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**Using the Implicit Relational Assessment Procedure to Investigate Teachers' Attitudes
Towards Students with ADHD and Anxiety**

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Abstract

This research aimed to investigate primary school teachers' attitudes towards students with mental health problems, specifically ADHD and anxiety. The goals of the research were: 1) to explore stigmatising attitudes in teachers. Did teachers report stigmatising attitudes towards students with ADHD and anxiety? 2) To explore gender-biased attitudes in relation to ADHD and anxiety. Did teachers show bias favouring ADHD/anxiety for one or other gender when information was held constant? Research was carried out using a behaviour analytic based implicit measure, the Implicit Relational Assessment Procedure (IRAP) and explicit self-report measures. Participants were working primary school teachers who taught students between 4-12 years of age. A total of 74 teachers took part in the research, with 66 providing data which could be used for analysis.

Study 1 examined stigmatising attitudes towards students with ADHD or anxiety, specifically, did teachers display a negative bias towards students with ADHD/anxiety? A total of 36 primary school teachers took part, but only 30 provided useable data ($n = 30$). Participants ranged in age from 23-59 years old. Participants completed an IRAP and two explicit measures, the Days Mental Illness Stigma Scale (DMISS) and the Stigmatising Attitudes and Believability Questionnaire (SAB). Overall, results found that teachers did not display stigmatising attitudes towards students with ADHD or anxiety. Results from the IRAP found that teachers responded in a *Disorder-Good-True* manner and a *Disorder-Bad-False* manner, which suggests non-stigmatising implicit attitudes. Statistical analysis was carried out on the IRAP results using an ANOVA, the results of which indicated the presence of a significant IRAP effect on all trial types. Similar results were found on the explicit measures. Low scores on the DMISS and the SAB also indicated that teachers reported low stigmatising attitudes.

Study 2 examined teachers' gender bias in relation to students with ADHD and anxiety. Specifically it investigated whether teachers associated ADHD and anxiety with one gender or the other when all other information was held constant. A total of 38 primary school teachers took part in this study, with 36 providing useable data ($n = 36$). Participants ranged in age from 23-63 years old. As with Study 1, participants completed an IRAP and explicit measures. The explicit measures in this study comprised of vignettes and Likert-scale questionnaires. Overall results found that teachers did show a gender bias in relation to ADHD and anxiety. Results from the IRAP found that teachers showed a gender bias for both ADHD and anxiety. Teachers responded in an *ADHD-Boy/Anxiety-Girl* consistent manner, suggesting that they associate ADHD with boys and do not associate it with girls, and that they associate anxiety with girls, and do not associate it with boys. Again, significant IRAP effects were found for all trial types. Similar results were found in the explicit results. On the vignette measures the majority of teachers attributed ADHD type behaviours to boys and anxiety type behaviours to girls.

This novel research adds to the small body of existing research in the area of attitudes towards children with mental health problems. The IRAP has not previously been used to examine these attitudes. Furthermore, teachers' implicit attitudes towards children with mental health problems have not been previously investigated. Overall results are discussed in the context of previous research, recommendations for future research and practical implications.

Chapter 1

Introduction

Using the IRAP to Investigate Teachers' Attitudes Towards Students with ADHD and Anxiety

Approximately one in five young people (those under the age of 18) have mental health problems and one in 10 have mental illnesses which require psychological intervention (Buckley, Gavin & McNicholas, 2009). According to research, approximately 50% of mental health problems have an onset before the age of 14, which encompasses primary school and early secondary school age ranges (Kessler et al., 2005). A common mental health problem in young people is attention deficit hyper-activity disorder (ADHD), having a prevalence rate of 3-5% in school going children (Balaguru, 2012). Another high prevalence mental health problem in young people is anxiety. In children below the age of 12, approximately 3 – 24% develop anxiety problems which interfere with daily functioning and 2.5 - 5% of these children meet the criteria for anxiety disorders (Cartwright-Hatton, McNicol & Doubleday, 2005; Ford, Goodman & Meltzer, 2003). The average age of onset for an anxiety related problem is 11, which indicates that anxiety problems arise during primary school years. These statistics are relevant in an Irish context, as demonstrated by a study which identified ADHD and anxiety rates of 3.7% in a large cohort ($n = 723$) of school going young people (Lynch, Mills, Daly & Fitzpatrick, 2006).

Mental health problems impact negatively on a child's life in many ways, including their behaviour and academic achievement in school and their interaction with their peers (Rothi & Leavey, 2006). For example, difficulties with literacy and mental health problems have been seen to be correlated. This correlation has been observed in both externalising and internalising disorders, in both boys and girls (Carroll, Maughan, Goodman & Meltzer, 2005). There is also research indicating that listening comprehension and working memory can be impaired in children with ADHD (McInnes, Humphries, Hogg-Johnson & Tannock, 2003). On top of this, research indicates that stigma against mental health disorders is still

hugely prevalent across the world. Stigma can impede individuals with mental health disorders from accessing appropriate professional help and can severely impact on their quality of life (Hinshaw, 2005; Stier & Hinshaw, 2007).

Stigma is a term which is used to refer to discriminatory behaviour, prejudice and stereotypes, directed towards a specific social group (Stier & Hinshaw, 2007). Stier and Hinshaw (2007) outlines the importance of acknowledging each of these separate components of stigma. From these components we can see that stigma is not a simple phenomenon. It involves attitudes, beliefs, cognitions and societal influences. Stereotypes are defined as beliefs or cognitive schemata about members of a certain social group (Hamilton, Stroessner, & Driscoll, 1994). Discriminatory behaviour involves treating one group or individual differently in comparison with another group, while prejudice involves behaviour based on negative attitudes towards a group or individual (Brown & Bigler, 2005; Weiner, Perry, & Magnusson, 1988). Some literature uses prejudice and stigma interchangeably, substituting stigma for prejudice. This indicates the importance of attitudes and behaviour to research involving stigma.

It is widely accepted that mental health problems are subject to stigma, bias and negative attitudes and that stigma is one of the most pressing concerns for the mental health field (Hinshaw 2005 & Stier & Hinshaw, 2007; Rusch et al. 2005; Hinshaw and Stier 2008). Individuals with mental health disorders are one of the most stigmatised groups in society (Hinshaw, 2005). These attitudes continue to exist despite increased public knowledge about mental health disorders. This is highlighted in the work of Schomerus and colleagues who carried out a meta-analysis of changes in public attitudes and found that over the last 20 years attitudes towards individuals with mental health problems have not significantly improved (Schomerus et al. 2012). This stigma leads to a lack of understanding, a reluctance to talk about the issues and fear of seeking help (Corrigan, 2005; Hinshaw & Cicchetti, 2000;

Phelan, Link, Stueve, & Pescosolido, 2000). Furthermore, stigma negatively impacts on personal relationships and vocational and educational goals (Sartorius, 1998). This can be seen in an Irish context, as demonstrated by St. Patrick's University Hospital who published results of survey which indicated that 19% of respondents believed that a person with a mental health problem was of lower intelligence, and a worrying 37% believed that a person with a mental health problem was not trust-worthy (St. Patrick's Hospital, 2011). Another large scale Irish study, carried out by Dublin City University on behalf of Amnesty Ireland found high levels of reported discrimination based on mental health disorders. Participants reported discrimination across almost every aspect of their lives, this included being unfairly treated by family members (61% of participants reported this), being unfairly treated in relation to finding a job (36%) and keeping a job (43%). A worrying 40% of participants reported they had taken themselves out of education due to feeling discriminated against, or for fear of being discriminated against (Mac Gabhann et al, 2010).

