teacher responses. Instead, results indicated that there was a pro-typical bias, and extroverts and introverts received similar relatively-lower scores.

The typical scores were very similar and there were no order effects, it was possible to proceed by combining counterbalanced groups with the same arrangement of non-typical vignettes. This created two groups, as illustrated in Table 3.3. In addition, for conceptual clarity the typical score was excluded for the remaining data analysis and the focus was on the main difference of interest which was to determine if there was a difference in teacher attitude toward introverts and extroverts.

Table 3.5

Combining of Counterbalanced Groups

Counterbalanced groups	Combined groups for analysis
positive-extrovert/negative-introvert	
	positive-extrovert/negative-introvert
negative-introvert/positive-extrovert	
negative-extrovert/positive-introvert	
	negative-extrovert/positive-introvert
positive-introvert/negative-extrovert	

In order to combine presentation of framing and student personality, each participant was exposed to one positive and one negative vignette, as well as one extrovert and one introvert vignette. For economical design, these were cross-combined to create two experimental groups; positive-extrovert/negative-introvert and negative-extrovert/positive-introvert. A 2x2 mixed ANOVA was therefore conducted, with framing of each vignette as the within-subjects factor with two levels (positive and negative) and group as the between-subjects factor indicating the combination of valence with student personality in the vignettes, with two levels (positive-extrovert/negative-introvert and negative-extrovert/positive-introvert).

Levene's test of homogeneity of variance was significant for the between-subjects factor of group in the negative vignette comparison (p = .034). As expected, there was a large and significant main effect of framing, $F(1, 331) = 589.45$, $p < .001$, partial $\eta2 = .64$, with a general decrease in vignette ratings from positive to negative framing. There was an interaction of framing and group with a medium effect size, implying that the main effect was moderated by which of the two student personalities were being presented positively or negatively, $F(1, 331) = 14.61$, $p < .001$, partial $\eta2 = .042$. Bonferroni-corrected pairwise comparisons showed that when the vignettes were framed positively there was a significant difference between responses to positive introvert and positive extrovert ($p = .044$) and when framed negatively, there was a significant difference in responses to negative introvert and negative extrovert (p < .001). In summary; regardless of framing, extroverts got a

significantly higher rating than introverts (see Figure 3.5). Mean differences are outlined in Table 3.4.

Figure 3.11

Impact of Framing and Framing Group on Teacher Attitude
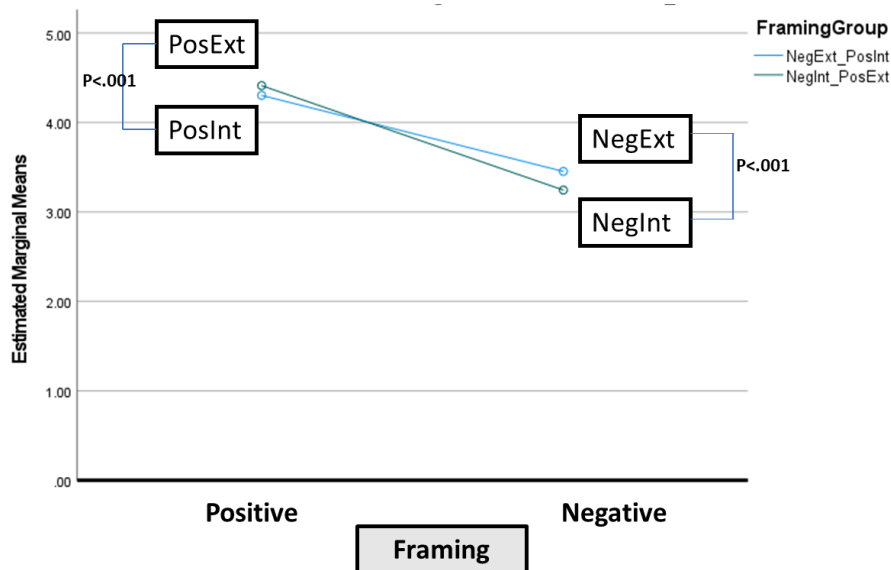
Table 3.6

Mean Difference for Framing Groups

Framing Group	Framing Group	Mean Difference	Sig
PosExt	PosInt	.109	.044
NegExt	NegInt	.209	.005

3.5.5   Student Personality and Order of Presentation for Student-Centred (SC) Questions

Responses across vignettes indicated that positive framing produced more positive scores, but that within each framing category (positive and negative) extroverts tended to score higher. Vignette scoring items had been developed to capture teachers' attitudes towards their own teaching (i.e. teacher self-efficacy) as well as their attitudes to the students'

ability to achieve academically. Further analysis was therefore required to determine if the pro-extrovert bias demonstrated above was related to student-centred or teacher-centred vignette scores, beginning with student-centred (SC) items.

A 3x2 mixed ANOVA was conducted, with student personality from each vignette as the within-subjects factor with three levels (typical, introvert, extrovert) and order as the between-subjects factor with two levels, indicating the order of presentation of introvert and extrovert vignettes (typical-extrovert-introvert or typical-introvert-extrovert). Mauchly's test of sphericity was significant, which indicated that the assumption of sphericity had been violated ($W = .520$, $\chi2(2) = 216.06$, $p <.001$). Therefore, the Greenhouse-Geisser correction (epsilon) was adopted ($\varepsilon = 0.675$). For the between-subjects factor of order, Levene's test was non-significant for any vignette type (all $p's >.05$), indicating homogeneity of variance.

There was a large main effect of student personality, $F(1.35, 447.17) = 139.67$, $p <.001$, partial $\eta2 = .297$. Bonferroni-corrected post hoc comparisons indicated that typical SC scores were significantly higher than introvert and extrovert vignette ratings (both $p's <.001$) and that introvert and extrovert vignette ratings also differed from each other ($p = .003$). There was no interaction of student personality and order $F(1.35, 447.17 = .124$, $p = .800$, partial $\eta2 <.001$), indicating that the pattern of difference across vignette ratings for SC questions was not affected by the order in which introvert or extrovert ratings were obtained, see Figure 3.6.

Figure 3.12

Effect of Student Personality and Order of Presentation for SC Questions
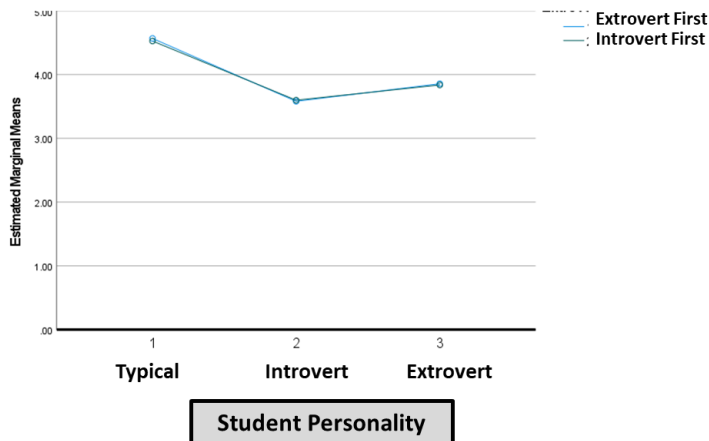
3.5.6 Framing and Order of Presentation for SC Questions

A similar approach was taken to determine if there were order effects for vignette framing; a 3x2 mixed ANOVA was conducted, with framing of each vignette as the within-subjects factor with three levels (typical/neutral, positive, and negative) and order as the between-subjects factor with two levels, indicating the order of presentation of positive and negative vignettes (typical/neutral-positive-negative or typical/neutral-negative-positive) Mauchly's test of sphericity indicated that the assumption of sphericity had been violated for the within-subjects factor of framing, ($W = .685$, $\chi 2(2) = 124.64$, $p < .001$). This means that the assumption of sphericity was not met, so a Greenhouse-Geisser correction ($\varepsilon = .761$) was adopted. Results indicated a main effect of framing, $F(1.52, 503.59) = 654.52$, $p < .001$, partial $\eta 2 = .664$. Bonferroni-corrected pairwise comparisons indicated that typical/neutral SC ratings were significantly higher than both positively- and negatively-framed vignette SC ratings, and that positively-framed vignettes received significantly higher ratings than negatively-framed vignettes (all $p's < .001$).

There was a non-significant interaction of framing and order, ($F(1.5, 494.68) = 1.66$, $p = .197$, partial $\eta 2 = .005$), implying that scores differed across vignette framing conditions, but this difference was not affected by order of presentation of the Negative and Positive vignettes, see Figure 3.7.

Figure 3.13

Effect of Framing and Order of Presentation of SC Questions
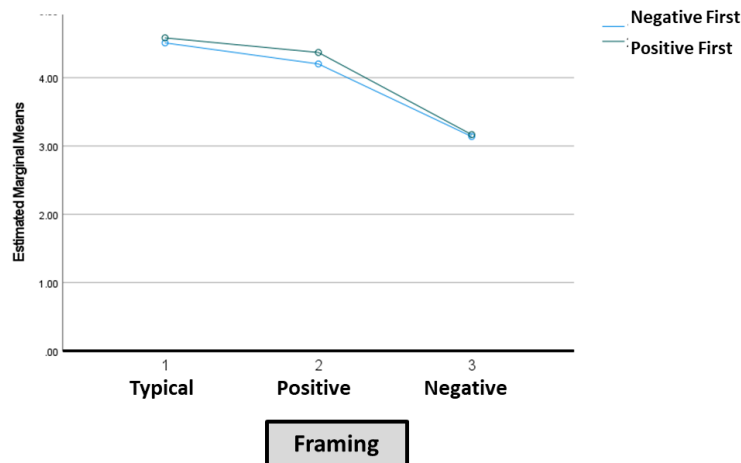
3.5.7   Framing and Framing Group on Teacher Attitude for SC Questions

Main effects of student personality and framing were obtained, and a lack of interaction effects with order of presentation indicated that the experimental manipulation of vignette content had produced different responses to the vignette categories without being confounded by order effects. Furthermore, it was possible to proceed by combining counterbalanced groups with the same arrangement of non-typical vignettes. As before, this created two groups. In addition, for conceptual clarity the typical score was excluded and the focus was on the main difference in teacher attitude toward introverts and extroverts.

Just as before a 2x2 mixed ANOVA was conducted, with framing of each vignette as the within-subjects factor with two levels (positive and negative) and group as the between-subjects factor indicating the combination of valence with student personality in the vignettes, with two levels (positive-extrovert/negative-introvert and negative-extrovert/positive-introvert).

Levene's test of homogeneity of variance was significant for the between-subjects factor of group in the negative vignette comparison (p = .002). As expected, there was a large and significant main effect of framing, $F(1, 331) = 629.63$, $p < .001$, partial $\eta2 = .66$, with a general decrease in vignette SC ratings from positive to negative framing. There was also a moderate interaction of framing and group, implying that the main effect was moderated by

which of the two student personalities were being presented positively or negatively, $F(1, 331) = 38.56$, $p < .001$, partial $\eta 2 = .104$. Bonferroni-corrected pairwise comparisons showed that when the vignettes were framed positively there was a significant difference between responses to positive introvert and positive extrovert ($p = .003$) and when framed negatively, there was a significant difference in responses to negative introvert and negative extrovert ($p < .001$). As with the total scores, framing matters. However, regardless of framing extroverts get a higher teacher rating than introverts to SC questions, see Figure 3.8. Mean differences are outlined in Table 3.5.

Figure 3.14

Impact of Framing and Framing Group for SC Questions
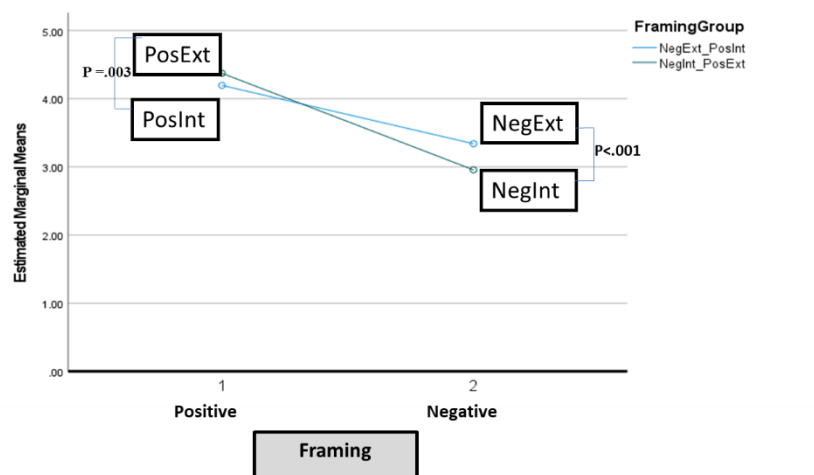
Table 3.7

Mean Difference for Framing Groups

Framing Group	Framing Group	Mean Difference	Sig
PosExt	PosInt	.178	.003
NegExt	NegInt	.384	<.001

3.5.8   *Student Personality and Order of Presentation for Teacher-Centred (TC) Questions*

A 3x2 mixed ANOVA was conducted, with student personality from each vignette as the within-subjects factor with three levels (typical, introvert, extrovert) and order as the between-subjects factor with two levels, indicating the order of presentation of introvert and extrovert vignettes (typical-extrovert-introvert or typical-introvert-extrovert). Mauchly's test of sphericity was significant, which indicated that the assumption of sphericity had been violated ($W = .628$, $\chi2(2) = 153.32$, $p < .001$). Therefore, a correction (epsilon) was adopted. If estimated epsilon is less than 0.75 Greenhouse-Geisser is adopted as per Maxwell & Delaney (2004), as was the case in this study ($\varepsilon = 0.729$). For the between-subjects factor of order, Levene's test was non-significant for any vignette type (all *p's* $>.05$), indicating homogeneity of variance.

There was a large main effect of student personality, $F(1.46, 482.64) = 119.14$, $p < .001$, partial $\eta2 = .265$. Bonferroni-corrected post hoc comparisons indicated that typical TC scores were significantly higher than introvert and extrovert vignette ratings (both *p's* $<.001$) and there was a non-significant difference in introvert and extrovert vignette TC ratings ($p = 1.00$). There was no interaction of student personality and order $F(1.46, 482.64) = .090$, $p = .854$, partial $\eta2 <.001$, indicating that the pattern of difference across vignette ratings for TC questions was not affected by the order in which introvert or extrovert ratings were obtained, see Figure 3.9.

Figure 3.15

Comparison of Typical (1), Introvert (2) and Extrovert (3) for TC Questions
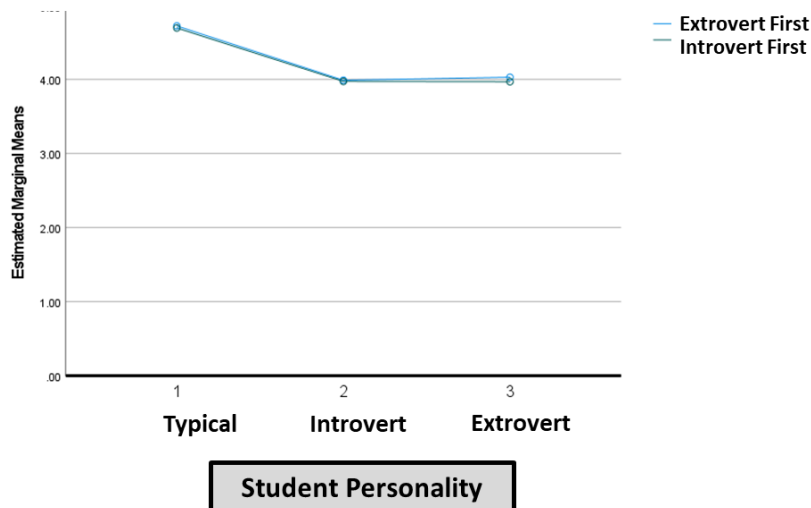
3.5.9   Framing and Order of Presentation for Teacher Centred Questions

A similar approach was taken to determine if there were order effects for vignette framing; a 3x2 mixed ANOVA was conducted, with framing of each vignette as the within-subjects factor with three levels (typical/neutral, positive, and negative) and order as the between-subjects factor with two levels, indicating the order of presentation of positive and negative vignettes (typical/neutral-positive-negative or typical/neutral-negative-positive) Mauchly's test of sphericity indicated that the assumption of sphericity had been violated for the within-subjects factor of framing, ($W = .678$, $\chi2(0) = 128.46$, $p = <.001$). This means that the assumption of sphericity was not met, so a Greenhouse-Geisser correction ($\varepsilon = .756$) was adopted. Results indicated a main effect of framing, $F(1.51, 500.59) = 428.83$, $p <.001$, partial $\eta2 = .564$. Bonferroni-corrected pairwise comparisons indicated that typical/neutral TC ratings were significantly higher than both positively- and negatively-framed vignette TC ratings, and that positively-framed vignettes received significantly higher ratings than negatively-framed vignettes (all *p's* $<.001$). There was a non-significant interaction of framing and order, ($F(1.00, 331.00) = .582$, $p = .446$, partial $\eta2 = .002$), implying that TC scores differed across vignette framing conditions, but this difference was not affected by order of presentation of the negative and positive vignettes, see Figure 3.16.