There has been very little research carried out in relation to the stigmatisation of children. A small body of research exists in this area and all the research agrees that stigmatisation of children is an under-researched yet vitally important topic for investigation (O'Driscoll, Heary, Hennessy & McKeague, 2012; Heflinger, Wallston, Mukolo, Brannan, 2014; Hinshaw, 2005, Mukolo, Heflinger & Wallston, 2010). In his 2005 paper, Hinshaw discusses potential implications of stigma on school aged children with mental health problems. He highlights how education is a key element of children's lives, yet children with mental health problems may be hindered in their ability to learn. Stigmatisation may result in a reluctance to get an assessment or diagnosis, which would provide access to special resources. This could severely limit the child's opportunities to engage in vital educational and social opportunities. Some research has been carried out on peer stigma towards children with mental health problems (O'Driscoll, Heary, Hennessy, McKeague, 2012). This study

examined explicit and implicit stigma and attitudes in children and adolescents towards peers with mental health problems. Results found that young people display both internal and external stigma towards other young people with mental health problems, specifically ADHD and depression.

Stigmatisation of children with mental health problems by adults was investigated in large scale study in the United States. Findings from the “National Stigma Study – Children” (Pescosolido et al, 2008), indicated that adults who identified a child as “mentally ill” were twice as likely to report a potential for violence (Pescosolido, Fettes, Martin, Monahan, McLeod, 2007). These results also indicated a preference for social distance from children who displayed “disturbing” behaviours associated with ADHD and depression. The study indicated that one in five parents would have been unhappy to have a child who they labelled as having ADHD/depression in their child’s class or as their child’s friend (Martin, Pescosolido, Olafsdottir, McLeod, 2007). The finding that the label of “mental illness” is associated with a perceived likelihood for violence is of particular interest to note, as it reflects a stigmatising attitude (Martin, Pescosolido, Olafsdottir, McLeod, 2007). A controversial paper by Heflinger and Hinshaw (2010), suggest that stigmatisation of young people with mental health disorders may even occur in mental health service providers, by professionals who are working with the young people. Based on literature surrounding stigma, the authors investigated the attitudes of professionals and institutions and suggested “stigmatising practices” may exist. It can be reasonably deduced from stigma research in adult populations and from limited research in child populations, that young people with mental health disorders are subjected to stigmatisation, both from an adult population and from their peers. Although the authors admit that this could be a contentious issue, the research is not unwarranted. Similar concerns can be seen in Ireland. In the Amnesty Ireland

and Dublin City University report, 58% of participants reported being unfairly treated by mental health staff (Mac Gabhann et al, 2010).

The current research will employ a behavioural measure to investigate teachers' attitudes and stigma towards children with mental health problems. Hinshaw (2005) outlines support for investigation into how teachers respond to mental illness. He says that the presumption that all societal groups respond to all mental illness in the same way, in itself, could be stigmatising, and specifically mentions the importance of research into the responses and attitudes of parents, teachers, family members and peers. There has been very little research specifically investigating stigma and teachers, however there is some literature surrounding teachers' attitudes and perceptions, particularly in relation to ADHD. Some research has indicated that teachers can have negative perceptions regarding the academic ability of students with ADHD (Eisenberg and Schneider, 2007). In a review of the literature surrounding ADHD and teachers, it was suggested that teachers are pessimistic towards outcomes for children with ADHD (Kos, Richdale & Hay, 2006). However their attitudes and their belief that they are competent to teach children with ADHD are based on their knowledge of the disorder. Kos and colleagues (2006) again highlight a dearth in the literature surrounding teachers' attitudes and what influences them. A more recent study published in 2012 indicated that experience with children with ADHD relates to attitudes towards teaching children with ADHD. This study found that although stereotypical beliefs and teaching beliefs surrounding children with ADHD were negative, more favourable behaviours towards children with ADHD were related to increased levels of experience (Anderson, Watt & Noble, 2012). It should be noted however, that these relationships were not statistically significant.

In relation to teachers' attitudes towards children with internalising disorders such as anxiety and depression, even less research has been carried out. Some research has indicated

that teachers are more concerned about children exhibiting externalising behaviour disorders and less concerned about internalising ones (Kos, Richdale & Hay, 2006). This could be because it is easier to identify disruptive externalising behaviours, or because teachers believe that internalising disorders have a better prognosis (DeStefano, Gesten, & Cowen, 1977). Peterson and colleagues (1987) examined teachers' responses to a child with stress or depression. Teachers watched a video of a 9 year old girl who was depicted as either depressed, or not depressed, experiencing high levels of stress or low levels of stress. Teachers were then asked to rate the girl on her levels of attractiveness, expectations for her future and need for therapy, among other negative attributions. Results found that the presence of depression or anxiety influenced almost every rating (Peterson, Wonderlich, Reaven & Mullins, 1987).

From the literature reviewed, there is overwhelming evidence to support further research in the area of stigma and children. Researchers who have carried out work in this area have identified a shortage of research on the topic (Hinshaw, 2005; O'Driscoll, Heary, Hennessy & McKeague, 2012). There is an even greater absence of research investigating potential stigma by teachers towards students. Although there is a body of research surrounding teachers' attitudes, even this is lacking, and it focuses primarily on externalising disorders such as ADHD. Considering the vital roles education and school play in the lives of children, it is essential to understand how stigma may impact on these early childhood experiences. The literature supports the present research project, which will investigate whether teachers show a negative bias towards students with mental health issues.

Teachers' Attitudes and Gender Bias in Reporting Child Mental Health Problems

A further area of significance is teachers' ability to correctly recognise, identify and report mental health problems in students. The importance of teachers' recognition and reporting of mental health problems should not be undervalued. It is recommended that direct

reports from teachers are obtained and taken into consideration when making a mental health diagnosis, especially in the case of ADHD and its subtypes (Sayal & Goodman, 2009).

Research has indicated that information from parents does not accurately correspond with teacher reports and in cases of a queried diagnosis, it is recommended that information is sought from teachers. Parental reports on school behaviour may not reflect the opinion of teachers (Sayal & Goodman, 2009). Teacher based reports create a full picture of the child's day-to-day functioning and behaviours, thus helping to minimise the possibility of misdiagnosis and to support access to the most appropriate interventions (Valo & Tannock, 2010).

Research on how teachers identify and rate mental health problems has provided varied results. The literature indicates that when rating ADHD and ADHD type behaviours, teachers detect a far greater number of students with ADHD than the statistical norms would predict (Kypriotaki & Manolitsis, 2010). Detection rates of up to 15% have been identified in teacher reports (Weiler, Bellinger, Marmor, Rancier & Waber, 1999; Glass & Wegar, 2000). This is far above the 3-5% suggested in DSM-IV. On the other hand, research in the area of internalising disorders (such as anxiety and depression) has found the opposite. Studies have found that teachers often overlook children with internalising problems, frequently because the child is well behaved in the classroom or because they believe the child will "grow out" of them as they mature (Molins & Clopton, 2002; Green, Clopton & Pope, 1996). A recent study by Headley and Campbell (2011) found that teachers were generally able to identify and refer young people with severe levels of anxiety, but had difficulty distinguishing between moderate anxiety symptoms and severe anxiety disorders.

When comparing externalising and internalising disorders, research has indicated that teachers identify and show more concern towards children exhibiting externalising disorder behaviours. Percy and Clopton found that teachers perceived a greater cause for concern in

externalising disorders, and also were unable to distinguish between severe internalising and moderate internalising disorders (Pearcy & Clopton, 1993). These results were mirrored in a recent study by Loades and Mastroyannopoulou (2010) who also found that teachers showed more concern for externalising disorders compared to internalising. This study also found that there was a difference in levels of problem recognition based on the gender of the child; teachers less accurately identified girls with externalising behaviour disorders and boys with internalising behaviour disorders.

The issue of gender bias is one which appears frequently in the literature, but results are often varied. Again, there is a substantial lack of research regarding gender differences for internalising disorders, with the majority of research focusing on ADHD. Some research has suggested that teachers more readily identify and report externalising disorders, such as ADHD in boys than in girls (Loades and Mastroyannopoulou, 2010; Scitutto, Nolfi & Bluhm, 2004, Jackson & King, 2004). Scitutto and colleagues found that in their sample of American teachers, teachers were more likely to refer boys than girls, regardless of their symptom type. The largest difference in referrals based on gender was when the child displayed hyperactivity as a symptom on its own, without inattention. Loades and Mastroyannopoulou (2010) carried out similar research in the UK and found that when presented with a vignette of a child with a clinical level externalising disorder, they more accurately identified boys as having a disorder than girls. Other research has found there to be no difference in teachers' recognition and reporting of ADHD based on gender. Moldavsky et al found that after reading a series of vignettes teachers reported 45% of boys and 43% of girls as having ADHD and this difference was not found to be significant (Moldavsky, Groenewald, Owen & Sayal, 2013). And yet again other research has found that teachers showed more concern for girls displaying behaviours associated with ADHD. One study found that teachers considered girls with ADHD type behaviour to be significantly more impaired than boys displaying the

same behaviours, they also considered girls in more need of services (Coles, Slavec, Bernstein & Baroni, 2012).

Little research has been carried out on reported gender bias in relation to internalising disorders such as anxiety. Loades and Mastroyannopoulou found that when presented with a vignette describing a child with clinical level anxiety, teachers would more accurately identify girls as having a disorder than boys (Loades & Mastroyannopoulou, 2010). Given the importance teacher reporting can have for referrals, implementation of appropriate interventions and diagnoses, it is important to ascertain whether they show any gender bias in relation to mental health disorders. Considering the inconsistency in results regarding gender bias and ADHD, and the lack of research involving internalising disorders, it would be of benefit to investigate this area further. This research will attempt to do this by investigating if any bias is shown favouring ADHD/anxiety for one or other gender.

Measures of Attitudes Towards Mental Health Problems

A vast majority of research carried out in the domain of stigma, attitudes and mental health uses explicit measures, often in the form of self-reporting and vignettes. These measures come with limitations, which are discussed frequently in the literature. Self-reported attitudes are based on overt responding, and research has shown that much of modern day bias is not expressed explicitly and overtly (Hinshaw, 2005). Explicit measures involving self-reporting are highly subject to social desirability factors (Hinshaw, 2007). They have also been shown to correlate poorly with other measures of stigma (Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997). Research also indicates that self-report measures are susceptible to faking and self-preservation bias (Egloff & Schmukle, 2003). Steir and Hinshaw (2007) suggests that due to social desirability and the use of explicit measures, much research may underestimate levels of stigma towards individuals with mental illnesses. He strongly advocates for the use of implicit measures in measuring stigma, saying

that explicit measures do not reflect deep levels of attitude change or discriminatory behaviours. In comparison with explicit measures, implicit measures use behavioural responses as an indication of stigma or bias attitudes, or lack there-of. In many implicit measures the behaviour which is being measured is response latency. Implicit measures can more accurately assess socially unacceptable, underlying, attitudes over which individuals are thought to have far less control than explicit attitudes (Steir & Hinshaw, 2007). Typically, implicit measures measure more immediate or automatic responses (Frieze et. al, 2008, Galdi et al, 2008). This is in contrast to explicit, self-report measures which may measure more “controlled behaviours” (Dovidio et. al, 1997, Dovidio et. al, 2009).

However, there is a complicated relationship between implicit measures and behaviours. Research has shown that explicit measures may predict intentional behaviours (Shelton, Richeson, Salvatore & Trawalter, 2005; Karpinski, Steinman & Hilton, 2005), where as implicit measures may predict automatic behaviours (Ziegert & Hanges, 2005). Hoffman and colleagues carried out a meta-analysis of the relationship between an implicit measure (the IAT) and self-report measures (Hoffman et al., 2005). The research found a small effect size, which indicated that explicit measures do not sufficiently assess actual levels of stigma and that they should be supported by other more direct measures. In 2005 Hinshaw stressed the importance of measuring behavioural discrimination and the use of implicit measures, saying that sole reliance on explicit measures will underestimate any substantial research carried out in the area of stigma, bias and mental health (Hinshaw, 2005).

Although previously it has been common place to use solely explicit measures to study stigma, attitudes and bias towards mental health, in recent years there has been a move to include implicit measures (Kopera et. al, 2015; Thibodeau & Finley, 2017; Kelly & Barnes-Holmes, 2013). However this research is still limited in number. One project which did so was carried out by O’Driscoll et al, who looked at implicit and explicit stigma in

young people towards their peers with mental health problems (O'Driscoll, Heary, Hennessy & McKeague, 2012). This research used the Implicit Association Test (IAT) as the implicit measure, and vignettes and questionnaires as their explicit measures. The research compared depression with ADHD and results from the implicit measure found that participants held more negative views towards depression than ADHD, particularly older boys, whose views were significantly more negative towards depression compared to younger boys and girls in general. Other similar research examined implicit attitudes towards children with autism (Kelly & Barnes-Holmes, 2013). This research, using the Implicit Relational Assessment Procedure (IRAP, Barnes-Holmes, Barnes-Holmes, Stewart & Boles, 2010) found that participants produced negative bias towards children with autism. Research carried out with mental health professionals and medical students found that although mental health professionals reported higher positive emotions towards people with mental health problems on explicit measures, on implicit measures both mental health professionals and medical students reported negative attitudes (Kopera et. al, 2015).

As can be seen, the use of implicit measures has been widely supported for investigation into the area of stigma, bias and mental health. While some previous research has used the IAT, this research will use the Implicit Relational Assessment Procedure (IRAP) (Barnes-Holmes et al., 2006).

Implicit Measures

As previously discussed, traditional methods of assessing beliefs and attitudes have used explicit measures such as questionnaires, Likert scales, interviews, focus groups etc. It has been argued that these measures may be subject to number of biases, such as the social desirability bias (King & Bruner, 2000; Nederhof, 1985). That is to say, participants may respond to such measures in a way they deem to be most socially acceptable, and not in a way that accurately reflects their beliefs or attitudes. This is particularly relevant in relation to

socially sensitive topics such as racism, sexism, homophobia etc. Stigmatising attitudes towards mental health problems can also be considered a socially sensitive topic (Hinshaw, 2005). Arising from this issue, researchers have increasingly focused on measuring implicit attitudes. In their seminal paper, Greenwald and Banaji (1995) define implicit attitudes as “introspectively unidentified (or inaccurately identified) traces of past experience that mediate favourable or unfavourable feeling, thought, or action toward social objects” (p. 8). In an attempt to measure implicit attitudes and to combat the identified issues in explicit measures, a number of implicit measures have been created by researchers. Although they all aim to measure the same concept, they do so in different ways based on different theories. Currently the most prominent implicit measure is the Implicit Association Test (IAT, Greenwald, McGhee & Schwartz, 1998). The IAT is a computer based task which asks participants to categorise stimuli. Participants are presented with two target concepts and two attributes. As an example, an IAT measuring attitudes towards disability may contain stimuli relating to disabled people (e.g. pictures of people in wheelchairs), abled people (e.g. pictures of people walking), and evaluative labels, such as “good” words (e.g. cheerful) and “bad” words (e.g. horrible). In one trial, a picture or a word will be presented and participants will be required to press either a key on the left for “disabled or bad” or a key on the right for “abled or good”. If a picture of a person in a wheelchair was presented, participants would be required to press the left key, as the left key refers to the word “disabled”. If the word “cheerful” was presented, participants would be required to press the right key, as the right key refers to the word “good”. Effectively participants are required to sort the stimuli into the relevant associated category. During the course of the IAT the categories change so that, for example, the left key will correspond with “disabled and good” and the right key will correspond with “abled and bad”. Participants are still required to sort the same stimuli into the relevant associated category. The average latency to sort the stimuli correctly is compared

between trials. If participants respond more quickly when the response categories are “disabled and bad” and “abled and good” then would indicate an automatic preference for abled people. The differences in response latency between the two category combinations creates the “IAT effect”. The IAT effect can be interpreted to indicate implicit bias in relation to the subject matter used in the IAT. Essentially, the IAT measures the association between the target concepts and the attributes (Greenwald, McGhee & Schwartz, 1998). The idea behind the IAT is that participants will respond faster to stimuli that are “similar” or closely associated in memory. This quick responding is in comparison to slower responding on stimuli which are dissimilar or not associated in memory (Greenwald, McGhee & Schwartz, 1998).