Figure 3.16

Effect of Framing and Order of Presentation of TC Questions
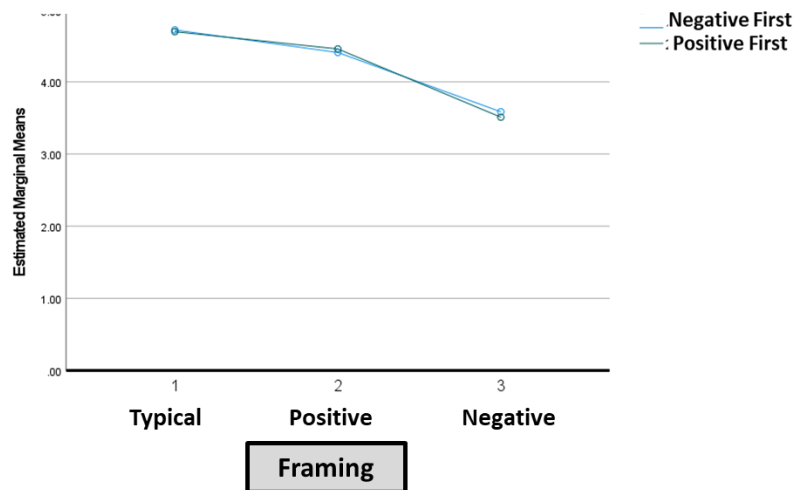
3.5.10 *Framing and Framing Group on Teacher Attitude for TC questions*

The typical scores were very similar and there were no order effects, it was possible to proceed by combining counterbalanced groups with the same arrangement of non-typical vignettes. In addition, for conceptual clarity the typical score was excluded for the remaining data analysis and the focus was on the main difference of interest which was to determine if there was a difference in teacher attitude toward introverts and extroverts.

In order to combine presentation of framing and student personality, each participant was exposed to one positive and one negative vignette, as well as one extrovert and one introvert vignette. For economical design, these were cross-combined to create two experimental groups; positive-extrovert/negative-introvert and negative-extrovert/positive-introvert. A 2x2 mixed ANOVA was therefore conducted, with framing of each vignette as the within-subjects factor with two levels (positive and negative) and group as the between-subjects factor indicating the combination of valence with student personality in the vignettes, with two levels (positive-extrovert/negative-introvert and negative-extrovert/positive-introvert).

Levene's test of homogeneity of variance was non-significant for the between-subjects factor of group in the negative and positive vignette comparison ($p = .854$). As

expected, there was a large and significant main effect of framing, $F(1, 331) = 338.57$, $p < .001$, partial $\eta2 = .506$, with a general decrease in vignette TC ratings from positive to negative framing. There was no interaction of framing and group, $F(1, 331) = .582$, $p = .446$, partial $\eta2 = .002$. Bonferroni-corrected pairwise comparisons showed that when the vignettes were framed positively there was no significant difference between responses to positive introvert and positive extrovert ($p = .503$) and when framed negatively, there was no significant difference in responses to negative introvert and negative extrovert ($p < .712$), see Figure 3.11. Mean differences are outlined in Table 3.6.

In summary, the data analysis indicates that:

- Framing matters. As expected, there was a large and significant main effect of framing $F(1, 331) = 589.45$, $p < .001$, partial $\eta2 = .64$, with a general decrease in vignette ratings from positive to negative framing. Vignettes/student personalities that were framed positively received a higher attitudinal rating than those framed negatively.

- Student Personality matters. There was an interaction of framing and group with a medium effect size $F(1, 331) = 14.61$, $p < .001$, partial $\eta2 = .042$. Regardless of framing, there was a significant difference between introverts and extroverts, with extroverts getting higher total ratings.

- Did Teacher-Centred questions impact the findings? Focusing on teacher-centred questions only, as expected there was a large and significant main effect of framing, $F(1, 331) = 338.57$, $p < .001$, partial $\eta2 = .506$. Positively framed vignettes received higher attitudinal ratings. However, there was no interaction of framing and group $F(1, 331) = .582$, $p = .446$, partial $\eta2 = .002$. indicating no significant difference between ratings for extroverts and introverts. This suggests that teachers had confidence in their own ability to teach all students, including introvert students.

- Did Student-Centred questions impact the findings? Focusing on student-centred questions only, as expected, there was a large and significant main effect of framing, $F(1, 331) = 629.63$, $p < .001$, partial $\eta2 = .66$. Positive vignettes received a higher attitudinal rating. However, for SC questions there was also a moderate interaction of framing and group, implying that the main

effect was moderated by which of the two student personalities were being presented positively or negatively, $F(1, 331) = 38.56$, $p < .001$, partial $\eta2 = .104$. Whether framed positively or negatively, extroverts obtained significantly higher ratings than introverts for each framing category. Therefore, the findings suggest that the overall lower attitudinal rating for introvert students was located in the SC questions and not the TC questions.

Figure 3.17

Impact of Framing and Framing Group for TC Questions
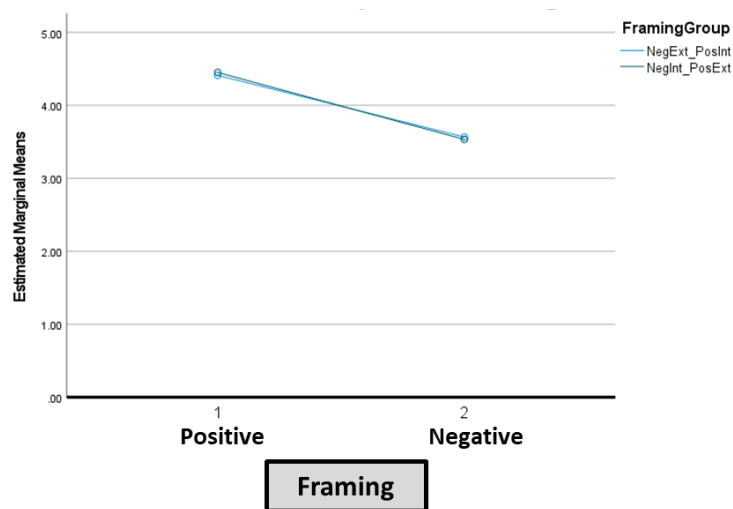
Table 3.8

Mean Difference for Framing Groups

Framing Group	Framing Group	Mean Difference	Sig
PosExt	PosInt	.040	.503
NegExt	NegInt	.033	.712

3.5.11 ANCOVA: Effect of Teachers' Levels of Extraversion for SC Questions

The pro-extrovert bias in scores appears to be related to student-centred items but not teacher-centred ones. A remaining question concerned whether this effect was related to the

teachers' own level of extroversion. As such, the above 2x2 factorial structure (framing x personality) was repeated as an ANCOVA with teacher extroversion scores as the covariate.

Levene's test of homogeneity of variance was significant for the between-subjects factor of group in the positive ($p = .037$) and negative vignette comparison ($p = .002$). Although Levene's test was significant, group sizes are very close and therefore the ANCOVA is taken to be relatively robust to violation of this assumption (Pallant, 2020; Stevens, 1996). As expected, there was a moderate and significant main effect of framing, $F(1, 330) = 11.22$, $p < .001$, partial η2 $= .033$, with a general decrease in vignette SC ratings from positive to negative framing. There was a moderate interaction of framing and group, $F(1, 1.00) = 37.483$, $p < .001$, partial η2 $= .102$. Bonferroni-corrected pairwise comparisons showed that when the vignettes were framed positively there was a significant difference between responses to positive introvert and positive extrovert ($p < .005$), extroverts were getting higher scores and when framed negatively, there was still a significant difference in responses to negative introvert and negative extrovert ($p < .001$), extroverts were still getting the higher scores, see Figure 3.12. Mean differences are outlined in Table 3.7.

Figure 3.18

Interaction of Framing and Student Personality, Adjusted for Teacher Extroversion

Covariates appearing in the model are evaluated at the following values: Mean scores for teacher extraverson = 3.5012
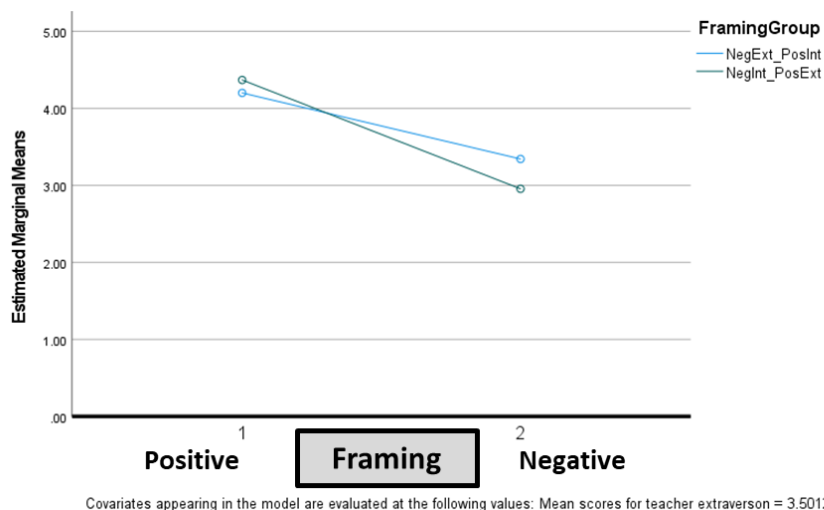
Table 3.9

Mean Difference for Framing Groups

Framing Group	Framing Group	Mean Difference	Sig
PosExt	PosInt	.168	.005
NegExt	NegInt	.388	.001

When the variance in teacher extraversion scores is controlled for, the results remain the same. Mean teacher extraversion scores were not significant ($p =.059$), suggesting therefore that teacher personality type was not a significant confounding variable in the present study.

3.6 Discussion

The purpose of the current study was to explore primary school teachers' attitude toward introversion in students. The results are discussed under each hypothesis in addition to exploring the impact of teacher- and student-centred questions.

3.6.1 What are primary school teachers' attitude toward student personality (introvert and extrovert) and does framing matter?

As expected, there was a large and significant main effect of framing, with a general decrease in vignette ratings from positive to negative framing. Vignettes that were framed positively obtained higher scores than those framed negatively, regardless of personality type. This highlights that framing does matter. It has previously been mentioned that aspects of the extrovert personality type are more socially desirable in western cultures (Fulmer et al., 2010; Lawn et al., 2019; Myers, 1992). Therefore, in general they are 'framed' positively. Reports also indicate negative perception and mistreatment of individuals who demonstrate introvert characteristics at work (McCord, 2017; McCord & Joseph, 2020) and in educational settings (Colley, 2019; Green et al., 2020; Rosheim, 2018) and are therefore framed negatively.

Social constructions are 'constructed' through beliefs held by society and social interactions with others. Hewitt (2009) contends that these social constructions that individuals have about the world have implications for different types of actions. The

findings in this study indicate that, the personality that is framed positively will receive a higher attitudinal rating. The basic principles of the person-environment fit theory are that the outcomes are best when personal and environmental attributes are compatible (Roberts & Robbins, 2004). Those who are 'positively framed' are most likely to represent the ideal personality which is typically accommodated in work and educational settings (Lawn et. al., 2019). Therefore, social constructions such as framing have implications for different types of action. A good person-environment fit is more likely to exist for the student personality that is positively framed. The more serious implications of framing are that those that are negatively framed are less likely to be accommodated or forced to adapt or change, leading to negative outcomes for student learning and wellbeing. Akiba and Alkins (2010) and Pawlowska et al. (2014) point out that the highest level of learning occurs when there is a good person-environment fit. According to Van Vianen (2018) people have an innate need to fit their environments. Therefore, a good person-environment fit is not only critical for a student's educational outcomes but also their general wellbeing (Fulmer et al., 2010; Lawn et al., 2019; Myers, 1992). The basic assumption appears to be that extroverts receive more positive framing in Western society but more research is required.

The findings in this study also indicate a moderate interaction of framing and group, implying that the main effect was moderated by which of the two student personalities were being presented positively or negatively, ($p < .001$, partial $\eta2 = .042$). When the vignettes were framed positively there was a significant difference between responses to positive introvert and positive extrovert ($p <.001$) and when framed negatively, there was a significant difference in responses to negative introvert and negative extrovert ($p < .001$). In both instances, extroverts obtained a higher attitudinal rating. In summary, while framing does appear to matter, regardless of framing extroverts receive higher attitudinal ratings from primary school teachers. The implications of this in reality are possibly more significant and even more stark. As pointed out previously, negative perceptions of the introvert student were cited in several studies (Colley, 2019; Green et al., 2020; Rosheim, 2018) and Lawn et al. (2019) and Touvinen et al. (2020) highlighted that extrovert traits are favoured traits in western cultures. Therefore, in the real world, the comparison is not between positively framed extroverts and positively framed introverts or negatively framed extroverts and negatively introverts. In reality, the comparison is most likely between positively framed

extroverts and negatively framed introverts, therefore making the difference in society and in classrooms, even more significant.

This bias within society also appeared to exist within the psychological tools that were used to create the vignettes. The NEO-PI-R questionnaire was designed as a measure of the Five Factor Model. Internal consistency coefficients were calculated at 0.86 to 0.95 for this scale and the extraversion test has good long-term test-retest reliability (McCrae & Costa, 1983;. McCrae, Kurtz, Yamagata & Terracciano, 2011). Within this scale introversion is not a dimension or category in its own right. This scale measures levels of extraversion. If an individual displays characteristics that are in opposition to extravert traits then that individual is considered to be low in extraversion or in other words, introvert. It appears to be a negative interpretation of introversion if one holds that all measures of extroversion or +keyed items appear quite positive e.g. Make friends easily, Warm up quickly to others, cheer people up, radiate joy and so on. It is the -keyed items that represent introversion e.g. Am not easily amused, prefer to be alone, am not really interested in others and so on. Using this as the foundation of the vignettes made it challenging at times to positively frame the introvert vignettes. It is not surprising then that a bias exists in society if this bias is embedded in the psychological tools that are used by professionals to measure personality, for example counselors, psychiatrists, psychologists, doctors, vocational counselors, and educators (McCrae, Kurtz, Yamagata & Terracciano, 2011). This study attempted to correct for this bias as part of the experimental procedure by using positive and negative framing of both personality types and counterbalancing the order of presentation. However, the bias persists. Extroverts received a higher attitudinal rating than introverts. This highlights how enculturated this bias is in society.

3.6.2 *Did Teacher-Centred or Student-Centred questions impact teacher attitude?*

The findings indicated that there was a large and significant main effect of framing when teachers rated the vignettes according to the student-centred questions ($p < .001$, partial $\eta2 = .66$). As before, positively framed vignettes obtained higher attitudinal ratings than negatively framed vignettes. There was also a moderate interaction of framing and group, implying that the main effect was moderated by which of the two student personalities were being presented positively or negatively ($p < .001$, partial $\eta2 = .104$). When the vignettes were framed positively there was a significant difference between responses to positive

introvert and positive extrovert ($p =.003$) and when framed negatively, the difference was even more significant in responses to negative introvert and negative extrovert ($p < .001$). Once again, regardless of framing, extroverts obtained a higher attitudinal rating than introverts for student-centred questions. The student-centred questions were as follows:

- I think this student is likely to feel happy in their classroom,
- I would expect this student to do well academically relative to their peers,
- This student is likely to engage with strategies that will help them to integrate into the classroom.

The findings imply that primary school teachers think of the extrovert as a more competent student.

These findings suggest that the difference in teacher attitudinal rating between introverts and extroverts is located in the responses to the student-centred questions rather than the teacher-centred questions. Importantly, it appears to place the cause of lower attitudinal rating within the student themselves rather than the teachers' perception of their own ability to teach introvert students. The student-centred questions highlight that teachers believe introvert students are less likely to engage with strategies to help them integrate, they are less likely to feel happy in their classroom and are not expected to do well academically relative to their peers.

In light of these findings, it is important to consider what this means for introvert students. As mentioned previously, identities are social constructions 'constructed' through social interactions with others and beliefs held by society. Bronfenbrenner's Ecological Systems Theory highlights the transactional process between the individual and others and offers a systems-based understanding of how an individual's wellbeing is embedded in the social context of their relationships (DES, 2019; Erikson et al., 2018). This model highlights the importance of relationships, that wellbeing is realised in a community and connected to a range of risk and protective factors that exist at multiple levels; individual, relational, cultural and societal (DES, 2019). Green et al. (2019) highlighted that the participants in their qualitative study expressed embarrassment and negative feelings about themselves based on how their peers perceived them due to their hesitancy and inability to add to a classroom discussion. This is supported by conclusions drawn by Smith et al. (2005) who suggested that quiet students do not contribute to their own or others' learning. Several participants in the Green et al. study admitted this perception put them off attending class. The misinterpretation

and lack of understanding of quiet engagement can lead to low expectations of these students (Colley, 2019; Rosheim, 2018). These negative perceptions of the introvert student influence the student's sense of self. The idea of the looking-glass self, refers to how an individual's self-concept and identity is developed in response to the opinions and reactions of others and how the individual internalises how they perceive others to evaluate them (Cooley, 1902). The self emerges based on what others tell you about who you are. Several aspects of self-concept play a role in wellbeing (Bailey, 2003; Epstein, 1973). All of which is compromised because of the social constructs that have been put in place.

If introvert students are considered less happy in their class, less likely to engage with strategies to help them integrate or less likely to do well academically based on their outward behaviour then it is highly probable that they will be encouraged to conform or adapt to what is considered the ideal student personality. Henjum (1982) contends that teachers and parents, with the best intentions, try to mould young people into sociable and outgoing individuals without considering the innate nature of their personality. The low teacher attitudinal ratings in this study are located in the student-centred questions. This supports the research that teachers can sometimes have low expectations of quiet children and believe they are less intelligent and will fare less well academically than the more talkative and active students (Cain & Klein, 2015; Coplan et al., 2011).

These findings do not bode well for introvert students. Teacher perceptions regarding introvert students' intelligence and academic skills may create a self-fulfilling prophecy (Hauck et al., 1986), in which introvert students "live up" to these expectations. The impact of these expectations on the introvert is that they may minimise their own strengths which leads to low self-esteem, negative feelings about themselves and feelings of discomfort and stress in class, all of which are risk factors for their overall wellbeing. Wellbeing is enhanced when an individual's own behaviour is perceived to be consistent with one's true self (Henjum, 1982). This comes back to the importance of the person-environment fit, whereby, people have an innate need to seek out environments that are consistent with their own needs and values (Van Vienen, 2018). The above suggestions are somewhat speculative. Based on the novelty of these findings and the dearth of research in this area, particularly within the Irish context, perhaps, future research could explore the introvert student's first-hand experience of the classroom environment in Irish schools.

Additionally, this study relied solely on teacher self-reports. Although it is difficult to assess teachers' attitudes and beliefs without using self-reports, they may be prone to bias and an inflated sense of self-efficacy (Coplan et al., 2011). Furthermore, the findings from this study are based on teachers' responses toward hypothetical scenarios. Future research could include direct school-based observations of teachers to enhance our understanding of what is happening in the classroom.

The teacher's ability to understand the needs of the pupil and be flexible in their teaching approaches to meet these needs paves the way for a good person-environment fit. Touvinen et al. (2020) point out that in order for introvert students to feel comfortable it requires a socially supportive environment in which introvert students feel that they belong and are accepted by teachers and peers. A review of the literature indicates schools now adopt more interactive learning strategies in the classroom which are more suited to the extrovert student and may disproportionately challenge introvert students leading to inequities in the classroom. It is evident from the findings in this study that it is important to consider the themes that emerged from the literature review; need for alternative forms of class participation, negative perceptions of introvert students, expectations on the introvert student to conform, the role of teacher support, a poor person-environment fit and student wellbeing within the context of primary school teachers' attitude to introvert students.

3.6.3   *Did teachers' level of extraversion influence teacher attitude?*

The findings suggest that teacher personality does not impact their attitude toward students based on students' personality. A teacher who is high in extraversion does not provide a lower attitudinal rating for introvert students and a teacher low extraversion or who is an introvert themselves is not going to provide a higher attitudinal rating for introvert students. Based on the findings from this study it appears that the lower attitudinal ratings for introverts lies within the perception of introversion that exists within society and this influences all teachers.

The results indicated that there was a pro-typical bias. One possible reason for this is that a pro-first-vignette bias occurred. All teachers received the typical vignette as the first vignette. Consideration was given to counterbalancing the typical vignette but a larger sample would have been required, as more potential orders would be required. Furthermore, the experimental design aims to approximate the evaluative sequence. It's probably more

representative of teachers' everyday practice to encounter typical students as the norm, and then occasionally to be presented with a student who is more introverted or extroverted than usual. It is also possible that the typical student received the highest attitudinal rating in the current study as this vignette comprised of favourable characteristics as stated in the literature such as, 'This student engages in verbal participation in class'. 'They volunteer to speak in class on a regular basis, and typically put up their hand before talking' and 'they are often an active participant and contributor to group activities with other children.' The typical student engages in verbal participation, a form of student engagement and participation that is highly valued by teachers as pointed out by many of the studies in the literature review (Rosheim, 2018; Colley, 2019; Green et al., 2020; Smith et al, 2005). Rosheim (2018) pointed out that communication and participation in the classroom was largely based on verbal participation which is more suited to the extrovert student and in this study some of these traits featured in the typical vignette. This vignette was not influenced/compromised in any way by positive or negative framing. It was intentionally constructed to portray a student in a neutral way that might be familiar to most teachers. Many people will exhibit characteristics of both extroversion and introversion but may lean more towards one than the other. The typical student does not explicitly feature any of the traits of the introvert student positive or negative such as those outlined in the introvert vignettes, for example 'They need time to answer a question in class', 'This student favours a quiet learning environment', 'This student is hard to get to know', 'They have little to say in class'. Nor does the typical vignette feature the distinctive elements of the extrovert such as 'They are first ..to speak', 'This student can take charge', 'they like to play up to an audience', 'This student is always chatting to others in the class. They can sometimes find it difficult to work independently'. All elements of the introvert and extrovert vignettes are designed to include distinctive features that may or may not appeal to others. The typical vignette however is designed in such a way as not to be distinctive. This may explain why it obtained a higher rating than extroverts and introverts. The typical student, as described in the vignette, does not pose any challenges in the classroom. The typical vignette, in fact, incorporates some of the features that teachers value such as some inclination towards verbal engagement and group participation.

3.6.4 *Summary of Findings and Conclusion*

These results confirm the findings outlined in the literature review which looked at introvert students across different levels of education (primary, post-primary and third level), and explored their experience of the classroom environment. These students indicated that they frequently felt uncomfortable, under pressure, exhausted, stressed and misunderstood by their teachers and peers, in their educational settings. The findings from this study, confirm that teachers do indeed display a more negative attitude towards introvert students and appear to have a more positive attitude toward extrovert students. The findings in this study also indicate that these negative beliefs do not lie in the teachers' perception of their own ability to teach introvert students and are not influenced by their own sense of self-efficacy as an educator but lie in their attitude (feelings, behaviours and thoughts) toward the introvert student. Teachers indicated that introvert students are less likely to feel happy in their classroom, they have lower expectations that introvert students will do well academically relative to their peers and they feel that the introvert student is less likely to engage with strategies to help themselves integrate into the classroom activities. In summary, this locates the reason for the lower attitudinal rating towards introverts within the student. However, it is worth noting that the participants were working off specific scenarios. As mentioned previously, extroversion/introversion is a dimension of human personality (Jung, 1927). The introvert-extrovert spectrum, like many continuous dimensions, means an individual can be classified in terms of their position on the scale. It does not attempt to place everyone neatly into one category or another, introvert or extrovert. Many people will exhibit characteristics of both extroversion and introversion but may lean more towards one than the other. The spectrum accommodates those at the extreme ends, highly extrovert or introvert, and every nuance in between. Therefore, in reality there are different levels of introversion and so the findings of this study should be interpreted with a degree of caution as it is not suggesting that all teachers respond to all introvert students in this way but perhaps respond in this way to a specific set of traits and behaviours typical of the introvert, such as low verbal participation and low social interaction. It is possible that some introvert students do engage verbally and make efforts to socially interact. However, it is likely that they are employing various mechanisms to cope within and adapt to a learning environment that is at odds with their personality. Green et al. (2019) highlighted that, participants in their study expressed

feeling anxious before a class in anticipation of what is expected of them and of having to 'put themselves out there' leaving them feeling drained after the class. Similarly, Colley (2019) and Rosheim (2018) reported that introvert students feel under pressure to perform. While individuals can and must at times adapt to fit into their environment, this can have harmful consequences for their wellbeing (Dewe et al., 2012; Edwards & Rothbard, 1999; Van Vianen, 2018).

Interestingly, this range in extroversion/introversion is due in part to the influence of both genetics and the environment on an individual's personality and therefore, this is important to hold in mind when considering the findings of the teacher-centred and student-centred questions. The ability to feel happy in their classroom, to do well academically relative to their peers and to engage with strategies to help themselves integrate into the classroom activities is not simply down to the introvert student's innate ability but is also dependent on the teachers' ability to understand the needs of the pupil and be flexible in their teaching approaches to meet these needs. It is this relationship that creates a good person-environment fit. In line with Bronfenbrenner's Ecological System Theory, the individual is made up of their own personality characteristics and influenced by their environment and how people respond to them and in turn they react to that response and so on in a cyclical fashion.

In the Growing Up in Ireland study, Smyth (2015) highlights that primary school students' experiences, especially attitudes to their teacher, school and school subjects, have a long-term impact on the self-image of 9-13 year olds. Fostering positive relationships with teachers is a key aspect of student wellbeing. Part of fostering a positive teacher/student relationship is about building rapport. As mentioned previously, key elements of building rapport are recognition that the other person has their own model of the world that is not the same as our own, that the person feels safe in that space and that they feel respected (Beaver, 2011). It was evident from the literature review that this does not appear to be the case for introvert students relative to their extrovert peers. Lower attitudinal ratings for introvert vignettes based on student-centred questions in this study, highlight that the introverts' own model of the world is not accepted and as a result it is unlikely that they feel safe or respected in the school environment. This is not in accordance with the guidelines for wellbeing as pointed out by the NCCA (2017) or The Wellbeing Policy Statement and Framework for practice, where it states that wellbeing is present when a person realises their potential, has a

sense of purpose, connection and belonging to a wider community (DES, 2019). In conjunction with promoting wellbeing, schools may need to consider any unconscious bias and examine their own implicit perspectives of introverts, and how they are taking their wellbeing into account. Based on the findings of this study, it is essential that schools find a balance in order to create not just a comfortable learning environment but a tolerable one for all students, including introvert students.

Chapter 4 Critical Review and Impact Statement

Within this chapter, I will reflect upon the research process as a whole. This will include reflecting on the epistemological position that was adopted as part of the research design and the theoretical perspective taken and why it was deemed the most appropriate for this design. This will be followed by a rationale for the selection of the design, measures and methods of analysis against available alternatives. Furthermore, within this chapter I will outline the ethical considerations that were taken into account as part of this research study, while also exploring the potential implications of this research for professional practice in educational psychology and within wider societal contexts. Finally, an impact statement detailing what I feel to be the most critical impacts of this research is included.

4.1   Reflections on the Research Process

My reflection is structured using the Rolfe, Freshwater and Jasper reflective practice cycle (Rolfe et al., 2001). This framework enabled me to reflect on what I learned from the research process.

Figure 4.1

The Rolfe et al. (2001) Reflective Framework
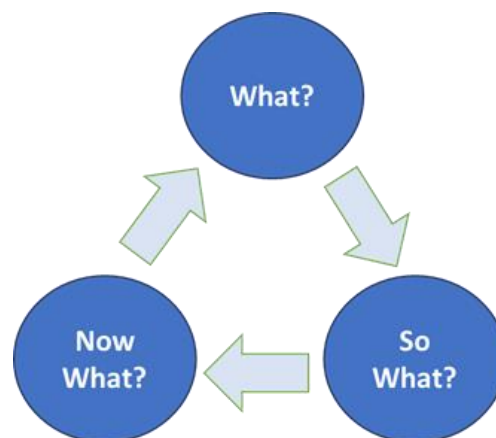
What? Initially, for my doctoral thesis, I was interested in exploring the 'quiet' student's experience of the school environment. Due to some conceptual overlaps, as I explored research on the shy, quiet student, I became aware of the experience of introvert students in the school environment. The level of interest in introversion in the popular press (Adams, 2013; Cain, 2013; Clark, 2013) has drawn attention to the negative perception and mistreatment of individuals who demonstrate introvert characteristics. While interest in this area has also spread into academia, for example, Cain (2013) has been cited by several scientific studies (Lawn et al., 2019; Leikas et al., 2017; Medaille & Usinger, 2019; Xioameng et al., 2017), I noticed that there was a paucity of research in this area both at an international level and within the Irish context.

So What? For me, the most important aspect that emerged from the literature was the nature of the introvert student's experience of school, the fact that studies indicated that they felt misunderstood, they felt they were perceived in a negative way and that their strengths go unrecognised, so much so that they feel under pressure to be more extrovert. This was meaningful for me because I learned about the societal expectations and pressure placed on introvert individuals to be more extrovert. This was particularly relevant for me as a trainee child and educational psychologist because it has an impact on the introvert student's wellbeing. They may minimise their own strengths which has costs for their health, personal lives, and sense of self (Medaille & Usinger, 2020; Green et al., 2019; Rosheim 2018).

Initially, I considered exploring the introvert student's experience in secondary schools in Ireland. Most of the literature that I reviewed focused on third level students and some at second level. However, very little research was conducted internationally at primary level and none that I could find within the Irish context. Given that primary school years are critical for self-concept formation, the lack of emphasis on this period indicated a limitation of the extant research. To date, research was most likely conducted in second and third level educational settings because the focus has been on eliciting the introvert student's personal experience of their educational environment and this is perhaps easier to conduct with older students. This illustrated that there was a gap in the literature at primary level and I felt the need to explore this.

Having conducted a systematic review of the literature, it became apparent that there was a need to explore teacher attitude towards introvert students. According to UNESCO's

institute for educational planning, one of the key components of a positive psychosocial learning environment is positive student and teacher relationships (UNESCO, 2021). A student's sense of connectedness to their teacher is created in a school environment where the teacher understands the needs of the pupil and is flexible in their teaching approaches to meet these needs (Garcia-Moya et al, 2015; Fraire et al., 2013). A student's experience of school and their learning environment is critical for their educational outcomes and general wellbeing. Government policy in Ireland supports the view that a whole school approach to wellbeing is central to best outcomes for students in terms of having a sense of belonging and feeling supported and this in turn impacts educational and academic outcomes (DES, 2019; Weare, 2000). The Wellbeing Policy and Framework for Practice places a high priority on wellbeing promotion and a target that all schools and centres for education will engage in a School Self-Evaluation Wellbeing Promotion Process by 2023 (DES, 2019). The findings from this study could inform part of these school self-evaluations as outlined in more detail under the *Policy* and *Practice* headings below.

Now What ? As a result of this research, I have developed my skills as a scientist practitioner. As a scientist, I learned to conduct a systematic review and to critically analyse the existing literature while using various frameworks, such as Gough's Weight of Evidence Framework (2007) and Gersten et als'. (2007) and Brantlinger et al.'s (2005) coding protocols, to guide me in this process. While I enjoyed the research process, it would be remiss of me not to acknowledge that there were challenges, especially when trying to recruit participants. It was not enough to email schools and principals to recruit the number of teachers required for this study, it also involved engaging in snowball sampling, whereby I asked teachers I knew, to recruit other participants from among their acquaintances and work colleagues.

As a practitioner, I have developed a greater understanding of the implications of the social constructions that we hold in society and how these influence interactions in the classroom. I now realise the critical importance of the person-environment fit in terms of student outcomes both academically and with respect to their wellbeing, the many variables that contribute to a good person-environment fit and how the teacher plays a key role in constructing this. I have an enhanced understanding of student personality and the misconceptions that may be held about introvert students which in turn lead to inappropriate

support strategies. All of these learning outcomes are essential to me in my future role as a child and educational psychologist as they will inform my practice, ensuring that I develop relevant hypotheses, conduct comprehensive formulations and consider all aspects of the child and the transactional process between the student, the teacher and their learning environment.

As a next step, it is essential to disseminate these findings in order to bring a conscious awareness to the introvert student's experience within an educational setting and attitudes toward these students. A whole-school approach to wellbeing considers all students, therefore, I believe it is important to explore the benefits of the Universal Design For Learning (UDL) Approach as part of curriculum development to provide all individuals with an equal opportunity to learn.

4.2   Reflection on the Ontological and Epistemological Approach

The research paradigm is made up of three elements; the ontology (Does a single reality exist?), Epistemology (How is it possible to know whether this reality exists or not?) and Research methodology (What methods can be used to explore this reality?).

Initially I felt that this study fell under the Constructivist paradigm whereby the ontological position holds that there are multiple, socially constructed realities (Mertens, 2015). This aligned with the idea that we all hold our own constructs about personality and these are 'constructed' through interactions with others, beliefs held by society and influenced by time and place.

Epistemology is 'a way of understanding and explaining how we know what we know' (Crotty, 1998). When exploring a topic, epistemology plays an important role because it influences how the research is framed (Moon & Blackman, 2017). Epistemologically, constructivism explores the interactive link between the researcher and the participants, values are made explicit and you create findings (Mertens, 2015). Furthermore, the methodological approach to systematic inquiry adopted under constructivism is primarily qualitative. It became clear that the researcher, participant interaction that is typically part of a social constructivist approach does not align with the methodology adopted in this study. Therefore, I concluded that my ontological and epistemological position was more aligned with pragmatism.