The IAT has been used in a wide range of studies to measure implicit attitudes towards a variety of socially sensitive topics. Results from IAT studies have often found a negative implicit attitude towards socially sensitive topics, which are not found in explicit measures (Nosek, Greenwald & Banaji, 2006). For example, on the topic of racial bias, IAT research has found that participants who did not report racist attitudes on explicit measures responded more quickly and accurately on the IAT when they were categorising names typically associated with white people with positive words, and names typically associated with black people with negative words. Responses were slower when participants were asked to categorise “white names” with negative words and “black names” with positive words (Greenwald et al., 2002). This is an example of how the IAT effect can be interpreted to indicate implicit bias, in this case implicit racial bias. This IAT effect has been replicated in many studies and is frequently used to measure implicit attitudes and beliefs (DeHouwer, 2002).

Another implicit measure is the Implicit Relational Assessment Procedure (IRAP). The IRAP is a behaviour-analytic tool, used to investigate implicit attitudes and cognitions

(Barnes-Holmes, Barnes-Holmes, Stewart & Boles, 2010). The IRAP has its foundational basis in relational frame theory (RFT). RFT is a modern, behaviour-analytic account of language and cognition (Hayes, Barnes-Holmes & Roche, 2001). From an RFT account, cognition involves relational processes and responding to stimuli in arbitrary and derived manners (Hughes, Barnes-Holmes & Vahey, 2012). In comparison with the IAT, the IRAP is non-associationist and postulates that human cognition is based on these relational processes rather than associations. Through the use of relational terms and varying trial types (which will be discussed later) the IRAP can be useful for exploring directionality of any detected bias (Barnes-Holmes et al., 2006). The IRAP has been credited with being a more precise measure of relations between stimuli than the IAT, and can provide a more insightful and complex set of results (Farrell, Cochrane & McHugh, 2015).

The IRAP has been used in the experimental analysis of implicit attitudes and beliefs (Barnes-Holmes, Barnes-Holmes, Stewart & Boles, 2010). A key paper in the IRAP literature is the 2010 paper by Barnes-Holmes, Barnes-Holmes, Stewart and Boles which outlines a “Sketch” or summary of the significant aspects surrounding the development, basis and use of the IRAP. The basis of the IRAP derives from researchers’ attempts to assess natural verbal relations, based on stimulus equivalence procedures (Barnes-Holmes, Barnes-Holmes, Stewart & Boles, 2010). The approach involved testing for experiment or laboratory-induced equivalence classes, which would be likely to conflict with pre-existing verbal relations (Barnes-Holmes, Barnes-Holmes, Stewart & Boles, 2010). An essential aspect of this approach is the prediction that the experiment or laboratory-induced equivalence classes would be impeded by the natural, pre-existing verbal relations (i.e. well-practiced, learned history responses). This approach of countering natural verbal relations against experimental laboratory-induced equivalence classes is the conceptual and foundational basis of the IRAP (Barnes-Holmes, Barnes-Holmes, Stewart & Boles, 2010).

This is in contrast to the IAT which assumes the position that human cognition is based on associations. These associations are relative, and the IAT does not reveal directionality of associations or implicit attitudes (Barnes-Holmes, Waldron, Barnes-Holmes & Stewart, 2009; Farrell, Cochrane & McHugh, 2015).

In the IRAP procedure, participants are asked to respond as accurately and quickly to stimuli that are either consistent or inconsistent with their natural, pre-existing established verbal relations (Barnes-Holmes, Barnes-Holmes, Stewart & Boles, 2010). When participants are responding to stimuli that are inconsistent with their pre-existing verbal relations, latency times should be longer than responses to stimuli which are consistent with their pre-existing verbal relations (Barnes-Holmes et al., 2010).

The IRAP is presented as a computer programme, with stimuli presented on the screen. A label stimulus is presented at the top of the screen and a target stimulus is presented in the centre of the screen. Participants are required to respond using the key board, with responses that are either consistent or inconsistent with typical verbal contingencies. Participants are instructed for each block of trials as to whether a consistent or inconsistent answer is “correct”. Therefore during a consistent block trial, if the participant responds with an inconsistent response, this would be “incorrect” and they cannot move on to the next trial until they respond with the consistent response. After each block the “correct” answer and “incorrect” answer swap (Barnes-Holmes et al., 2010). As an illustrative example, Roddy, Stewart and Barnes-Holmes’s (2009) study on implicit attitudes towards weight will be used. For this study, the label stimuli were the adjectives “good” and “bad”. The target stimuli were pictures of an overweight individual and a slim individual. Participants were required to respond with either “same” or “opposite”. This created four trial types, *Good-Slim*, *Bad-Slim*, *Good-Overweight*, *Bad-Overweight*. During a Pro-Slim and Anti-Overweight block of trials, participants are asked to respond with “same” when they saw the word “Good” and the image

of the slim person, “opposite” when they saw “Bad” and a slim person, “same” when they saw “Bad” and an overweight person and “opposite” when they saw “Good” and an overweight person. For an Anti-Slim and Pro-Overweight block of trials, the responses would be reversed (Roddy et al., 2009). This provides an example as to how the IRAP pits competing natural verbal relations against experimental-induced equivalence classes. In this current study, the IRAP will be used to investigate the pre-existing, natural, verbal relations of teachers in relation to children with mental health problems. It will investigate whether teachers show a negative bias, and if the bias is *disorder-negative, normality-positive* or a combination. It will also investigate gender-bias in relation to mental health problems.

Similar to the IAT, the data collected from the IRAP are response latencies. This means the time, measured in milliseconds, between the presentation of the stimulus (or the start of the trial) and a correct response being emitted by the participant (Barnes-Holmes et al., 2010). As mentioned earlier, when responding to stimuli that are consistent with the participants pre-existing verbal relations, latency times should be shorter than when responding to stimuli that are not consistent. Therefore, in the previously mentioned example, if latency times were shorter on *Good-Slim, Bad-Overweight* trials, it could be inferred by the researcher that the participant had a Pro-Slim, Anti-Overweight bias or attitude. In relation to the current study, if teachers’ latencies are shorter for *Disorder-Bad, Normality-Good* trials, it could be inferred that teachers have a Pro-Normality, Anti-Disorder bias.

While both the IRAP and the IAT use response latencies to establish the existence or absence of a bias, the IRAP differs from the IAT in a number of other ways. The IRAP can reveal in more detail the specificity and directionality of the detected bias. The IAT effect is based on relative bias, that is, bias based on comparing the results of two different combinations of stimuli. To refer back to the example of the Disability IAT used earlier, if an implicit, anti-disability bias was found on the IAT (i.e. response latencies were shorter when

the categories were “disabled and bad” and “abled and good”), this tells us that participants had a strong automatic preference for abled persons over disabled persons. However, it does not tell us for example, the degree of anti-disability bias or whether there was distinct negative responses towards disabled persons and positive responses towards abled person. It tells us little about the responses to each individual category. In comparison, due to the four trial type nature of the IRAP we are able to examine each category, or trial type, in greater detail and at an individual level. Although it is possible, it is not necessary to compare the IRAP trial type results with each other. Taking the same disability based topic, a Disability IRAP may produce the trial types *Disabled-Bad*, *Disabled-Good*, *Abled-Bad*, *Abled-Good*. Analysing the results from each individual trial type produces a far richer description of any inferred implicit bias. For example, results may show an Anti-Disability bias on the *Disabled-Bad* trial type (e.g. responding in a Disabled-Bad-True manner), but this bias may not be seen on the *Disabled-Good* trial type (e.g. responding in a Disabled-Good-True manner). This complexity and added richness in the results is a product of the IRAP and is not seen in other implicit measures.