Pragmatists assert that there is a single reality **and** that all individuals have their own unique interpretation of that reality which allows for a socially constructed view of teacher attitudes to personality. Under this ontology, reality is actively created as individuals act in the world, and it is thus ever changing, based on human experience. A major underpinning of pragmatist epistemology is that knowledge is always based on experience. An individual's perceptions of the world are influenced by their social experiences. Each person's knowledge is unique as it is created by their unique experiences. Epistemologically, this study is concerned with how teachers understand the concept of introversion based on their own social experiences. The study assumes that teacher attitudes to student personality are socially-constructed and thus, based on society's construction of introversion, teachers would provide lower attitudinal ratings toward introvert students. This was a hypothesis-driven research question based on a psychological variable (introversion/extroversion). This is an under-researched area and so it was important to enable this design to reach as many teachers as possible. It was concluded that a quantitative study was best suited to this research question. Therefore, the way in which this research question was explored aligns with a pragmatist epistemological position.

There is no specific methodology associated with the pragmatic paradigm. The pragmatic paradigm is useful for guiding research design because the researcher can match methods (in this case quantitative) to the specific questions and purposes of research (Weaver, 2015). The study assumes that teacher attitudes to personality are socially constructed. As such, the design looked at how positive and negative framing of student personality influences teacher attitude. This phenomenon was investigated by means of a quantitative design which means that the overarching view of truth, knowledge, how we come to know comes from a pragmatic perspective.

4.3   Reflections on the Theoretical Framework

The theory underpinning this research was the Person-Environment Fit theory. This theory describes the match between attributes of the person and attributes of the environment (Roberts & Robbins, 2004). The basic principles of the person–environment fit theory are that the outcomes are best when personal and environmental attributes are compatible (Van-Vianen, 2018). The Person-Environment Fit theory was deemed to be the most appropriate theoretical framework for this study because it was exploring the

compatibility of the introvert student (person) within the primary-school classroom (environment). This was achieved by exploring teacher attitude toward introvert students. The literature indicates that the teacher plays a key role in constructing a good person-environment fit (Akiba and Alkins, 2010; Pawlowska et al., 2014). The compatibility between a person and the environment can affect the person's motivation, behaviour, and overall mental and physical health; if there is a good person-environment fit this can facilitate the individual to function at their best and a poor person-environment fit may lead to maladaptation (Holmbeck et al., 2008). If teachers' have a negative attitude toward introvert students, this may lead to a poor person-environment fit which can impact student wellbeing and academic outcomes. The teacher's ability to understand the needs of the pupil and be flexible in their teaching approaches to meet these needs paves the way for a good person-environment fit (Flood and Bank, 2021; Roberts & Robbins, 2004; Rose, 2000). It was therefore important to consider any stereotype or prejudice that may exist toward the introvert student within the educational setting.

4.4   Reflections on the Methodology

4.4.1   *Method of Data Collection*

Most of the studies that informed the rationale for this research were based on introvert students' experiences of educational settings. It was explicitly highlighted in a number of the studies that it was important to gather information on teachers' attitudes toward introvert students. Initially a qualitative study was considered for this research question and teacher interviews were proposed as a means to gain self-reports of teacher attitude towards student personality. Little to no research has been conducted in this field of study within an Irish context and so it was important to enable this design to reach as many teachers as possible. This was a hypothesis-driven research question based on a psychological variable (introversion/extroversion) with a robust quantitative research literature. It was concluded that a quantitative study was more suited to this research question. A web-based survey was deemed the most appropriate form of data collection for the following reasons; First consideration was sample size. Interviews as a method of data collection would have limited the sample size to a smaller number. The use of a web-based survey ensured access to a large sample and enabled the researcher to reach all primary schools in Ireland via email. A survey design can be a good starting point for an under-researched area such as this. The

benefit of a large sample size also meant that the results were more generalisable as it was more representative of the primary school teacher population. There was also a concern that due to issues such as social desirability, challenges to professional competence, that a true picture of teacher attitudes could not be achieved via qualitative methods such as interviews. The second reason to choose a web-based survey was accessibility. Most people have access to a computer or phone now and an advantage of a web-based survey is the fact that it permits respondents to complete the questionnaire whenever they choose with the use of different platforms. A greater response rate is more likely as a result. Interviews allow less flexibility to complete the interview process whenever suits the participant. The third reason surveys were chosen is that they are more time-efficient. Teachers are very busy. Therefore, it was important that this survey was not a huge infringement on teacher time. The ability to access the survey across a variety of platforms at a time that suited the participants was essential. Interviews are more time consuming for the participant. The fourth reason is determining the precise delivery of each aspect of the survey. The survey was developed using Qualtrics, a web-based survey tool (https://www.qualtrics.com). Advanced survey platforms such as this allow the researcher to build a survey to suit their needs, for example, building in an information sheet for the participants, built-in features to prevent the participants submitting incomplete questionnaires and the ability to provide a debrief page immediately upon completion of the survey. The fifth reason to use surveys is ease of use. There is no burden on the respondents to post the survey upon completion. They simply submit online and the data is accessible immediately to the researcher. The sixth reason is anonymity. A crucially important advantage of web surveys is that the participants can remain anonymous, which is an added layer of confidentiality. The seventh reason is cost. A final advantage of web surveys is their low cost. Qualtrics was accessible through the college and no postage or travel was required which would be the case with other methods of data collection, such as paper surveys or interviews.

It was concluded that the use of vignettes was appropriate for this study as it enables the researcher to collect data which is not accessible through other sources (Erfanian et al., 2020). It was important that the teachers were not fully aware of the purpose of the research at the time of completing the survey in order to prevent participant bias (McCambridge et al., 2012). There was no explicit deception, however information was

withheld as knowledge of the specific purpose of the study would have skewed the results and teachers may have answered in a different way. Therefore, a debriefing page was included at the end of the survey, which clearly and explicitly described what the study was about. By using vignettes that represented typical, extrovert and introvert students and the use of positive and negative framing, it helped ensure that the purpose of the research was not immediately obvious. The vignettes were gender neutral so this ensured that the teachers were only responding to student personality and framing. The research exercised great caution when designing the vignettes to ensure the validity of the student descriptions. The development of the vignettes using designed statements from the Five Factor Model (FFM) ensured consistency across the student descriptions and ensured that each participant was responding to the same or similar prompt. Presenting the vignettes via the web-based survey also enabled the counterbalancing of the order of presentation of the framing and student personality. This meant that there were four possible combinations and enabled the random assignment of each participant to one of four groups. This prevented participant fatigue by not having to review five vignettes, as well as further ensuring the avoidance of subject bias (Ben-Nun, 2008; Egleston et al., 2011). Despite the many benefits of using vignettes, the researcher is also aware of their limitations which will be discussed in a later section *Future Research*.

While a quantitative study was the most appropriate method for this question at this time for all of the reasons outlined above, a qualitative approach could further enhance these findings. The findings from this study rely on teacher self-reports based on hypothetical scenarios. Direct school-based observations and teacher interviews would provide rich data as to what is happening on the ground in reality and provide context for the teacher's responses. Furthermore, student interviews would enable future research to elicit the voice of the child and shed light on the introvert student's experience of their learning environment within the Irish context at primary level.

4.4.2 *Sampling Approach*

The sample size is important because it strengthens the precision of the estimates and the power of the study to draw conclusions. Too small a sample may lack representativeness and too large a sample size is unnecessary, unethical and may highlight or enhance differences that are not relevant (Faber & Fonseca, 2014). Therefore, G-Power and a Qualtrics calculator

were used in this study to determine an appropriate sample size to represent the population of primary school teachers in Ireland (Cohen, 1998). A minimum of 269 participants were required to respond to this survey in order to generalise to the whole primary school teaching population (DES, 2021). The use of purposeful sampling was initially used to recruit participants for this study (Creswell & Poth, 2018). This sampling method enables researchers to choose eligible participants. Results indicate that sending online surveys to a clearly defined population positively impacts response rate (Wu et al., 2022). The initial stages of the sampling process were straight-forward. A list of all the primary schools in Ireland was retrieved from www.gov.ie. This provided all of the necessary information to ensure regional spread and a mix of different types of schools. Random-sampling ensured that the sample that responded from the list of schools would represent this specific population more broadly. The uptake was slow and it became evident that emailing schools was not enough in order to recruit the minimum number of participants to meet the requirements of this study within the time constraints of this research. It is difficult to say why the uptake was slow. It may simply be that schools and teachers are inundated with requests to participate in a multitude of research projects and had reached saturation point. The use of an online survey may have been a factor for some. While there are clear benefits to a web-based survey as outlined above, some participants may engage with technology more readily than others. Therefore, it may have acted as a barrier for some. It was concluded that it was necessary to engage in snow-ball sampling. This is where the researcher informed teachers they knew about the study and asked that they invite others in their schools to participate. It is difficult to say if this is what led to an increase in respondents as the participants remained anonymous and accessed the survey link in the same way. It is likely that snow-ball sampling did lead to some increase in responses. Qualtrics suggests various ways to increase response rate and two of these are having a prior relationship with the participant and perceived legitimacy of the research. Both of these points may have been addressed via snow-ball sampling.

4.4.3 *Data Analysis*

As part of a quantitative study there are steps to follow: data entry, data checking, data reduction, exploratory analyses, statistical significance testing for answering research questions and analysing the strength of effects (Barker et al., 2002). In order to ensure that

the data had been entered correctly, the researcher along with one of her supervisors proof-read the entries. They entered the scores on all the items and any reverse-scored items that needed to be recoded so that their values were consistent with the rest of the items in the scale. As part of the data analysis process, analyses were conducted on the responses to the pilot study to ensure that all of the necessary and required data was being gathered. This was also important to ensure that the data being gathered could be analysed and was relevant to the main research question. All data from the surveys was collected in Qualtrics, then exported to SPSS for analysis. A variety of methods (Kolmogorov–Smirnov and Shapiro-Wilk's tests of normality, evaluation of skew and kurtosis, and visual inspection of plots), were used in this study to explore the normality of the data. Cronbach's alpha indicated good reliability across all vignette probe items for each category.

Factorial ANOVAs were used to analyse the data and this enabled the exploration of how multiple independent variables (e.g. framing, personality and order) affect change in the dependent variable (teacher attitude). This effect was measured with individual main effects for each factor, along with the interaction effect with all factors. Due to the large sample size the study was able to permit reasonable inferences. By choosing a research design that controlled for extraneous variables by using a repeated-measures design whereby 334 participants were randomly assigned to four groups, enhancing the internal validity of the study. Effect sizes were reported and unlike test statistics, effect sizes are not affected by sample size and thus ensure a fair comparison.

It would be remiss of me not to mention that I had reservations about conducting a purely quantitative design. Engaging with a research design that relies solely on numerical data collection and analysis pushed me out of my comfort zone. Initially a qualitative design was chosen for this study because I did not want my study to centre around statistics, an area I was not expert in. However, I believed that a quantitative design was the best design to answer this question. As a result, I was supported by supervisors who could teach me and support me during the design and data analysis phase.

4.5   Ethical Considerations

The Mary Immaculate College Research Ethics Committee (MIREC) provided ethical approval for this research in December 2021. As a trainee psychologist it was incumbent upon the researcher to adhere to the Code of Professional Ethics as set out by the

Psychological Society of Ireland and the British Psychological Society (BPS, 2019; PSI, 2019). Psychologists accept that codes of ethics are necessary to protect the interests of clients and prevent misuse of psychological knowledge. In joining the PSI, the researcher agrees to comply with the Code's provisions. This related to the recruitment process, data collection, and ensuring participant confidentiality and anonymity. By choosing to contact teachers via the main school email address rather than seek out individual teacher email addresses, further ensured teacher anonymity and confidentiality. Additionally, through the use of vignettes, teachers were able to respond to a hypothetical scenario rather than providing information about individual students in their classrooms, thereby eliminating any risk of breaching student confidentiality.

The participating schools and recruited participants were provided with an information and debrief sheet. The information sheet informed the participants that their participation was voluntary, and that they could withdraw at any stage, without reason and without consequence. The participants were not required to provide any personal or identifying information. This was considered at the design phase and the researcher deliberated whether any further information about the participants would inform this research such as gender, age, type of school they worked in and location. It was decided that this information would not enhance the research and so it was not sought in order to further guarantee anonymity and confidentiality of the respondents.

Participants were informed of how the research outcomes would be used. Reporting outcomes and identifying appropriate pathways for dissemination, including publication, is also part of conducting research in an ethical manner, to communicate their work and foster public understanding. For example, it is important that those who took part in this study and others who work with introvert students learn of the outcomes of this research. Presenting at the annual PSI conference in 2022 went some ways towards addressing this as well as presenting to other students on the doctorate programme across the three cohorts in addition to members of academic staff within the college. It is also the intention of the researcher to publish the findings in relevant academic journals.

4.6   Implications for Policy, Practice and Future Research

Based on a systematic review of the literature, this study highlighted the introvert student's experience of school. The current study collected empirical data to explore primary

school teachers attitudes toward introvert students. This was conducted in the Irish primary school context where the research is limited, as was demonstrated in the systematic review. Thus, this research hopes to have filled this research gap. The findings derived from this study have led to recommendations and implications for policy, practice and future research as outlined below.

4.6.1 *Policy*

The findings from this study indicate that teachers provided higher or more positive attitudinal ratings for extrovert students compared to introvert students. The findings also indicate that teachers believe that introvert students are less likely to succeed academically relative to their extrovert peers, less likely to engage with strategies to help them integrate into the classroom and less likely to feel happy at school relative to extrovert students. Despite these findings, the results also indicate that teachers feel confident in their own ability to teach all student personality types. The teacher attitudes implied that they ascribed these issues to the students.

Wellbeing is present when a person realises their potential, has a sense of purpose, and feels connected to a wider community (NCCA, 2017). Schools are engaging with the Wellbeing Policy and Framework for Practice and the School Self-Evaluation Wellbeing Promotion Process (DES, 2019). The findings from this study highlight potential barriers to existing policies in relation to student wellbeing.

School self-evaluation (SSE) focuses on school improvement by means of an internal school review process (DES, 2021). This happens when all stake-holders are included and work collaboratively (DES, 2021). It is an evidence-based approach and involves gathering information from a range of sources, before making any decisions. SSE is supported by the Looking at Our School (LAOS) quality framework 2022. This helps school principals and teachers to determine if existing practice is effective. If schools do not have an understanding of introversion or a conscious awareness of attitudes toward this student personality type, then it is difficult for them to determine whether existing provision and practice is effective. Schools cannot address inequities if they are not aware of them and therefore, they cannot engage in a thorough Whole School Self-Evaluation Wellbeing Promotion Process.

School Self-evaluation: Next Steps 2022-2026 advises how schools can use SSE to ensure that school goals for equity, inclusion, teaching, learning and wellbeing can be achieved (DES, 2022). There is a six-step process that schools can follow as part of a school self-evaluation (SSE). These are; 1) Identify Focus, 2) Gather Evidence, 3) Analyse and Make Judgements, 4) Write and Share Report and Improvement Plan, 5) Put Improvement Plan Into Action and 6) Monitor Actions and Evaluate Impact (www.gov.ie). The findings from this study could be used to inform the SSE.

Articles 28 and 29 of the United Nations Convention on the rights of the child committed the education system to the 'development of the child's personality, talents and mental and physical abilities to their fullest potential' and to 'take all appropriate measures to ensure that school discipline is administered in a manner consistent with the child's human dignity' (United Nations, 1989, p.27-30). Based on the findings from this study and in conjunction with the rights of the child as set out by the UN, I believe the Wellbeing Policy and the SSE guidelines should clarify what is meant by equity and inclusion and what this applies to, for example, gender, race and student personality among other things. It is my hope that I will disseminate the findings of this study and that this will influence how schools identify a specific focus, step 1, in their approach to SSE. I aim to bring an awareness to what it means to be introvert, how the introvert student experiences the school environment and disseminate the findings of this study highlighting teachers attitudes toward introvert students. Presenting at the PSI annual conference in November 2022 and at the NEPS annual trainee conference in December 2022 went someway to addressing this. Further to this I aim to publish in scholarly peer-reviewed and practice-based publications while also exploring possible avenues to feed into discussions at policy level. My proposal to government would be to seek changes at teacher training level, to ensure teacher training includes UDL as a core module and bring an awareness to the importance of student personality when considering teaching approaches and SSE.

4.6.2 *Practice*

The catalogue for the Wellbeing Policy Statement and Framework for Practice organises resources under four key areas of wellbeing promotion: Culture & Environment, Curriculum (Teaching & Learning), Policy & Planning and Relationships & Partnerships. See Figure 4.2, Whole School Approach – Four Key Areas of Wellbeing Promotion.

Figure 4.2

Whole School Approach – Four Key Areas of Wellbeing Promotion

Each of the four key areas can be linked to promoting wellbeing for introvert students.

Culture & Environment - *mission & ethos, school and classroom climate and culture* has an impact on the person-environment fit for the introvert student. Schools now adopt more interactive learning strategies in the classroom which are more suited to the extrovert student and may disproportionately challenge introvert students leading to inequities in the classroom. It is important to acknowledge participation inequities in class and find a balance within the learning environment and via pedagogical practices that will keep all students along the introversion/extroversion continuum engaged with their learning.