It should be noted that in relation to the IRAP, the term “implicit” does not refer to internal, mentalistic descriptions (Murphy, MacCarthaigh & Barnes-Holmes, 2014). In IRAP studies, “implicit” relates to a bias that is interpreted by the researcher from the participant’s behavioural measures, their recorded response latencies. This is further explained by the Relational Elaboration and Coherence Model (REC model). This model is a Relational Frame Theory interpretation of results from the IRAP, known as the IRAP effect (Barnes-Holmes et al., 2010). The REC model says that IRAP trials may produce brief relational responses (BIRRs). These responses are usually immediate and relatively short, and occur before the participant has even responded by pressing a key on the keyboard (Barnes-Holmes et al., 2010). The probability of BIRRs occurring is related to the participant’s verbal and nonverbal

history. When put under time pressure (as participants are in IRAP studies), the participant's behavioural system responds with these immediate and brief relational responses, which give rise to the IRAP effect. The IRAP effect is seen as evidence of the effect of context and history on relational repertoires (Power, Barnes-Holmes, Barnes-Holmes & Stewart, 2009). This is in contrast to explicit measures, where participants are not typically under time pressures. When participants are not under time pressures, they can engage in more complex, extended relational responding. These are often referred to as extended and elaborated relational responses (EERRs). However under time pressures imposed by the IRAP, participants respond with immediate, brief relational responding (Barnes-Holmes et al., 2010). Complex, extended relational responding gives rise to more mediated responses. The differences between BIRRs and EERRs were proposed in the context of the REC Model (Barnes-Holmes et al., 2010; Hughes, Barnes-Holmes & Vahey, 2012). The IRAP, and other time-based implicit measures, target BIRRs, while EERRs are often engaged when explicit measures are being completed (Hughes, Barnes-Holmes & Vahey, 2012). This difference in underlying processes is often referenced to account for divergent responses between implicit and explicit measures.

As an example, if an individual has a contextual and verbal history of relating people with disabilities to negative traits, when presented with a Disability IRAP containing stimuli depicting people with disabilities, BIRRs confirming relations between the disability stimuli and negative stimuli may be more likely to occur (Barnes-Holmes et al., 2010; Hughes, Barnes-Holmes & Vahey, 2012). Therefore the individual may respond faster when asked to affirm that individuals with disabilities have negative traits, than if they were asked to affirm that individuals with disabilities have positive traits. The IRAP may identify these automatic responses, which are based on our verbal histories. In turn, these responses are interpreted as implicit attitudes (Hughes, Barnes-Holmes and Vahey, 2012; Murphy, MacCarthaigh, &

Barnes-Holmes, 2014). Hughes and colleagues (2012) indicate that such attitudes may not appear in results of explicit measures, as typically explicit measures are not completed under time pressure, thus allowing for extended relational responding (EERRs) and rule governed behaviour to influence responses. When completing explicit measures, individuals may ignore BIRRs and respond in a manner which has a history of being socially reinforced (e.g. “it is wrong to discriminate against people with disabilities”) (Hughes, Barnes-Holmes, & Vahey, 2012).

A number of published IRAP studies exist, demonstrating its use for measuring various attitudes and biases with a variety of participants. As already mentioned, Roddy et al. (2009) used the IRAP to assess implicit attitudes towards weight. It has also been used to investigate attractiveness bias (Murphy, MacCarthaigh & Barnes-Holmes, 2014). Gender bias and self-esteem were measured in children with ADHD and dyslexia using the IRAP (Scanlon, McEnteggart, Barnes-Holmes & Barnes-Holmes, 2014). The attentional bias of cocaine users towards cocaine related stimuli was also investigated (Carpenter, Martinez, Vadhan & Barnes-Holmes, 2012). The IRAP has also been used to measure attitudes towards Dublin life and country life in Ireland, it has been used with college students and prisoners, it has investigated attitudes towards meat in vegetarians to name but a few published articles (Barnes-Holmes, Waldron, Barnes-Holmes & Stewart, 2009; Vahey, Barnes-Holmes, Barnes-Holmes & Stewart, 2009, Barnes-Holmes, Murtagh, Barnes-Holmes & Stewart, 2010). Research using the IRAP has been carried out with teachers to assess their attitudes towards children with autism, in comparison to normally developing children (Kelly & Barnes-Holmes, 2013). So far there has been no published research which has used the IRAP on teachers to investigate their attitudes and biases towards students with mental health problems. However, as demonstrated by the wide variety of topics and participants in IRAP

research, it is reasonable to assume that it will be an appropriate tool for measuring bias and attitudes in teachers towards children with mental health problems.

Summary

The review of the literature has identified a significant gap in knowledge surrounding stigma, attitudes and bias towards children with mental health problems. The role of education, and in turn teachers, is a hugely important one in the lives of young people, so it is appropriate and necessary to investigate their attitudes and bias towards children with mental health problems. The literature has also strongly supported the need for the use of implicit measures for investigating this topic. The IRAP is a behaviour-analytic tool used to measure implicit attitudes and bias. It has been used on a wide range of topics and with a diverse range of participants.

The aim of this current research will be to investigate primary school teachers' attitudes towards students with mental health issues using a behavioural based, implicit measure (IRAP) in conjunction with explicit self-report measures. Specific research questions are:

1. Do primary school teachers show an implicit negative bias towards students with mental health issues and is the nature of any bias shown as disorder-negative, healthy-positive or a combination?
2. Is a bias shown favouring ADHD/Anxiety for one or other gender when information is held constant?
3. Are the implicit data consistent with primary teachers' self-report data regarding students with externalising and internalising disorders?
4. Can the implicit relational assessment procedure (IRAP) be used to detect stigma in the area of mental health disorders?

Chapter 2

Study One

Investigating Stigmatising Attitudes Towards Students with
ADHD/Anxiety

Study One

Study 1 aims to examine whether primary school teachers show a stigmatising attitude or negative bias towards students with ADHD/Anxiety and is the nature of any bias shown as disorder-negative, normal-positive or a combination. There has been very little research carried out in relation to the stigmatisation of children. The research which has been carried out in the area suggests that children suffering from mental health issues are subject to peer-to-peer stigma and stigma from adults also (O'Driscoll, Heary, Hennessy, McKeague, 2012; Martin, Pescosolido, Olafsdottir, McLeod, 2007). Research into teachers' attitudes towards children with mental health issues is warranted as teachers frequently work with such children. Previous researchers in the area have also outlined the importance of investigating how various societal groups respond to mental health issues (Hinshaw, 2005).

Much research into stigma and mental health has employed explicit measures such as questionnaires and vignettes. However explicit measures such as these are subject to social desirability factors and may not be an accurate measure of stigma (Hinshaw, 2007; Dovidio et al, 1997). Recent research has recommended the use of implicit measures to supplement explicit measures (Hinshaw, 2005; O'Driscoll, Heary, Hennessy, McKeague, 2012). One such implicit measure is the IRAP. The IRAP has previously been used in similar research to investigate teachers' attitudes towards students with autism (Kelly & Barnes-Holmes, 2013).

This study will investigate teachers' attitudes towards students with mental health problems using both implicit and explicit measures. Implicit attitudes will be measured using a behaviour analytic tool, the IRAP, and explicit attitudes will be measured using self-report questionnaires (the DMISS and the SAB). This study seeks to add to the small pool of knowledge surrounding the stigmatisation of children with mental health issues. It has been identified that there is a significant lack of research in this area. An IRAP has not previously been used to assess stigmatising attitudes towards children.

Method

Recruitment Procedure

Five primary schools in the Dublin catchment area were contacted in the first instance by email or telephone call. The researcher communicated with the relevant liaison person in the school (principal/vice-principal/board of management representative), explained the research aims and requirements, and provided an information sheet. At the discretion of the relevant school principal, either the researcher met with the teachers to inform them about the study, or the principal themselves spoke with the staff to explain the research to them. Teachers within the schools subsequently signed up if they wished to take part in the research. Participants were required to be qualified primary school teachers, and currently employed as teachers in a primary school setting to be included in the study. Non-teaching principals and vice-principals were excluded.

Participants

Thirty-six teachers took part in the current study. Data from six participants were excluded from the analysis as they failed to meet predetermined pass criteria for the IRAP task (see p. 27). The final sample for analysis consisted of 21 females and nine males, ranging in age from 23 to 59 ($M = 34.83$, $SD = 10.65$). Demographic information and participant characteristics are reported in Table 1.