Curriculum - *Planning supports and monitoring* is key to ensuring that the needs of the introvert student are being met appropriately and consistently. Balancing the use of teaching techniques and settings so as to serve all students in the class. Understanding the need to make adjustments for temperament and that introversion does not need to be 'fixed' but instead nurture the strengths typical of this personality type, thereby fostering the talents of all students.

Relationships & Partnerships - *Student and staff relationships* are essential for student wellbeing. Part of fostering a positive teacher/student relationship is about building rapport with a young person. A key function of developing rapport with a student is to establish trust and respect (BPS, 2019). This can only be achieved if teachers and all those who work with students, including educational psychologists, have a better understanding of what introversion is, what the introvert students' experience of the classroom environment is, what their needs are and how these needs can best be met (DES, 2019). A better understanding of introversion could also help dispel beliefs linked to these students such as lacking motivation, disinterested and less intelligent.

Policy and Planning – *School Self-Evaluation and Continuous Professional Development*. This can be achieved through initial teacher training and Continuous Professional Development, which in turn influences and shapes the ethos and culture of the school and informs school policy. Universal Design for Learning (UDL) addresses student diversity in educational settings by promoting inclusive and equitable practices (Flood & Banks, 2021). UDL has traditionally been used at third level with little focus at primary or second level (Flood & Banks, 2021). UDL ensures choice and flexibility by providing multiple ways for learning, teaching, and assessment (Flood & Banks, 2021). As highlighted in the literature review, the teacher plays a key role in paving the way for a good person-environment fit through recognising the needs of introvert students and being flexible in how they meet those needs. Landin & Schirmer (2012) demonstrated positive outcomes for students when teachers use UDL and follow key guiding principles; offering students choices in how to engage with learning content, choices in how to demonstrate their understanding, valuing students' unique interests and enabling students to communicate through mediums that suit their learning. According to Flood and Banks (2021) UDL is gaining some momentum in Irish curriculum documents (recent draft publication of the Primary Curriculum Framework) but it exists at an optional level only at teacher training level and remains limited at CPD level for practicing teachers.

In summary, best outcomes are most likely when the teacher (a) focuses on using multiple modalities in instruction, for example balancing class time between lecture, 'circled discussions', group work, independent work and thought. This will allow all students to thrive and push them beyond their comfort zones, (b) focuses on multiple modalities for

demonstrating knowledge and what a student has learned, for example, students who are confident and articulate get regular positive feedback for participating verbally and by ensuring the use of various modalities in how the student can demonstrate their knowledge, the teacher can enable the introvert students to demonstrate their strengths. Highlighting the benefits of taking time to think things through, reflecting, writing, listening, observing and (c) offering choice in how students present their knowledge, for example, in writing or orally, group or individual work.

It is important to note that I am not a primary school teacher. However, as an educational and child psychologist I work with both primary and post-primary schools and am concerned with learning, behaviour, social and emotional development. It is the role of an EP to work in partnership with teachers, parents and children in identifying additional needs. As an educational and child psychologist I can offer a range of services aimed at meeting these needs, by supporting the individual students, their families and teachers through consultation and assessment but also through research. The literature highlighted a potential bias, within Western society in particular, in addition to the findings of this study within an Irish context, that appears to favour extrovert characteristics. A review of the literature indicates that this appears to have an impact within our classrooms which has costs for the introvert students' academic outcomes and emotional wellbeing (Medaille & Usinger, 2020; Green et al., 2019; Rosheim 2018) both of which are central to my role as an educational and child psychologist. It is part of the role of an EP to identify approaches and strategies to make learning more effective for all, such as promoting the use of UDL. This involves consideration of the social, emotional and cognitive processes involved in learning and applying these findings to improve the learning process which teachers can then chose to implement in practice through the use of already existing resources such as incorporating student personality into the SSE and using the guidelines embedded in the Wellbeing Policy Statement and Framework for Practice to accommodate all student personality types. Future studies could examine the impact of changes in these areas; implications for practice and outcomes for students.

4.6.3   *Future Research*

A survey design can be a good starting point for an under-researched area, with the potential to explore findings more deeply via qualitative methods either through

subsequent studies or mixed methods. A potential limitation of this design was the sole reliance on self-reports, which may be prone to biases or inflated associations between what the participant believes they are doing in the classroom and what is actually happening in the classroom. Although it is difficult to assess teachers' attitudes and beliefs without relying on self-reports, future research might also include direct school-based observations. Furthermore, this design relied on vignettes and therefore assessed teachers' attitudes toward hypothetical scenarios. The many advantages of vignettes are listed above, however, it must be stated that they have limitations in terms of capturing student personality. As stated in the literature review, personality exists on a continuum, therefore, no two introverts will be identical. The vignettes attempted to capture the key aspects of introversion using the designed statements of the FFM. However, the vignettes captured one mood (positive or negative). In reality, an individual's mood and personality will fluctuate and the teacher may respond in different ways to any one student. Therefore, direct school-based observation may compliment this study.

As mentioned previously, very little research has been conducted at primary level possibly because the focus has been on eliciting the introvert student's personal experience of their educational environment and this is perhaps easier to conduct with older students. While this study focussed on teacher attitude, I believe it is important for future research to explore the voice of the introvert student at primary level in order to capture the voice of the child. This poses challenges as it will be essential to determine the child's personality type and personality tests may not be valid for use with children, parental consent will be required to work with children as well as giving consideration to the nature of the interview questions and how to elicit a child's experience of the classroom environment.

In future studies, an alternative theory to Person-Environment Fit theory could be Standpoint theory (Borland, 2020, January 23rd). This theory purports that individuals create knowledge by means of power relations that construct and divide social groups into dominant and nondominant categories (for example, extroverts and introverts) (Allen, 2017). It is an individual's social and political experiences within those categories that shape our perspectives and is the lens through which we see and understand the world. For example, introvert individuals are placed in a unique position to highlight patterns of behaviour that those in the dominant group (extroverts) may have no conscious awareness of. The world is

not experienced in the same way by all individuals or groups. The views of those with more social power are validated more than those in marginalized groups, therefore leading to a better person-environment fit.

Another possible alternative theoretical perspective for this study might be Intersectionality. This provides a lens through which to examine processes, practices, policies that lead to inequities because of intersecting identities, introversion being one of these identities. Speight and Vera (2009) suggest that EPs can analyse and challenge these structures. Intersectionality highlights that social identities work on multiple levels. It is a framework for understanding different people's varying experiences in the world or others attitudes towards people based on various combinations of social identities. What would teachers' attitudes be towards introvert students if the vignettes layered different social identities, such as gender, personality, race and neurodiversity. Attitudes toward introvert students may vary depending on whether they are male or female, black or white, neurotypical or neurodiverse. This may be a pathway for future research to explore.

4.7   Conclusion

At the core of the professional doctorate in educational and child psychology is professional practice (Fenge, 2009). One of the aims of the programme is for the doctoral student to conduct research at doctoral level that makes a distinctive contribution to the field of educational and child psychology. The purpose of this research question was to determine if barriers to learning and wellbeing existed for introvert students. It is part of the role of a practicing educational psychologist to promote enquiry and empirical research to support and inform decision-making processes for key partners such as educational settings, local authorities and other relevant organisations (BPS, 2017). A core competency of being an educational psychologist is to demonstrate self-awareness and work as a reflective practitioner. Boud et al. (1985) define reflection as ''a generic term for those intellectual and affective activities in which individuals engage to explore their experiences in order to lead to a new understanding and appreciation'' (p. 19). This chapter enabled me to reflect on the body of work undertaken over the previous two years and it has led to a new understanding and appreciation of the social constructions that we hold about the world and the impact of this on others. This is a salient point as I review the key competencies for educational psychologists as set out by the British Psychological Society which highlight that it is the role

of an educational psychologist to demonstrate appreciation of diversity in society and the experiences and contributions of different groups or individuals, it is the role of an educational psychologist to actively promote inclusion and equity, to take appropriate professional action to redress power imbalances and to embed principles of anti-discriminatory and anti-oppressive practice, to be aware of attitudes towards vulnerable individuals and redress influences which risk diminishing opportunities for these individuals, to demonstrate knowledge and understanding of stigmatising beliefs, to understand the impact of inequality and the implications of this for access to resources (BPS, 2019). Finally, and that which was at the heart of this research, it is the role of an educational psychologist to contribute to the analysis, development and maintenance of effective and supportive learning environments for all children and young people (BPS, 2019). These competencies as set out by the BPS were relevant to this study.

4.8   Impact Statement

A notable strength of this study is that it is one of the first to explore primary school teachers' attitudes towards introvert students within the Irish context. The findings have highlighted an area that has been underexplored to date. The aim of this research was to bring an awareness to the introvert student's experience and to suggest ways in which teachers and EPS can support introvert students. The analysis and insight presented in this thesis has implications in three key areas; policy, professional practice and research

The Wellbeing Policy and Framework for Practice places a high priority on wellbeing promotion and a target that all schools will engage in a School Self-Evaluation (SSE) Wellbeing Promotion Process by 2023 (DES, 2019). The knowledge gained from this study highlights a lack of understanding of what introversion is and the impact of this on introvert students' wellbeing. If schools are not aware of the inequities that exist for introvert students, then it is unlikely to be identified as a focus for School Self-Evaluation (SSE). This research highlights the potential need for government initiatives and updated policies to educate school leaders and teachers on how they can achieve goals for equity and inclusion under the SSE for the introvert student.

This study has identified ways in which professional practice can align the needs of the introvert student within an active learning environment through the use of the Universal Design for Learning approach (UDL) and the Wellbeing Policy Statement and Framework for Practice. The needs of introvert students may be addressed by incorporating the principles of UDL as part of curriculum development to give all individuals equal opportunities to learn and to enable all students to capitalise on their own, individual strengths, in line with the basic principles of the continuum of support. Furthermore, this thesis has highlighted that student personality can be identified as a focus of the school-self-evaluation and wellbeing for introvert students can be addressed under the four key areas of wellbeing as set out in the catalogue for the Wellbeing Policy Statement and Framework for Practice.

The primary impact of this study is its' potential to inform the field of inclusive education nationally and internationally by bringing a conscious awareness to teachers, schools and educational psychologists of what introversion is, how introvert students' experience the classroom environment, what their needs are and how these needs can best be met. In order to bring about change it is essential to disseminate the findings of this study to those who can

implement change. This process of dissemination has already commenced by means of presenting the findings at the Annual Conference of the Psychological Society of Ireland 2022, presenting the findings at team meetings within NEPS and at the annual NEPS Trainee conference 2022. It is also the aim to publish the findings in relevant academic journals. The purpose of disseminating these findings is to promote dialogue amongst teachers, educational psychologists and the general public. To encourage those working with primary school students to consider the person-environment fit and the transactional process between the student, the teacher and the learning environment within the context of student personality. The purpose of disseminating these findings is also to encourage informed discourse on the social constructions of introversion within the broader community and society in general.

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Appendix A   **Mapping of the Field**

Table A.1

Mapping of the Field

Author	Aim	Study Design	Participant /Sample	Setting	Assessment	Methods	Data Analysis
Beckerson et al. (2020)	(a) determine if active learning environments promote improved exam scores in the class as a whole (b) characterize the relationship between the social personality and performance on exam questions, both overall and those relating specifically to material learned during active learning settings (c) identify how social personality contributes to group perception within the active learning sessions	Multivariate design Mixed Methods Qualitative and quantitative	194 College students over the age of 18. Focal group was 33 microbiology students. No break down of gender or ethnicity.	University classroom	IPIP (International Personality Item Pool) was used to measure the Big Five Factors Extroversion, Agreeableness, Conscientiousness, Neuroticism, and Openness	Statistical analysis Three-way ANOVA Qualitative research in form of survey/questionnaire on the student's experience of the active learning environment and evaluation of peer contributions in class.	Three-way ANOVA to test for a significant effect between the tested unit, personalities, and active learning class attendance on student exam performance.

Brown & Terry, (2013)	(a)Determine the preferred learning style of campers. (b)Determine relationships between campers' preferred learning style and their attainment of knowledge (c)Determine the relationship between campers' learning style and their retention of knowledge (d)Determine if a relationship exists between campers' learning style and their attitude about the camp experi-ence.	Quantitative split-plot factorial repeated measures quasi-experimental design	344 FFA campers 8th-12 grade. No breakdown by gender or ethnicity.	FFA camp in Oklahoma. 1500 attend. Provides recreation and social activities but also provide an academic curriculum in leadership and communication.	The Paragon Learning Style inventory was used to gauge learning style. A widely used 52-item instrument	Participants were split into groups by learning style. Then assessed at three different stages; pre-, post & delayed post-test.	*Split plot factorial analysis-* SPF-4x2 design that tested differences among four between-subjects groups (learning styles), differences between two repeated measures (pre-test and posttest scores) and determined if an interaction existed between learning styles and test scores and SPF-4x3 design, which included one additional repeated measure (delayed posttest). The fourth objective was analyzed using a one-way ANOVA to test if relationships existed between campers' preferred learning style and their attitude score.

Colley (2019)	What are the educational experiences of students who identify as introverts? What educational approaches do students perceive as most beneficial?	Phenomenol ogical qualitative design	Email sent to 378 nursing students. 10 initially volunteered. 7 included in final study. Some participants over the age of 25. All female. Two hispanic and five Caucasian.	Online private meeting room	10 question survey administered to 31 students in the class. Questions based on continuum of introversion-extroversion (Cain, 2012). Not a valid measure.	Interview lasted 45-60 minutes Video and audio recording. Transcribed by researcher.	Thematic Analysis Horizontilisation and structural analysis
Green et al. (2019)	To describe the experiences of introverted undergraduate students in an active learning English classroom environment	Qualitative	10 undergraduat e students. Six participants were female and four were male. Various ethnicities were nearly equally represented.	State college. 7500 students. Two-thirds of the students are White, one-sixth are African American, and one-sev-enth are Hispanic.	Myers Briggs Type Indicator. Questions raised about the validity of this instrument.	Semi-structured interviews, non-synchronous online forum, Cognitive representations	Thematic analysis
Henriksson et al. (2019)	1) pupils' experience of student health services, family, friends, recuperation and the	Quantitative	1045 upper secondary pupils in Sweden 16-	*Digital survey*	Participant self-reported whether they were introvert or	Web based survey	5-step hierarchical regressions and a number of independent t-tests

	learning environment; 2) difference between introverted and extroverted pupils' sense of well-being, perceived stress, views of the learning environment, 3) the degree to which aspects of school life predict well-being and stress.		17 years of age. 54% female, 44% male, 2% other.		extrovert. No measurement tool used. well-being was measured using a modified version of the 5-item World Health Organization Well-being Index. Experience of learning was a 7 item scale using a 4 point likert scale.		were performed to examine the relationship with family, friends, experience of the learning environment, well-being, and stress based on personality type.
Rosheim (2018)	To understand how introvert/quiet students mediate their thinking beyond talk in the classroom. To ascertain learning preference. Focus on introvert.	Qualitative Universal approach. The whole class took part in the activities but only data used from the three introvert students.	Three 6th grade, Introvert students. One girl, two boys. One from Mexico, one American and one who's parents are from Laos.	K-6 elementary school. Racially & linguistically diverse. Suburban midwestern US district.	10 question survey administered to 31 students in the class. Questions based on continuum of introversion-extroversion (Cain, 2012). Not a validated measure.	Questionnaires, 9-15 min Interviews, video recording, Reflective reports Used triangulation to account for bias.	Discourse and Content Analysis. Multimodal analysis - Probe further in interview re questionnaire answers. Video recorded whole class doing small group activities – teacher led and student led. Gestures, facial expressions and speech (tone, inflection, volume),

							students reflective writing
Tuovinen et al. (2020)	1. To determine if the social validation school is a valid tool within the Finnish school context. 2. How does introversion relate with self-esteem, school-work engagement and school burnout?	Quantitative	862 ninth grade Finnish students (15-16 year olds)	Electronic survey in urban comprehensive schools in Southern Finland	-Social engagement scale (Fredricks et al., 2016; Wang et al., 2016) - The Big Five personality traits (Costa & McCrae, 1992) -Rosenberg self-esteem scale (Rosenberg, 1965) - Schoolwork Engagement Inventory (Salmela-Aro and Upadyaya, 2012) - The School Burnout Inventory (Salmela-Aro et al., 2009)	-Quantitative research in the form of survey questionnaire. Statistical analyses was performed	-Confirmatory factor analysis (CFA) to test the structural validity of social engagement. -Hierarchical multiple regression was used to test the moderator effects of social engagement on the relationship with introversion and wellbeing (i.e., with self-esteem, schoolwork engagement, and school burnout).

Table A.2

Mapping of the Field Summary of Findings

Author	Findings	Synthesised Findings	Recommended Future Research
Beckerson et al. (2020)	The level of an individual's extroversion can significantly impact how they perform in active learning environments. These findings are particularly important for introverts for classes that rely more heavily on active learning. Active learning environment is indeed not a one-size-fits-all solution for improving the way all students learn	This is in line with Rosheim, Fink, Colley and Medaille's beliefs that various forms of participation must be considered.	. Further research with larger sample size
Brown et al., (2013)	Learning style did not impact learning or retention of knowledge at pre, post and delayed post test. Significant difference between learning style and attitude to camp. Extrovert rated their experience higher. Therefore introverts learning not impacted but it was not a positive experience	There is overlap with Beckerson, Brown found no difference on learning outcome. Beckerson saw general improvement for all with active learning but when he compared it to passive learning he found that introverts had better outcomes when passive learning was used.	None. Concludes that educators need to attend better to the unique social needs of introverts.
Colley (2019)	Unsupportive teachers diminish them Teacher trying to make them extrovert Negative impact on confidence – anxiety and embarrasment Physical and emotional wellbeing compromised – discomfort in class Need for quiet/reflective time Need for time to process thoughts	Rosheim, Colley & Medaille refer to the physical aspect – headaches and feeling unwell Rosheim and Colley both refer to the need/value for quiet time Rosheim and Colley teachers not recognising strengths of introvert	Teaching approaches and their effect on the introvert student's engagement and learning

	Small group work can work well but more time for independent work needed Being able to ask questions outside of the classroom environment helpful	Rosheim and Colley refer to the importance of a supportive teacher	
Green et al. (2019)	The active learning classroom did not match participants preferred learning styles Employing coping mechanisms enabled participants to perform at their typical academic level. Sub themes: desire to observe prior to participation, feeling pressure to perform, the desire for time in order to think reflectively, and significant energy expenditure. Classroom noise an issue	In line with Rosheim, Colley & Medaille re the need for time to process thoughts Medaille also referred to this pressure to perform and also pressure to be something they are not. Classroom noise also came up for Rosheim & Medaille	Control for shyness in future studies. Consider teachers' attitude toward introvert students and the impact this has on academic and emotional outcomes.
Henriksson et al. (2019)	Extroverts consistently gave responses indicating a more positive experience. female gender, introversion were risk factors for wellbeing and stress.	This is in line with Brown's results. Extroverts rated their experience of the learning environment higher.	Further research should increase the sample size to make conclusions more reliable.
Rosheim (2018)	Communication and representation to be more than about language. Participation beyond talk – listening, thinking, writing. Attending when they appeared not to be. Students self-advocate – stating they need space that they are not shy. Need quiet time. Shift in identity over the period of the study – seeing their strengths & recognising their learning preferences. Social construction of identity. Teacher support essential	Touvinen & Rosheim contend that various types of participation necessary. Introvert behaviour misunderstood or not recognised.	Need to learn more about how introvert learners mediate thinking. How they participate.
Tuovinen et al. (2020)	This study revealed that the social engagement scale is a valid measure that can be used in the Finnish school context. social	Less importance placed on class discussion is in line with Rosheim's proposal that teachers should look at various	Use of peer-reported personality versus self-report only. Looking at family-level variables in the study of introversion.

	engagement is characterized by two unique dimensions; social engagement and social disengagement. These findings thus imply that disengagement is not simply the opposite of engagement but a distinct psychological process that contributes independently to academic and psychological outcomes: a student can be engaged and disengaged at the same time. The results demonstrated that the interaction between the social engagement and introversion was significant: introverts with high social engagement have higher self-esteem than introverts with low social engagement. This may indicate that, for all students, no matter what their personality trait is, it is important to collaborate with other students. However, social engagement explained about 13% of the total effect, which means that other unexplored variables may affect self-esteem. No interaction between social engagement and social disengagement for schoolwork engagement and school burnout. Social engagement has a high positive relation with schoolwork engagement and social disengagement has a negative relation with schoolwork engagement and a positive relation with school burnout. Introverted students with low social engagement do not help their peers, are not interested in other students' ideas, and do not share their own ideas. However, the study also indicated that introverts are not necessarily unsocial and that many of them are socially engaged.	types of participation beyond talking. Introversion and social disengagement have a positive relation and social disengagement has a positive relation with burn out. Furthermore, introverted students reported less perceived support from fellow students than the more active students. This in line with Henriksson et al. and Brown who also indicate that extroverts rated their experience of the learning environment higher.	Future research to take a person-centred approach and look at individuals that share attributes to identify groups that need support. E.g. how their wellbeing is being impacted by having a cluster of attributes.

	Less importance should be placed on students participating in class discussion		
	Highlights the importance of identifying, understanding, and accepting different personalities at school to improve wellbeing.		

Appendix B   Studies Excluded

	Study Excluded from Review	Reason for Exclusion
1.	A. D. (2015). Does common core hurt introverted students? *District Administration*, *51*(12), 26.	1
2.	Ahmed, F., Campbell, P., Jaffar, A., Alkobaisi, S., & Campbell, J. (2010). Learning & personality types: A case study of a software design course. *Journal of Information Technology Education*, 9, IIP237-IIP252.	3
3.	Al-Dujaily, A., Jieun K., & Hokyoung R. (2013). Am I extravert or introvert? Considering the personality effect toward e-learning system. Journal of Educational Technology & Society, 16(3), 14–27.	4
	Alfonso, Z., Long, V. (2005). Graphing calculators and learning styles in rural and non-rural high schools. Working Paper No. 23. Ohio Univ., Athens. Appalachian Collaborative Center for Learning, Assessment, and Instruction in Mathematics. (ACCLAIM). 2005 31 pp. (ED494991)	3
4.	Ali Borna, T. (2017). Role of extroversion and introversion in developing speaking skill of Bangladeshi EFL learner: Teachers' perspective. ASA University Review, 11(1), 61–74	3
5.	Aliakbari, M., Abol-Nejadian, R. (2015). Trait emotional intelligence and learning styles: the case of Iranian English for academic purposes learners. Educational Psychology, Vol. 35 Issue 7, p779-793, 15p; DOI: 10.1080/01443410.2013.819071	3
	Almusharraf, A., & Almusharraf, N. (2021). Socio-interactive practices and personality within an EFL online learning environments. Education & Information Technologies, 26(4), 3947–3966. https://doi-org.libraryproxy.mic.ul.ie/10.1007/s10639-021-10449-8	3 & 4
6.	Amir, T., & Gati, I. (2006). Facets of career decision-making difficulties. British Journal of Guidance & Counselling, 34(4), 483–503. https://doi-org.libraryproxy.mic.ul.ie/10.1080/03069880600942608	3 & 4
7.	Anagnostopoulos, D., Buchanan, N. T., Pereira, C., & Lichty, L. F. (2009). School staff responses to gender-based bullying as moral interpretation: An exploratory study. Educational Policy, 23(4), 519–553.	3
8.	Angera, J. J., & Latty, C. R. (2015). Structures and technology encouraging discussion in human sexuality courses: Strategies to engage a range of students. American Journal of Sexuality Education, 10(1), 86–100. https://doi-org.libraryproxy.mic.ul.ie/10.1080/15546128.2015.1009598	3
9.	Anliak, S., & Sahin, D. (2010). An observational study for evaluating the effects of interpersonal problem-solving skills training on behavioural dimensions. Early Child Development & Care, 180(8), 995–1003. https://doi-org.libraryproxy.mic.ul.ie/10.1080/03004430802670819	3
10.	ap Sion, T. G., & Francis, L. J. (2022). The psychological type profile of Salvation Army officers working within the United	4

	Kingdom: diversity, strengths, and weaknesses in ministry. Mental Health, Religion & Culture, 1–18. https://doi-org.libraryproxy.mic.ul.ie/10.1080/13674676.2021.1884211	
11.	Archer, L., Nomikou, E., Mau, A., King, H., Godec, S., DeWitt, J., & Dawson, E. (2019). Can the subaltern "speak" science? An intersectional analysis of performances of "talking science through muscular intellect" by "subaltern" students in UK urban secondary science classrooms. Cultural Studies of Science Education, 14(3), 723–751.	3
12.	ASH, B. L. (2015). Can a zebra change its stripes? Assessing and teaching the introverted student. Business Education Forum, 69(4), 26–30.	1
13.	Baar, R. (2016). Attitudes of German student teachers on inclusion. Journal of Research in Special Educational Needs, 16, 225–228.	3
14.	Baker, F. S. (2013). Making the quiet population of internationally adopted children heard through well-informed teacher preparation. Early Child Development & Care, 183(2), 223–246. https://doi-org.libraryproxy.mic.ul.ie/10.1080/03004430.2012.669757	3
15.	Barelds, D. P. H., & Dijkstra, P. (2021). Exploring the Link between Bright and Dark Personality Traits and Different Types of Jealousy. Psihologijske Teme / Psychological Topics, 30(1), 77–98. https://doi-org.libraryproxy.mic.ul.ie/10.31820/pt.30.1.4	4
16.	Barnard, B. (2016). Counseling the quiet. Journal of College Admission, 232, 34–37.	1
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220.	van Ittersum, K., & Wansink, B. (2013). Extraverted children are more biased by bowl sizes than introverts. PLoS ONE, 8(10), 1–3. https://doi-org.libraryproxy.mic.ul.ie/10.1371/journal.pone.0078224	3 & 4
221.	Vinje, H., Brovold, H., Almøy, T., Frøslie, K. F., & Sæbø, S. (2021). Adapting Statistics Education to a Cognitively Heterogeneous Student Population. Journal of Statistics Education, 29(2), 183–191. https://doi-org.libraryproxy.mic.ul.ie/10.1080/26939169.2021.1928573	3 & 4
222.	Vinther, J., Porras, L., Young, F. J., Budd, G. E., Edgecombe, G. D., & Zhang, X. (2016). The mouth apparatus of the Cambrian gilled lobopodian Pambdelurion whittingtoni. Palaeontology, 59(6), 841–849. https://doi-org.libraryproxy.mic.ul.ie/10.1111/pala.1225	3 & 4
223.	Vondracek, R. (2007). Comfort and convenience? Why students choose alternatives to the library. Portal: Libraries and the Academy, 7(3), 277–293.	3
224.	Wade-Jaimes, K., & Schwartz, R. (2019). "I don't think it's Science:" African American girls and the Figured World of School Science. Journal of Research in Science Teaching, 56(6), 679–706.	3
225.	Wagganer, E. L. (2015). Creating Math Talk Communities. Teaching Children Mathematics, 22(4), 248–254.	3
226.	Wakamoto, N. (2000). Language learning strategy and personality variables: focusing on extroversion and introversion. IRAL: International Review of Applied Linguistics in Language Teaching, Vol. 38 Issue 1, p71-81, 11p; DOI: 10.1515/iral.2000.38.1.71.	3
227.	Walkup, N. (2010). Drawing Miss Daisy. SchoolArts: The Art Education Magazine for Teachers, 110(1), 40.	3
228.	Walters, M. L., Lohse, M., Hanheide, M., Wrede, B., Syrdal, D. S., Koay, K. L., Green, A., Hüttenrauch, H., Dautenhahn, K., Sagerer, G., & Severinson-Eklundh, K. (2011). Evaluating the robot personality and verbal behavior of domestic robots using video-based studies. Advanced Robotics, 25(18), 2233–2254. https://doi-org.libraryproxy.mic.ul.ie/10.1163/016918611X603800	3 & 4
229.	Wang, Y., Ang, C., Jiang, Z., & Wu, C.-H. (2019). The role of trait extraversion in shaping proactive behavior: A multilevel examination of the impact of high-activated positive affect. Personality & Individual Differences, 136, 107–112. https://doi-org.libraryproxy.mic.ul.ie/10.1016/j.paid.2018.01.035	3 & 4
230.	Wayment, H. A., West, T. N., & Craddock, E. B. (2016). Compassionate values as a resource during the transition to college: Quiet ego, compassionate goals, and self-compassion. Journal of The First-Year Experience & Students in Transition, 28(2), 93–114.	3
231.	Webb, N. M. (1982). Peer interaction and learning in cooperative small groups. Journal of Educational Psychology, 74(5), 642–655.	3
232.		
233.	Weinstein, I. (2015). Learning and lawyering across personality types. Clinical Law Review, 21(2), 427–453.	1
234.	Weiser, O., Blau, I., Eshet-Alkalai, Y. (2018). How do medium naturalness, teaching-learning interactions and Students' personality traits affect participation in synchronous E-learning? Internet & Higher Education, Vol. 37, p40-51, 12p; DOI: 10.1016/j.iheduc.2018.01.001	3 & 4

235.	Wells, F. L. (1940). Mental measurement and college objective. Psychological Review, 47(5), 425–450. https://doi-org.libraryproxy.mic.ul.ie/10.1037/h0062124	3 & 4
236.	Wells, F. L. (1941). Some functions of mental measurement in the young superior adult. Journal of Consulting Psychology, 5(3), 105–110. https://doi-org.libraryproxy.mic.ul.ie/10.1037/h0055817	2, 3 & 4
237.	Wendt, S., Hipps, J., Abrams, A., Grant, J., Valosek, L., & Nidich, S. (2015). Practicing Transcendental Meditation in High Schools: Relationship to Well-Being and Academic Achievement among Students. Contemporary School Psychology, 19(4), 312–319.	3
238.	What Works Clearinghouse (ED). (2014). Repeated Reading. What Works Clearinghouse Intervention Report. In What Works Clearinghouse. http://ies.ed.gov/ncee/wwc/interventionreport.aspx?sid=576	3
239.	Williams, E., Robbins, M., & Francis, L. J. (2005). When introverts ceased to be more religious: a study among 12- to 16-year-old pupils. Journal of Beliefs & Values: Studies in Religion & Education, 26(1), 77–79. https://doi-org.libraryproxy.mic.ul.ie/10.1080/13617670500072952	3
240.	Winarti, Cahyono, B. Y., Mukminatien, N., & El Khoiri, N. (2021). Collaborative Writing Using Process Writing Approach: The Effect of Group Size and Personality Types. International Journal of Instruction, 14(4), 391–410. https://doi-org.libraryproxy.mic.ul.ie/10.29333/iji.2021.14423a	3
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242.	Xu, H., Zhu, X., Zhou, Z., Xu, Y., Zhu, Y., Lin, L., Huang, J., & Meng, R. (2019). An exploratory model for the non-fatal drowning risks in children in Guangdong, China. BMC Public Health, 19(1), 1–7. https://doi-org.libraryproxy.mic.ul.ie/10.1186/s12889-019-6944-5	3 & 4
243.	Xuan Van Ha, Murray, J. C., & Riazi, A. M. (2021). High school EFL students' beliefs about oral corrective feedback: The role of gender, motivation and extraversion. Studies in Second Language Learning & Teaching, 11(2), 235–264. https://doi-org.libraryproxy.mic.ul.ie/10.14746/ssllt.2021.11.2.4	3
244.	Yağcı, M. (2018). Web-mediated problem-based learning and computer programming: Effects of thinking style on academic achievement and attitude. Computer Applications in Engineering Education, Vol. 26 Issue 6, p2012-2025, 14p, 12 Charts; DOI: 10.1002/cae.21964	3
245.	Yao, Y., Zhao, S., Gao, X., An, Z., Wang, S., Li, H., Li, Y., Gao, L., Lu, L., & Dong, Z. (2018). General self-efficacy modifies the effect of stress on burnout in nurses with different personality types. BMC Health Services Research, 18(1), N.PAG. https://doi-org.libraryproxy.mic.ul.ie/10.1186/s12913-018-3478-y	3 & 4
246.	Yip, D.Y., Coyle, D., & Tsang, W.K. (2007). Evaluation of the effects of the medium of instruction on science learning of Hong	3

	Kong secondary students: Instructional activities in science lessons. Education Journal, 35(2), 77–107.	
247.	Yoon, B. (2010). Meeting the cultural and social needs of English-language learners: A middle school ESL teacher's practice. Teacher Education and Practice, 23(1), 31–43.	3
248.	Zainuddin, Z., & Attaran, M. (2016). Malaysian students' perceptions of flipped classroom: A case study. Innovations in Education and Teaching International, 53(6), 660–670.	3
249.	Zamani, B. E., Abedini, Y., & Kheradmand, A. (2011). Internet addiction based on personality characteristics of high school students in Kerman, Iran. Addiction & Health, 3(3/4), 85–91.	3
250.	Zaretsky, R. (2013). If silence is golden, we should invest in it during seminars. Times Higher Education, 2113, 26–27.	1
251.	Zeichner, O. (2019). The relationship between extrovert/introvert attributes and feedback on students' achievements. International Journal of Distance Education Technologies, 17(2), N.PAG. https://doi-org.libraryproxy.mic.ul.ie/10.4018/IJDET.2019040101	3
252.	Zhang, H., Xiao, S., Liu, Y., Yuan, X., Wan, B., Muscente, A. D., Shao, T., Gong, H., & Cao, G. (2015). Armored kinorhynch-like scalidophoran animals from the early Cambrian. Scientific Reports, 16521. https://doi-org.libraryproxy.mic.ul.ie/10.1038/srep16521	3 & 4
253.	Zhukov, K. (2007). Student learning styles in advanced instrumental music lessons. Music Education Research, Vol. 9 Issue 1, p111-127, 17p, 1 Diagram, 7 Charts; DOI: 10.1080/14613800601127585	3

Appendix C   Sample Coding Protocol Quantitative Studies

Coding protocol

Gersten, R., Fuchs, L. S., Compton, D., Coyne, M., Greenwood, C, & Innocenti, M. (2005). Quality indicators for group experimental and quasi-experimental research in special education. Exceptional Children, 71,149-164.