Table 1.

Participant demographic information

Demographic Question	Number of teachers
Age group of current students?	
4-6	10
7-9	7
10-12	13
Received education/training in mental health?	
Yes	18
No	12

Experience working with students with mental health problems		
<i>No experience</i>	0	
<i>Little experience</i>	7	
<i>Some experience</i>	9	
<i>Quite a bit of experience</i>	7	
<i>A lot of experience</i>	7	
	M	SD
Years teaching	10.46	9.325

Ethics

The participant sample was comprised of typically-developing adults. Principal ethical concerns were with voluntariness, informed consent and data protection. Permission was granted from each of the schools to take part in the study. Teachers from the schools volunteered to take part in the research, and were provided with a consent form and information sheet at the start of each session (see Appendix A and B). Participants were informed that participation was voluntary and that all data would be treated with full confidentiality and coded from the outset. Thus, once they had completed the IRAP, due to the anonymous nature in which the data are stored, participants were told it would not be possible to remove their data or to receive individual IRAP results. Participants were debriefed and thanked at the end of each research session.

As the topic of mental health in children could have caused the teachers some concern about children they were teaching, contact information was provided on the information sheet for appropriate child mental health services in Dublin. The current research was conducted in accordance with current ethical standards dictated by the appropriate professional bodies, and was approved by the Research Ethics Committee at the Department of Psychology, Maynooth University.

Setting

Research was carried out on location in five schools, during school hours. Research sessions were conducted in available empty rooms in the schools to minimise distractions. The researcher was present during all sessions but remained out of sight of the participants during the IRAP task.

Materials

The Implicit Relational Assessment Procedure (IRAP; Barnes-Holmes et al., 2006). The IRAP is a computer-based programme which requires participants to quickly and accurately respond to presented stimulus relations and automatically records participant data including percentage of correct responses and response latency data (duration). The IRAP was delivered to participants on the researcher's laptop provide detail as per previous research. The stimuli that the IRAP presents onscreen are broken down into three categories: label stimuli, target stimuli and response options. Label stimuli are presented at the top of the screen, target stimuli are presented in the middle of the screen and response options at the bottom of the screen. Label stimuli were the phrases "A student with ADHD/Anxiety is..." and "A Normal student is...". Target stimuli were negative (stigmatising) and positive (non-stigmatising) words (e.g., Weird, Strange, Unfriendly, Kind, Sensible) and response options were "True" and "False". The stigmatising words were selected from a list of 250 words which were identified as stigmatising from a qualitative, cross-sectional study (Rose, Thornicroft, Pinfold & Kassam, 2007). From this, four IRAP trial types were established, (a) Disorder-Bad (b) Disorder-Good (c) Normal-Bad (d) Normal-Good (see Table 2 for a full list of stimuli).

Explicit measures. Two explicit, self-report measures were used to stigmatising attitudes towards individuals with mental health disorders. The measures were both Likert-scale questionnaires, which were paper questionnaires and participants completed them using

a pen. A demographic questionnaire was also completed by participants. More complete details of explicit measures can be found in Appendices C, D and E.

Demographic questionnaire. The demographic questionnaire was created by the researcher and this asked participants to indicate their gender, age, length of teaching experience, what age group they taught, whether they had any specific mental health training, and how much experience, on a scale of 1-5 (1 was none and 5 was a lot), they felt they had in working with children with mental health problems.

Stigmatising Attitudes Believability (SAB; Masuda, Price, Anderson, Schmertz & Calamaras, 2009). The SAB is measure of stigmatising attitudes towards individuals with psychological disorders. It is an 8 item questionnaire, which uses a 7 point Likert scale. The scale ranges from “Not at all believable” (1) to “completely believable” (7). Participants are asked to rank how believable a negative statement about an individual with a psychological disorder is. It was originally designed to measure the impact of Acceptance and Commitment Therapy on the believability of negative thoughts towards individuals with psychological disorders. A high score indicates a high level of “cognitive fusion” with stigmatising thoughts (Hayes et al., 2005). A maximum score is 56 (indicating very high stigmatising attitudes) and a minimum score is 8 (indicating very low stigmatising attitudes). The scale has demonstrated acceptable internal consistency with a Cronbach’s alpha = .78 (Hayes et al., 2005; Masuda, Price, Anderson, Schmertz & Calamaras, 2009).

Day’s Mental Illness Stigma Scale (DMISS; Day, Edgren & Eshleman, 2007). The DMISS is a 28 item, Likert-type scale which measures attitudes towards people with mental illnesses. Specifically the DMISS involves 7 subscales, each of which represents a factor influencing these attitudes. These factors are: interpersonal anxiety, relationship disruption, poor hygiene, visibility, treatability, professional efficacy, and recovery. The DMISS Treatability subscale reflect beliefs that mental illnesses can be effectively treated,

with high scores reflecting a belief that it is not possible to effectively treat mental illness and low scores reflecting a belief that it is possible. The Recovery subscale indicates a belief that a person can recover from a mental illness, again with high scores reflecting a belief that recovery is not possible and low scores indicating a belief that it is possible. High scores on the DMISS Anxiety scale indicate feelings of nervousness, anxiousness or fear around a person with mental illness. High DMISS Hygiene scores indicate a belief that people with mental illness have poor hygiene habits. The Visibility subscale refers to a person's belief in their ability to recognise mental illness. The Relationship Disruption scale reflects beliefs that a person with mental illness is unable to maintain or have healthy relationships with others (Day, Edgren & Eshleman, 2007).

Participants are given a statement relating to one of these factors and are asked to rate from 1 – 7 how much they agree with the statement (1 being completely disagree and 7 being completely agree). High scores on the anxiety, relationship disruption, poor hygiene and visibility sub-scales indicate stigmatising attitudes, while high scores on the other 3 sub-scales indicate low stigmatising attitudes. All the subscales showed internal consistency with Cronbach's alphas of above .70 (anxiety = .90, relationship disruption = .84, hygiene = .83, visibility = .78, treatability = .71, recovery = .75, professional efficacy = .86).

Procedure

Participants were given an information sheet informing them about the nature of the study, this was also explained to them by the researcher. Once they understood the nature of the study they were asked to sign a consent form, one copy of which was returned to the researcher and one copy which they kept themselves. Participants were then asked to fill out the explicit measures, consisting of the demographic questionnaire and Likert scale questionnaires. All paper questionnaires were given an alpha-numeric code which matched their participant code for the IRAP. When the participants finished the paper questionnaires

they were asked to place them in an envelope to provide anonymity. Following the demographic questionnaire participants completed the IRAP, the procedure for which is outlined below.

IRAP procedure. All participants completed the same IRAP. Before the IRAP participants received visual instructions, which were also discussed with the researcher, to ensure that participants understood the concept and requirements of the IRAP. Participants were informed that they would be asked to respond to stimuli which were possibly consistent and inconsistent with their beliefs but that this was part of the procedure. The researcher also emphasised the importance of both speed and accuracy during the IRAP. Participants were also informed that if they needed to, they could take a break after each block.

The IRAP consists of a number of trials, which are grouped into blocks. On each trial the participant is presented with a label stimulus (“A student with ADHD/Anxiety is...” and “A Normal student is...”), a target stimulus (positive or negative words) and response options (True or False). All stimuli appear on screen simultaneously. Participants are required to select one of the two available response options (true or false) by pressing “d” or “k” on the laptop keyboard. If the participant selects the correct response option, the stimuli are cleared from the screen for 400ms and a new randomised combination of stimuli are presented. If the participant selects the response option designated as incorrect for the particular trial-block, a red “X” appears on the screen and remains on the screen until the participant selects the response option designated as correct, after which the procedure continues. For half of the blocks participants were required to respond in a Disorder-Bad/Normal-Good consistent manner. For example, when presented with the label “A student with ADHD/Anxiety is...” and the target “strange” the correct response would be “True”. Similarly when presented with the label “A Normal student is...” and the target “hardworking” the correct response would be “True”. For the other half of the blocks participants were required to respond in a

Disorder-Bad/Normal-Good inconsistent manner. During these blocks if presented with the label “A student with ADHD/Anxiety is...” and target “strange” the correct response would be “False”. If presented with the label “A Normal student is...” and target “hardworking” the correct response would also be “False”.