Reference of the study

Henriksson, Fredrika; Küller Lindén, Embla; Schad, Elinor. Well-being and Stress Among Upper Secondary School Pupils in Sweden. Psychology in Russia. State of the Art. 2019, Vol. 12 Issue 4, p172-195. 24p. DOI: 10.11621/pir.2019.0411

Essential Quality Indicators - Quality Indicators for Describing Participants

1. Was sufficient information provided to determine/confirm whether the participants demonstrated the disability(ies) or difficulties presented?
    ☐Yes

    ☒No The participants answered yes or no to 'are you introvert or extrovert?'

    ☐N/A

    ☐Unknown/Unable to Code

2. Were appropriate procedures used to increase the likelihood that relevant characteristics of participants in the sample were comparable across conditions?
    ☐Yes

    ☐No Not clear if participants had same understanding of introvert/extrovert.

    ☒N/A Just one large group. Not being compared across conditions.

    ☐Unknown/Unable to Code

3. Was sufficient information given characterizing the interventionists or teachers provided? Did it indicate whether they were comparable across conditions?
    ☐Yes

    ☐No

    ☒N/A

☐Unknown/Unable to Code

Essential Quality Indicators - Quality Indicators for Implementation of the Intervention and Description of Comparison Conditions

1. Was the intervention clearly described and specified?
☒Yes The method used to conduct the survey was clear.

☐No

☐N/A

☐Unknown/Unable to Code

2. Was the fidelity of implementation described and assessed?
☒Yes Yes it was explained that survey was administered online in four schools and

via teachers manually in three school.

☐No

☐N/A

☐Unknown/Unable to Code

3. Was the nature of services provided in comparison conditions described?
☐Yes

☐No

☒N/A

☐Unknown/Unable to Code

Essential Quality Indicators - Quality Indicators for Outcome Measures

1. Were multiple measures used to provide an appropriate balance between measures closely aligned with the intervention and measures of generalized performance?
☐Yes

☒No Only one method of data collection used.

☐N/A

☐Unknown/Unable to Code

2. Were outcomes for capturing the intervention's effect measured at the appropriate times?

☐Yes

☐No

☒N/A

☐Unknown/Unable

Essential Quality Indicators - Quality Indicators for Data Analysis

1. Were the data analysis techniques appropriately linked to key research questions and hypotheses? Were they appropriately linked to the unit of analysis in the study?

☒Yes

☐No

☐N/A

☐Unknown/Unable

2. Did the research report include not only inferential statistics but also effect size calculations?

☒Yes and no. There were inferential stats, e.g. t-test, but no effect size calculations

☐No

☒N/A This was not an experiment with more than one condition. Therefore, it did not

calculate effect size.

☐Unknown/Unable

Essential Quality Indicators Total Score: 4

Desirable Quality Indicators

1. Was data available on attrition rates among intervention samples? Was severe overall attrition documented? If so, is attrition comparable across samples? Is overall attrition less than 30%?

☐Yes

☐No

☒N/A Data was available on how many students had access to the survey and the percentage uptake.

☐Unknown/Unable

2. Did the study provide not only internal consistency reliability but also test–retest reliability and interrater reliability (when appropriate) for outcome measures? Were data collectors and/or scorers blind to study conditions and equally (un)familiar to examinees across study conditions?
☒Yes Cronbach's alpha was calculated

☐No

☒N/A There was no test-retest or interrater relability

☐Unknown/Unable

3. Were outcomes for capturing the intervention's effect measured beyond an immediate post-test?
☐Yes

☐No

☒N/A

☐Unknown/Unable

4. Was evidence of the criterion-related validity and construct validity of the measures provided?
☒Yes Evidence of measuring wellbeing in introverts v extroverts. And appropriate inferences were made. However, the introvert/extrovert self-rating is questionable.

☐No

☐N/A

☐Unknown/Unable

5. Did the research team assess not only surface features of fidelity implementation (e.g., number of minutes allocated to the intervention or teacher/interventionist following procedures specified), but also examine quality of implementation?
☐Yes

☐No

☒N/A

☐Unknown/Unable

6. Was any documentation of the nature of instruction or series provided in comparison conditions?
☒Yes Instructions were outlined. No conditions.

☐No

☐N/A

☐Unknown/Unable

7. Did the research report include actual audio or videotape excerpts that capture the nature of the intervention?
☐Yes

☐No

☒N/A

☐Unknown/Unable

8. Were results presented in a clear, coherent fashion?
☒Yes

☐No

☐N/A

☐Unknown/Unable

Desirable Quality Indicators Total Score: 4

	Total	Score
Essential Quality Indicators Total of >9 = Score 1 Total of <9 = Score 0	4	0

Desirable Quality Indicators Total of ≥4 = Score 2 Total of <4 = Score 1 Total 0 = Score 0	4	2
Total Score 3 = High Quality; 2 = Acceptable Quality; <2 = Poor Quality		2 Study Rating Acceptable Quality

Appendix D   Sample Coding Protocol Qualitative Studies

WoE A: Qualititative Studies

Coding Protocol

Brantlinger, E., Jimenez, R., Klingner, J., Pugach, M., & Richardson, V. (2005). Qualitative studies in special education. *Exceptional Children, 71*(2), 195-207.

Study

Colley, S. L. (2019). Voices of Quiet Students: Introverted Nursing Students' Perceptions of Educational Experiences and Leadership Preparation. *International Journal of Nursing Education Scholarship*, 15(1). https://doi-org.libraryproxy.mic.ul.ie/10.1515/ijnes-2018-0056

Table D.1

Credibility Measures for Qualitative Research

Credibility Measures for Qualitative Research	Description by Brantlinger et al. (2005, pp. 201-202)	Coding Criteria (0-3 ranking)
1. Triangulation	Search for convergence of, or consistency among, evidence from multiple and varied data sources (observations/interviews; one participant & another; interviews/documents) • *Data triangulation* – use of varied data sources in a study ☒ • *Investigator triangulation* – use of several researchers, evaluators, peer debriefers ☐	If the study states the type of triangulation, it receives a tick 0 = No evidence of triangulation (0 ticks) 1 = Weak evidence of triangulation (1 tick)

	• *Theory triangulation* – use of multiple perspectives to interpret a single set of data ☐ • *Methodological triangulation* – use of multiple methods to study a single problem. The author used a basic questionnaire from Cain (20) so that the students could self-identify as introvert or extrovert and interviews were conducted ☐	2 = Medium evidence of triangulation (2-3 ticks) 3 = Strong evidence of triangulation (4 ticks)
2. Disconfirming Evidence	After establishing preliminary themes/categories, the researcher looks for evidence inconsistent with these themes (outliers); also known as negative or discrepant case analysis	0 = There is no evidence of negative/discrepant case analysis 1 = There is evidence of negative/discrepant case analysis but it is not stated directly 2 = There is evidence of negative/discrepant case analysis and it is stated directly 3 = There is evidence of negative case analysis, it is stated directly with examples
3. Researcher Reflexivity	Researchers attempt to understand and self-disclose their assumptions, beliefs, values, and biases (i.e. being forthright about position/perspective)	0 = There is no evidence of own views/perspectives/reflections 1 = States methods of being reflective but not that they were used/minimising their views e.g. researchers all looked at the transcripts

		2 = Refers to methods of being reflective that minimised their views e.g. researchers looked at transcripts and discussed findings
		3 = Explicitly states how they were reflexive e.g. researchers looked at transcripts, discussed and collated findings and agreed on final outcomes. Emergence of themes from the data as a result
4. Member Checks	Having participants review and confirm the accuracy (or inaccuracy) of interview transcriptions or observational field notes • *First level* - taking transcriptions to participants prior to analyses and interpretation of results • *Second level* - taking analyses and interpretations of data to participants (prior to publication) for validation of (or support) for researchers' conclusions	0 = No evidence of member checks 1 = Evidence of member checks but not stated directly 2 = Evidence of first or second level member checks 3 = Evidence of first and second level member checks
5. Collaborative Work	Involving multiple researchers in designing a study or concurring about conclusions to ensure that analyses and interpretations are not idiosyncratic and/or biased; could involve interrater reliability checks on the observations made or the coding of data. (The notion that persons working together will get reliable results is dependent on the "truth claim" assumption that one can get accurate descriptions of situational realities.)	0 = Not discussed 1 = Stated that multiple researchers were used 2 = Stated that multiple researchers were used and in which sections 3 = Stated that multiple researchers were used and included discussions about interrater reliability

6. External Auditors	Using outsiders (to the research) to examine if, and confirm that, a researcher's inferences are logical and grounded in findings	0 = Not discussed 1 = Stated that they used external auditors in the research 2 = Stated who they used as external auditors and who they were 3 = Stated that the external auditors were used, who they were and the outcomes
7. Peer Debriefing	Having a colleague or someone familiar with phenomena being studied review and provide critical feedback on descriptions, analyses, and interpretations or a study's results.	0 = This was not discussed 1 = There was a mention of multiple researchers 2 = Stated who they used and who they were. 3 = Stated that they were used, who they were and what the outcomes were
8. Audit Trail.	Keeping track of interviews conducted and/or specific times and dates spent observing as well as who was observed on each occasion; used to document and substantiate that sufficient time was spent in the field to claim dependable and confirmable results	0 = This was not discussed 1 = Talks about making notes of the process but does not call it audit trail 2 = Stated that they used audit trail 3 = Stated that they used audit trail, why and the purpose of it

9. Prolonged Field Engagement	Repeated, substantive observations; multiple, in-depth interviews; inspection of a range of relevant documents; thick description validates the study's soundness	0 = There is no evidence of this 1 = There is one of three items 2 = There is two of three items 3 = All three items: observations, in-depth interviews and inspection of documents
10. Thick, detailed description	Reporting sufficient quotes and field note descriptions to provide evidence for researchers' interpretations and conclusions	0 = There were no quotes used 1 =One or less quotes used for each theme or short quotes (1-3) words 2 = There were full quotes used for each theme 3 = There were multiple quotes used for each theme and from different participants
11. Particularizability	Documenting cases with thick description so that readers can determine the degree of transferability to their own situations	0 = There is no evidence of situation discussed 1 = Limited details about the participants and context or not representative of the outside world 2 = Extended details of situation discussed 3 = Explicit details of situation discussed

| WoE A Credibility Measures | Triangulation, Disconfirming Evidence, Researcher Reflexivity, Member Checks, Collaborative Work, External Auditors, Peer Debriefing, Audit Trail, Prolonged Field Engagement, Thick, Detailed Description and Particularizability | Average of the scores for each category Total score of 9 divided by 11 = .81 |

Table D.2

Quality Indicator Measures for Qualitative Research

Quality Indicators Within Qualitative Research	Description by Brantlinger et al. (2005, pp. 201-202)	Coding Criteria (0-3 ranking)
1. Interview Studies (or Interview Components of Comprehensive Studies)	1. Appropriate participants are selected (purposefully identified, effectively recruited, adequate number, representative of population of interest)	0 = Does not meet any of the criteria
		1 = Meets one of five of the criteria
	2. Interview questions are reasonable (clearly worded, not leading, appropriate and sufficient for exploring domains of interest)	
		2 = Meets two to three of the criteria
	3. Adequate mechanisms are used to record and transcribe interviews	3 = Meets four to five of the criteria
	4. Participants are represented sensitively and fairly in the report	

	5. Sound measures are used to ensure confidentiality	
2. Observation Studies (or Observation Components of Comprehensive Studies)	1. Appropriate setting(s) and/or people are selected for observation	0 = Does not meet any of the criteria
	2. Sufficient time is spent in the field (number and duration of observations, study time span)	1 = Meets one of six of the criteria
	3. Researcher fits into the site (accepted, respected, unobtrusive)	2 = Meets two to four of the criteria
	4. Research has minimal impact on setting (except for action research, which is purposely designed to have an impact)	3 = Meets five to six of the criteria N/A
	5. Field notes systematically collected (videotaped, audiotaped, written during or soon after observations)	
	6. Sound measures are used to ensure confidentiality of participants and settings	
3. Data Analysis	1. Results are sorted and coded in a systematic and meaningful way	0 = Does not meet any of the criteria
	2. Sufficient rationale is provided for what was (or was not) included in the report	1 = Meets one of six of the criteria
	3. Documentation of methods used to establish trustworthiness and credibility are clear	2 = Meets two to four of the criteria
		3 = Meets five to six of the criteria
	4. Reflection about researchers' personal position/perspectives are provided 5. Conclusions are substantiated by sufficient quotations from participants, field notes of observations, and evidence of documentation inspection	

	6. Connections are made with related research	
WoE A Quality Indicators	Interview Studies, Observation Studies and Data Analysis	Average of the scores for each category Total 4 divided by 2 (observations N/A) = 2 .81 + 2 = 2.81

Appendix E   Sample Coding Protocol Mixed Methods Studies

Coding Protocol

Hong, Q.N., Pluye, P., Fabregues, S., Bartlett, G., Boardman, F., Cargo, M., (2018).
Mixed Methods Appraisal Tool (MMAT) version 2018 user Guide

Study

Beckerson, W. C., Anderson, J. O., Perpich, J. D., & Yoder-Himes, D. (2020). An
Introvert's Perspective: Analyzing the Impact of Active Learning on Multiple
Levels of Class Social Personalities in an Upper Level Biology
Course. *Journal of College Science Teaching*, 49(3), 47–57. https://doi-
org.libraryproxy.mic.ul.ie/10.2505/4/jcst20_049_03_47

Category of study designs	Methodological quality criteria	Responses			
		Yes	No	Can't tell	Comment
Screening questions (for all types)	S1. Are there clear research questions?	✓			
	S2. Do the collected data allow to address the research questions?	✓			
	Further appraisal may not be feasible or appropriate when the answer is 'No' or 'Can't tell' to one or both screening questions				
1. Qualitative	1.1. Is the qualitative approach appropriate to answer the research question?	✓			
	1.2. Are the qualitative data collection methods adequate to address the research question?	✓			Questionnaire
	1.3. Are the findings adequately derived from the data?	✓			
	1.4. Is the interpretation of results sufficiently substantiated by data?	✓			
	1.5. Is there coherence between qualitative data sources, collection, analysis and interpretation?	✓			
	2.1. Is randomization appropriately performed?	✓			

		✓			
2. Quantitative randomized controlled trials	2.2. Are the groups comparable at baseline?	✓			
	2.3. Are there complete outcome data?	✓			
	2.4. Are outcome assessors blinded to the intervention provided?		✓		
	2.5 Did the participants adhere to the assigned intervention?	✓			
3. Quantitative nonrandomized	3.1. Are the participants representative of the target population?				
	3.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)?				
	3.3. Are there complete outcome data?				
	3.4. Are the confounders accounted for in the design and analysis?				
	3.5. During the study period, is the intervention administered (or exposure occurred) as intended?				
4. Quantitative descriptive	4.1. Is the sampling strategy relevant to address the research question?				
	4.2. Is the sample representative of the target population?				
	4.3. Are the measurements appropriate?				
	4.4. Is the risk of nonresponse bias low?				
	4.5. Is the statistical analysis appropriate to answer the research question?				
5. Mixed methods	5.1. Is there an adequate rationale for using a mixed methods design to address the research question?	✓			
	5.2. Are the different components of the study effectively integrated to answer the research question?	✓			
	5.3. Are the outputs of the integration of qualitative and quantitative components adequately interpreted?	✓			
	5.4. Are divergences and inconsistencies between quantitative and qualitative results adequately addressed?	✓			
	5.5. Do the different components of the study adhere to the quality criteria of each tradition of the methods involved?	✓			

Appendix F   WoE for A, B and C

WoE A

Evaluates Methodological Quality of the study

Coding protocols

Table F.1: Gersten, R., Fuchs, L. S., Compton, D., Coyne, M., Greenwood, C, & Innocenti,
M. (2005). Quality indicators for group experimental and quasi-experimental research
in special education. Exceptional Children, 71,149-164.

Table F.2: Hong, Q.N., Pluye, P., Fabregues, S., Bartlett, G., Boardman, F., Cargo, M.,
(2018). Mixed Methods Appraisal Tool (MMAT) version 2018 user Guide

Table F.3 & F4: Brantlinger, E., Jimenez, R., Klingner, J., Pugach, M., & Richardson, V.
(2005). Qualitative studies in special education. *Exceptional Children, 71*(2), 195-
207.