The IRAP consisted of at least two practice blocks (one consistent block and one inconsistent block), however participants could complete up to six practice blocks depending on the speed and accuracy of the participant responses. Practice blocks were followed by six test blocks (three consistent and three inconsistent blocks). Each block consisted of 24 trials – each of the 12 target stimuli were presented with the label stimuli in a randomised combination and order. The combination of stimuli yielded four IRAP “trial types”: (a) Disorder-Bad (b) Disorder-Good (c) Normal-Bad (d) Normal-Good. Before each block participants were presented with one of two rules for responding. The rules were, A. “During the next phase please respond as if students with ADHD/Anxiety have NEGATIVE traits and Normal students have POSITIVE traits” and B. “During the next phase please respond as if students with ADHD/Anxiety have POSITIVE traits and Normal students have NEGATIVE traits”. Consistent IRAP trial-types presented the following relations: (a) Disorder-Bad-True (b) Disorder-Good-False (c) Normal-Bad-False (d) Normal-Good-True. Participants were required to affirm Consistent and Inconsistent IRAP trial-types on alternate trial-blocks. Inconsistent IRAP trial-types presented reversed relations and on these trial-blocks participants were asked to affirm: (a) Disorder-Bad-False (b) Disorder-Good-True (c) Normal-Bad-True (d) Normal-Good-False.

The IRAP requires participants to respond as quickly and accurately as possible. In order to achieve this two criteria are set: (a) 80% accuracy and (b) maximum 2000ms median response latency. If participants met these criteria during the two practice blocks they moved on to the test blocks. If they did not meet these criteria they were presented with the practice

blocks again until they achieved a criterion performance (up to a maximum of 6 practice blocks). The reason for the latency criterion is to ensure that the IRAP is accurately assessing “implicit attitudes” via immediate and brief relational responding, with the behavioural system being put under pressure to respond quickly (Barnes-Holmes, Barnes-Holmes, Stewart & Boles, 2010). The accuracy criteria is implemented to avoid high rates of inaccurate responses which would lead to difficulty in interpretation of results (Hughes & Barnes-Holmes, 2011).

Table 2.

Stimuli and Response Options for the Stigma IRAP

Stigma IRAP	
A Student with ADHD/ANXIETY is...	A NORMAL student is...
Weird	Sensible
Unintelligent	Intelligent
Strange	Hardworking
Rude	Kind
Unfriendly	Friendly
Bold	Good
True	False

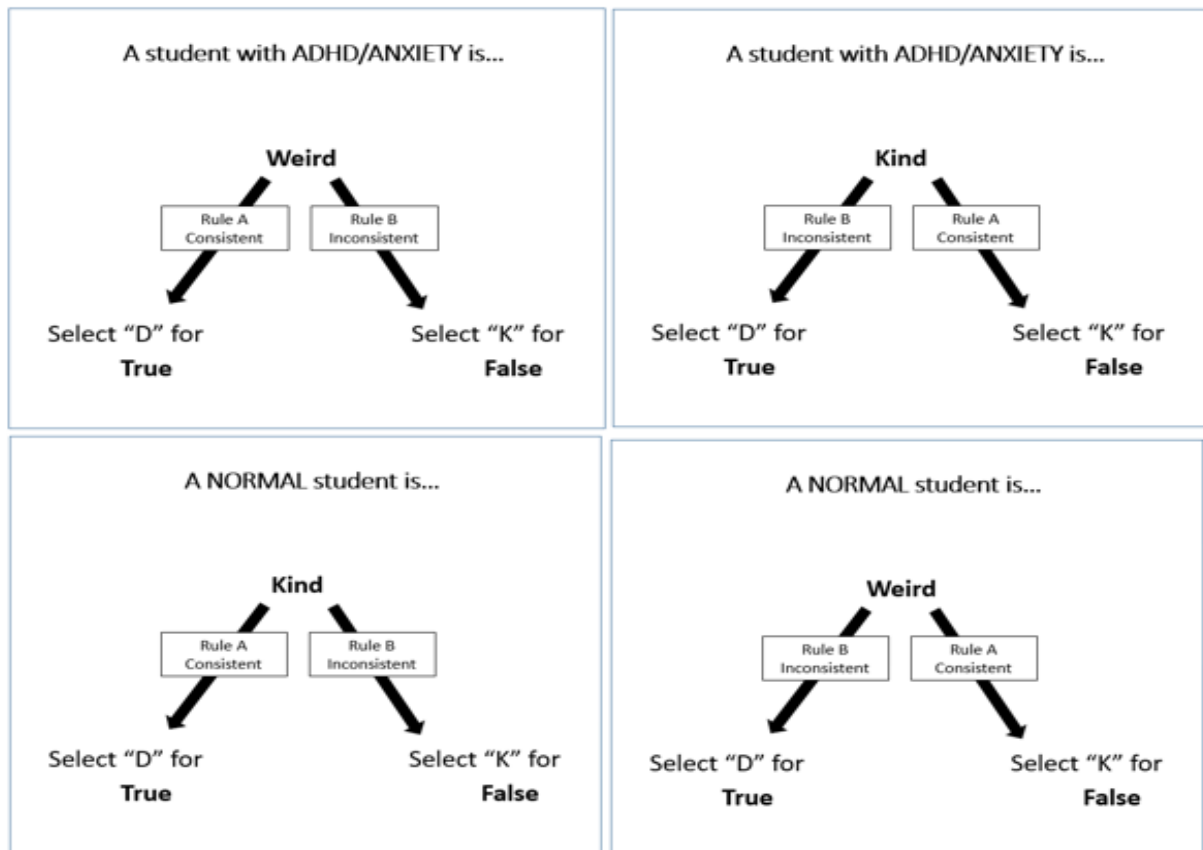


Figure 1. Representation of the screens that appear in the IRAP. Arrows and text boxes imposed for the purpose of this figure. Disorder-Bad (top left) Disorder-Good (top right) Normality-Good (bottom left) Normality-Bad (bottom right)

Results

Implicit Relational Assessment Procedure Data Preparation

IRAP data are primarily based on response latencies defined as the duration of time in milliseconds elapsed from the time the stimulus is presented onscreen to the time the participant correctly responds. These response latency data are transformed into D_{IRAP} scores using the D-algorithm (Barnes-Holmes et al., 2006). The D-algorithm involves a series of steps, as per Barnes-Holmes et al., (2010): (1) Data were only used from the test trial blocks, not the practice blocks; (2) latencies above 10,000ms are eliminated; (3) participants who scored less than 300ms on 10% or more of their test trials are eliminated; (4) twelve standard deviations for the four trial types are calculated (4 SDs from test-blocks 1 and 2, 4 SDs from test blocks 3 and 4, and 4 SDs from test blocks 5 and 6); (5) 24 mean latencies were calculated for the four trial-types in each of the 6 test-blocks; (6) difference scores were calculated from the mean latencies of each test block pair of consistent and inconsistent trial-blocks . This was done by subtracting the mean latency of the consistent trials from the mean latency of the corresponding inconsistent trials in each pair (subtracting the smaller mean latency from the larger mean latency); (7) each difference score was then divided by its corresponding standard deviation from step 4. This created 12 D-IRAP scores. (8) Four overall trial-type D-IRAP scores were calculated by averaging the three scores for each trial-type across the three pairs of test blocks (see means and SDs for 4 IRAP trial-types in Table 3).