Scores: Low = 1-1.6, Medium = 1.7-2.3 and High = 2.4-3

Table F.1

Quality Scores for the Quantitative Studies in the Review

Author	Essential Quality Criteria	Desirable Quality Criteria	Total Quality Score
Brown et al. (2013)	10 (1)	5 (2)	3 (High)
Henriksson (2019)	4 (0)	4 (2)	2 (Medium)
Tuovinen et al. (2020)	8 (0)	6 (2)	2 (Medium)

Table F.2

Quality Scores for the Mixed Method Study in the Review

Author	Category of study designs					
	Qualitative	Quantitative randomized	Quantitative nonrandomized	Quantitative descriptive	Mixed methods	Total Quality

		controlled trials				
Beckerson et al. (2020)	Met criteria 5 out of 5	4 out of 5	N/A	N/A	5 out of 5	High

*Note: High = 3; Medium = 2; Low = 1

Table F.3

Quality Scores for the Qualitative Studies in the Review

Quality Measures	Credibility Measures for Qualitative Research	Quality Indicators Within Qualitative Research	Total Quality
Colley (2019)	Total score = 7 No. of criteria = 11 Mean score = .63	Total = 4 No. of Criteria = 2 Mean score = 2	2.63 divided by 2 = 1.31 (Low)
Green (2019)	Mean score = 2.63	Mean score = 3	2.63 (High)
Rosheim (2018)	Mean score = 1.45	Mean score = 2	1.72 (Medium)

Table F.4

Break down of scores for Brantlinger WoE A

| | Credibility Measures | | | | | | | | | | | | | | | | Quality Indicators | | | | | | | | | | | | | | | | | | | | |
| | Triangulation | | | | | | | | | | | | | | | | Interview Criteria | | | | | | Observation Criteria | | | | | | | Data Analysis | | | | | | | |
	Data	Investigator	Theory	Methodological	Total Score	Disconfirming Evidence	Researcher Reflexivity	Member Checks	Collaborative Work	External Auditors	Peer Debriefing	Audit Trail	Prolonged Field Engagement	Detailed Description	Particularizability	WoE Credibility Measures	Appropriate Participants	Reasonable Questions	Mechanisms to Record	Participants represented Fairly	Confidentiality	Total	Appropriate Setting	Time in Field	Researcher unobtrusive	Impact on Setting	Filed Notes	Confidentiality	Total	Coding Information	Rationale	Trustworthiness	Researcher Perspectives	Quotes/Documentation/Notes	Related Research	WoE Quality Indicators	Overall WoE A
Colley 2019	✓	0	0	0	1	0	0	0	0	0	0	0	1	3	2	**0.63**	✓	0	✓	✓	0	2	Not Applicable							✓	0	0	0	✓	✓	**2**	**1.31**
Green 2019	✓	✓	✓	✓	3	0	3	3	3	3	3	0	3	3	3	**2.36**	✓	0	✓	✓	✓	3	Not Applicable							✓	✓	✓	✓	✓	✓	**3**	**2.63**
Rosheim 2018	✓	0	✓	✓	2	0	3	0	0	0	0	2	3	3	3	**1.45**	✓		✓	✓		2	✓	✓	✓	0	✓	0	2	0	0	✓	✓	✓	✓	**2**	**1.72**

WoE B

WoE B evaluates the study design to determine if it is relevant to this research question.

There is no one single hierarchy of study designs. Different types of research question are answered more appropriately by different study designs (Petticrew & Roberts, 2003). Based on the typology of designs in Petticrew & Robert's article (2003) the designs below are considered the most suitable to answer this research question. See Table 11 & 12 for WoE B quality score and quality rating as applied to each study.

Table F.5

WoE B Appraisal of Study Design in relation to this question

Type of Study Design	Quality Score	Quality Rating
Survey	3	High Quality
Qualitative	2	Medium Quality
Randomised Control Trial, quasi-experimental	1	Low Quality

Table F.6

Seven Studies evaluated using WoE B

Author	Study Design	Quality Score	Quality Rating
Beckerson et al. (2020)	Mixed Method Qual and quant data	1.5	Medium
Brown et al. (2013)	Quasi-experimental	1	Low
Colley (2019)	Qualitative	2	Medium
Green et al. (2019)	Qualitative	2	Medium
Henriksson (2019)	Survey	3	High
Rosheim (2018)	Qualitative	2	Medium
Tuovinen et al. (2020)	Survey	3	High

*Note: For the mixed methods the score of 2 for qualitative was added to the score of 1 for Quantitative = 3. Divided by 2 for an average = 1.5.

WoE C

WoE C measures the overall relevance of the study to this research question.

This review question is setting out to determine the teacher's attitude towards introvert students. Gaining insight into the introvert student's experience of school is an essential part of the rationale for this study as teacher behaviour, teaching methodology and teacher-student relationship are critical aspects of the person-environment fit. Criteria deemed important for WoE C are as follows:

1. First-hand account of teacher attitude towards introvert students
2. Reference to teacher attitude toward introvert students
3. Reference to the introvert student's experience of the school environment.
4. The study is addressing introvert or quiet students and not other states of being such as shyness or social anxiety.

High = Study meets all four criteria; Medium = Study meets three criteria; Low = Study meets two or less criteria. See Table 12 for WoE C for the eight studies.

Table F.7

Seven Studies Evaluated using WoE C

Author	Criteria Met	Criteria Not Met	Quality Score	Quality Rating
Beckerson et al. (2020)	• The International Personality Item Pool 'Big Five Measures of Personality questionnaire'. This determined level of extroversion/introversion. • Captures extrovert/introvert student's experience of the active learning environment	• First hand account of teacher attitude • Reference to teacher attitude or perspective of introvert student	2	Low
Brown et al. (2013)	• The Paragon Learning Inventory was used to determine learning style. This is based on Jung's four dimensions • Captures extrovert/introvert experience of educational environment.	• First hand account of teacher attitude • Reference to teacher attitude or perspective of introvert student.	2	Low

Colley (2019)	• Captures introvert student's experience of educational environment. • Reference to teacher attitude towards introvert and quiet students	• Use of Cain's questionnaire to determine if student introvert (Cain, 2012). Not a valid measure. • First hand account of teacher attitude	2	Low
Green et al. (2019)	• Captures the experience of the introvert student in an educational setting • Reference to teacher attitude or perspective of 'quiet' student.	• Myers Briggs Type Indicator used to measure introversion. Questions about the validity of this measure. • First hand account of teacher attitude	2	Low
Henriksson (2019)	• Captures the experience of the introvert student in an educational setting • Participants self-identified as introvert/extrovert.	• First hand account of teacher attitude • Reference to teacher attitude or perspective of 'quiet' student.	2	Low
Rosheim (2018)	• First hand account of teacher attitude • References teacher attitude/perspective of introvert student. • Captures the experience of the introvert child in the school environment via interview and reflective writing	• Use of Cain's questionnaire to determine if student introvert (Cain, 2012). Not a valid measure.	3	Medium
Tuovinen et al. (2020)	• Use of the Big Five Personality questionnaire • Reference to teacher attitude • Reference to the introvert student's experience in school.	• First hand account of teacher attitude	3	Medium

Appendix G   Extraversion 20 item Trait scale (Alpha = .91)

Table G.1

Extraversion 20 Item Trait Scale

+ keyed	– keyed
Feel Comfortable around people	Have little to say.
Make friends easily.	Keep in the background.
Am skilled in handling social situations.	Would describe my experiences as somewhat dull.
Am the life of the party.	Don't like to draw attention to myself.
Know how to captivate people.	Don't talk a lot.
Start conversations.	Avoid contacts with others.
Warm up quickly to others.	Am hard to get to know.
Talk to a lot of different people at parties.	Retreat from others.
Don't mind being the center of attention.	Find it difficult to approach others.
Cheer people up.	Keep others at a distance.

Note: Taken from https://ipip.ori.org/newNEOKey.htm#Extraversion

Converting IPIP Item Responses to Scale Scores

Here is how to score IPIP scales:
For + keyed items, the response
"Very Inaccurate" is assigned a value of 1,
"Moderately Inaccurate" a value of 2,
"Neither Inaccurate nor Accurate" a 3,
"Moderately Accurate" a 4, and
"Very Accurate" a value of 5.

For - keyed items, the response
"Very Inaccurate" is assigned a value of 5,
"Moderately Inaccurate" a value of 4,
"Neither Inaccurate nor Accurate" a 3,
"Moderately Accurate" a 2, and
"Very Accurate" a value of 1.

Once numbers are assigned for all of the items in the scale, just sum all the values to obtain a total scale score.

Note: Taken from https://ipip.ori.org/newScoringInstructions.htm

Appendix H   + and – Keyed Items for Extraversion

The NEO-PI-R has designed statements to measure levels of extraversion/introversion under the following headings:

Friendliness

Gregariousness

Assertiveness

Activity Level

Excitement Seeking

Cheerfulness

E1: FRIENDLINESS (Alpha = .87)

+ keyed Make friends easily.
Warm up quickly to others.
Feel comfortable around people.
Act comfortably with others.
Cheer people up.

– keyed Am hard to get to know.
Often feel uncomfortable around others.
Avoid contacts with others.
Am not really interested in others.
Keep others at a distance.

E2: GREGARIOUSNESS (.79)

+ keyed   Love large parties.
Talk to a lot of different people at parties.
Enjoy being part of a group.
Involve others in what I am doing.
Love surprise parties.
– keyed   Prefer to be alone.
Want to be left alone.
Don't like crowded events.
Avoid crowds.
Seek quiet.

E3: ASSERTIVENESS (.84)

+ keyed   Take charge.
Try to lead others.

Can talk others into doing things.
Seek to influence others.
Take control of things.
– keyed   Wait for others to lead the way.
Keep in the background.
Have little to say.
Don't like to draw attention to myself.
Hold back my opinions.

E4: ACTIVITY LEVEL (.71)

+ keyed   Am always busy.
Am always on the go.
Do a lot in my spare time.
Can manage many things at the same time.
React quickly.
– keyed   Like to take it easy.
Like to take my time.
Like a leisurely lifestyle.
Let things proceed at their own pace.
React slowly.

E5: EXCITEMENT-SEEKING (.78)

+ keyed   Love excitement.
Seek adventure.
Love action.
Enjoy being part of a loud crowd.
Enjoy being reckless.
Act wild and crazy.
Willing to try anything once.
Seek danger.
– keyed   Would never go hang gliding or bungee jumping.
Dislike loud music.

E6: CHEERFULNESS (.81)

+ keyed   Radiate joy.
Have a lot of fun.
Express childlike joy.
Laugh my way through life.
Love life.
Look at the bright side of life.
Laugh aloud.
Amuse my friends.
– keyed   Am not easily amused.
Seldom joke around.

Note: Taken from IPIP.org **https://ipip.ori.org/newNEOKey.htm#Extraversion**

Appendix I   Vignettes

Typical

This student is friendly with others at school. They display a typical pattern of verbal

participation in class. They volunteer to speak in class on a regular basis, and typically put up

their hand before talking. Although they are not necessarily a group leader, they are often an active participant and contributor to group activities. They enjoy a range of activities in the classroom from quiet to more stimulating. This student also enjoys humour and fun with their classmates.

Positive Introvert

This student takes time to make friends. They prefer to work independently or in small groups. They need time to answer a question in class because they like to think about their answer. This student listens, observes and reflects on what has been said before they contribute to class discussions. This student favours a quiet learning environment. They enjoy humour and fun with small groups of friends, and expresses amusement thoughtfully and quietly.

Negative Introvert

This student is hard to get to know and has limited interest in others. They prefer to complete work alone. This student reacts slowly when asked a question in class and takes time to answer. They have little to say in class and generally remain in the background. This student does not like the energy of a busy and active classroom environment. This student is not easily amused.

Positive Extrovert

This student makes friends easily. They thrive working in big groups. They are first to volunteer to speak and enjoy class discussions as they can think while speaking. This student can take charge and assume a leadership role in group activities. They love the energy of a busy and active classroom environment. They enjoy being at the centre of humour and fun in the classroom.

Negative Extrovert

This student is always chatting to others in the class. They can sometimes find it difficult to work independently. Because they are so talkative, they can often take over classroom

discussions. They tend to take control and can dominate in group activities. This student is usually involved in any noise or disruption in the classroom. They are easily amused, and like to play up to an audience.

Appendix J   Letter to the Principal

For the Attention of the Principal,

My name is Ciara Raleigh, and I am a student in the Professional Doctorate in Educational and Child Psychology in Mary Immaculate College (MIC). As part of my doctorate I am conducting a piece of research. The purpose of my research is to explore teachers' evaluations of how three different types of hypothetical students might "fit" into the classroom environment based on a description of these students in a series of short written accounts. I am inviting primary school teachers to participate in an anonymous, online survey as part of my research. Please see information sheet attached containing further details about this study, including a link to the survey. I would be grateful if you could please circulate the attached information sheet to the teachers in your school.

This study has received MIREC approval.

If you have any questions regarding the research please contact the principal Investigator, Ciara Raleigh: E-mail: 9305319@micstudent.mic.ul.ie. You may also contact the research supervisor Dr. Therese Brophy, Course leader for the Doctorate in Educational and Child Psychology, Department of Educational Psychology, Inclusive and Special Education, Mary Immaculate College, Limerick: E-mail: therese.brophy@mic.ul.ie.

If you have any concerns about this study and wish to contact an independent authority, you may contact: Mary Collins, MIREC Administrator, Mary Immaculate College, Limerick Telephone: 061-204980 E-mail: mirec@mic.ul.ie.

Sincerely,

Ciara Raleigh
Postgraduate Student
Professional Doctorate in Educational and Child Psychology

Appendix K   Information Sheet

Dear Participant,

My name is Ciara Raleigh, and I am a student in the Professional Doctorate in Educational and Child Psychology in Mary Immaculate College (MIC). You are being invited to participate in an online survey as part of my research because you are a primary school teacher. The purpose of my research is to explore teachers' evaluations of how different types of hypothetical students might "fit" into the classroom environment.

What will you do in this study?

If you decide to participate in this study, you will review three short written accounts (approximately 50 words). The vignette is a short story, approximately 50 words and will present a hypothetical scenario involving students in your classroom. The vignettes will be followed by a number of statements with a rating scale to indicate agreement that ranges from strongly agree to strongly disagree. As part of the survey you will also be asked to complete a personality questionnaire to determine your personality type. The survey will require approximately 20 minutes.

Are there any risks of participating in the study?

There are no risks to participating in this study. You are not being asked about specific students or situations in your own classroom. Each vignette is a hypothetical scenario. Your participation in this study is voluntary and proceeding with the survey implies consent. You have a right to withdraw your participation at any time. If you choose to participate in this project, please answer all questions as honestly as possible. You are not required to provide any personal or identifying information therefore anonymity is guaranteed. In order to ensure that all information will remain confidential, please do not include your name. Copies of the project will be provided to my supervisors in MIC.

What are the benefits of participating in the study?

The data collected will provide useful information regarding person environment fit regarding students in the classroom environment.

Will anyone know what you say in this study?

Anyone who volunteers to take part in the survey will be protected under the ethical guidelines of Mary Immaculate College and confidentiality will be guaranteed. Names of people, places and schools are not required as part of this study, thereby ensuring anonymity. The complete surveys will be protected electronically through password-protected laptop.

If you have any questions regarding the research please contact principal Investigator, Ciara Raleigh: E-mail: 9305319@micstudent.mic.ul.ie. You may also contact the research supervisor Dr. Therese Brophy, Course leader for the Doctorate in Educational and Child Psychology, Department of Educational Psychology, Inclusive and Special Education, Mary Immaculate College, Limerick: E-mail: therese.brophy@mic.ul.ie.

If you have any concerns about this study and wish to contact an independent authority, you may contact: Mary Collins, MIREC Administrator, Mary Immaculate College, Limerick Telephone: 061-204980 E-mail: mirec@mic.ul.ie.

Please click on the link below to complete the survey.

<INSERT SURVEY LINK HERE>

Sincerely,

Ciara Raleigh

Appendix L   Information Sheet Preceding Survey

The purpose of this research is to explore teachers' views on different students in the classroom environment.

You will review three short hypothetical scenarios of students in the classroom setting. The scenarios will be followed by a number of statements with a rating scale to indicate agreement that ranges from strongly agree to strongly disagree. Please select the rating that most closely reflects your view.

As part of the survey you will also be asked to complete a short questionnaire that explores aspects of your personal disposition.

The survey will take about 20 minutes. A short debrief is provided at the end of the survey to give you a bit more detail on the study.

Your participation in this study is voluntary and proceeding with the survey implies consent. Click on the arrow below to continue.

Appendix M   Debrief Sheet

Thank you for taking part in this study. Your responses have been recorded.

Dear Participant,

Below is an outline of the purpose of this study. The details are provided at this stage of the study to avoid bias in your responses to the survey.

Purpose of this study

Previous studies indicate that aspects of the extrovert personality type are more socially desirable in western cultures and thus are accommodated both in work and educational settings, leading to a better person-environment fit and therefore better wellbeing. These findings suggest that extroverts are viewed ore positively compared to introverts and this has consequences for society's feelings, thoughts and actions towards these personality types. This study was designed to look at the effects of positive and negative framing of student personality types and how this effects teachers' attitudes towards introvert and extrovert students in their classroom. Your completion of the personality questionnaire will also allow me to explore the impact of teacher personality type on responses provided.

At the beginning of this study the researcher did not highlight that the focus of the study was on teacher attitude toward different student personality types as this may have influenced how teachers responded and it is important that the results represent the way in which you typically respond.

Thank you for taking the time to participate in this study.