IRAP Data Analysis

Mean D_{IRAP} scores and standard deviations for the four IRAP trial-type conditions are outlined in Table Z. Positive D_{IRAP} scores indicated stigma consistent responding (i.e. Disorder-Bad/Normal-Good), and negative D_{IRAP} scores indicated stigma inconsistent responding (i.e. Disorder-Good/ Normal-Bad). The graph shows that participants responded more rapidly (e.g., shorter response latencies recorded) in affirming Disorder-Bad-False/Normal-Bad-False versus the converse (e.g., Disorder-Bad-True), and participants also responded more rapidly when affirming Disorder-Good-True / Normal-Good-True versus the converse (e.g., Disorder-Good-False). In order to facilitate comparisons across trial-types using SPSS software for statistical analysis, the data for trial-types 1 and 2 were inverted (multiplied by -1; as per Hussey, Thompson, et al., 2015). Fig. 2 shows the (un-inverted) trial-type data for visual analysis.

Table 3.

Mean IRAP D-Scores and standard deviations for the four IRAP trial-types (n=30)

Assessment	<i>M(SD)</i>
Stigma IRAP	
<i>Disorder-Bad</i>	-.292 (.384)*
<i>Disorder-Good</i>	-.559 (.680)*
<i>Normal-Bad</i>	.287 (.480)*
<i>Normal-Good</i>	.459 (.641)*

* $p < .05$ significant IRAP effect (one-sample t test; significant from zero)

One-sample t -tests were carried out to examine whether the IRAP D-scores differed significantly from zero, and to determine the presence of an IRAP effect. Each trial type was

found to be significant [Disorder-Bad: $t(29)=3.716$, $p=.001$; Disorder-Good: $t(29)=4.030$, $p=.001$; Normal-Bad: $t(29)=2.928$, $p=.008$; Normal-Good: $t(29)=3.510$, $p=.002$]. See Figure 2.

A one-way repeated measures ANOVA was carried out to compare D -scores across the four trial-type conditions. Mauchly's Test of Sphericity indicated that the assumption of sphericity had been violated, $\chi^2(5) = 14.611$, $p = .012$. Wilks' Lambda was used for the results as this is a multivariate test which does not require sphericity (Pallant, 2013). There was no statistically significant main effect for trial-type, Wilks' Lambda = .85, $F(3,27) = 1.278$, $p = .308$. This indicates that D -IRAP scores did not differ significantly between trial-types.

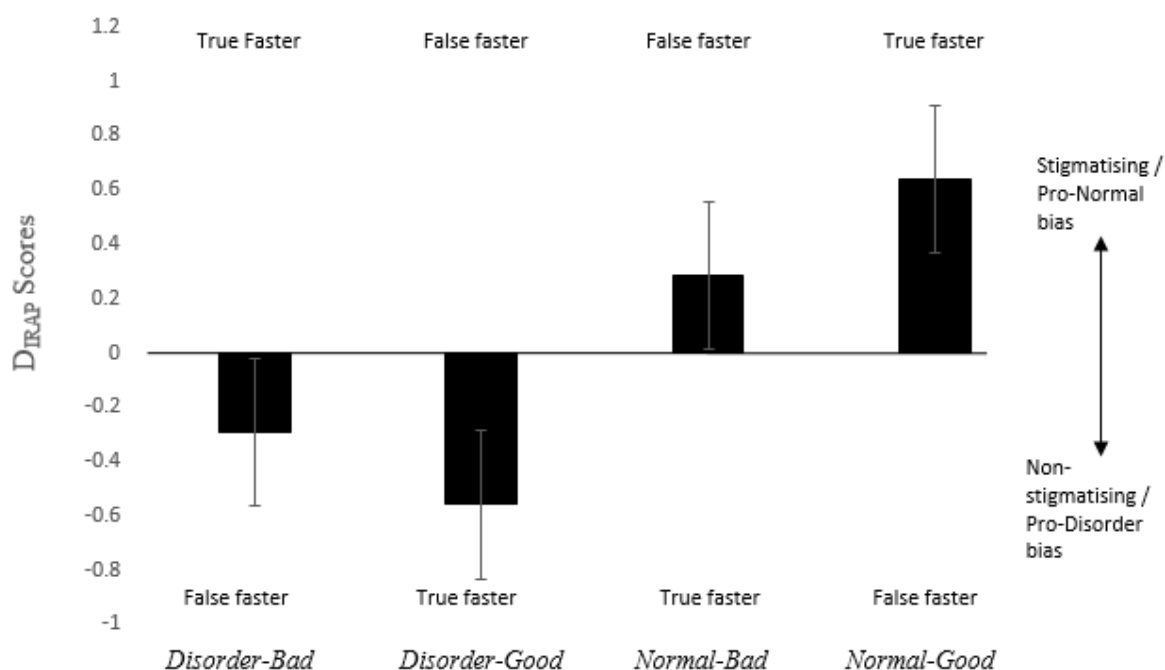


Figure 2. Mean Stigma D -IRAP Scores. Positive D -scores (above the x-axis) represent Normal-Good/ Disorder-Bad responding; negative D -scores (below the x-axis) represent Disorder-Good/ Normal-Bad responding.

Explicit Measures Data

Table 4 below illustrates the mean scores and standard deviations for the self-report questionnaires. The maximum score on the SAB questionnaire is 56 and higher scores indicate higher stigmatising attitudes. The mean score of 18.96 indicates that participants had low self-reported stigmatising attitudes overall. Similarly, on the DMISS participants also reported low stigmatising attitudes, with a mean score of 70.21. Sub-scales also reflected low self-reported stigmatising attitudes.

Table 4.

Self-report data summary for the SAB and the DMISS.

Scale (n=30)	Mean (max score)	Standard Deviation
SAB Total	18.92 (56)	4.383
DMISS Total	70.21 (196)	19.258
- DMISS Treatability	10.21 (21)	6.143
- DMISS Relationship Disruption	15.58 (42)	5.594
- DMISS Hygiene	9.13 (28)	4.684
- DMISS Anxiety	16.79 (49)	8.423
- DMISS Visibility	13.08 (28)	3.309
- DMISS Recovery	7.21 (14)	4.433
- DMISS Professional Efficacy	7.46 (14)	3.476

Correlations. Correlational matrices examined associations between the IRAP trial-type data and the data from explicit measures, and demographic data. Before the correlation was carried out, explicit self-report data were tested for normality using the Kolmogorov-Smirnov Test. A number of subscales on the DMISS violated the assumptions of normality, therefore the non-parametric Spearman's Rank Order Correlation was used.

As expected, there was a statistically significant positive correlation between the SAB score and the overall DMISS score, $r = .425$, $p = .039$. There was a statistically significant negative correlation between the Disorder-Bad trial-type and years working as a teacher, $r = -.439$, $p = .032$. There was also a strong negative correlation between the Disorder-Good trial-type and years working as a teacher, $r = -.562$, $p = .004$. The Disorder-Good trial-type also correlated negatively with teachers' age, $r = -.428$, $p = .037$. There were no further statistically significant correlations between IRAP trial types and explicit measures. A full correlational matrix can be found in Appendix I.

Discussion

Study 1 aimed to investigate attitudes of primary school teachers towards students with mental health problems, specifically ADHD and anxiety. Potential stigmatising attitudes were investigated using explicit and implicit measures. The IRAP compared students with ADHD/anxiety to “normal” students, using “good” and “bad” relations.

Overall the IRAP results indicated non-stigmatising attitudes towards ADHD/anxiety. Each trial type result was statistically significant from zero, indicating a significant IRAP effect on all trial types. Teachers demonstrated a *Disorder-Bad-False* relational bias and a *Disorder-Good-True* bias. For example, on “A student with ADHD/Anxiety is (stigmatising word)” trial types, teachers responded faster when “false” was the required response. Similarly, on “A student with ADHD/Anxiety is (positive word)” trial types, teachers responded faster when “true” was the required response. Based on an RFT interpretation of IRAP results, this suggests that teachers’ pre-existing verbal histories relate students with ADHD/anxiety to positive words as opposed to negative, stigmatising ones. This can be interpreted to mean that teachers did not show stigmatising attitudes towards students with mental health problems. Teachers also demonstrated *Normal-Good-True* and *Normal-Bad-False* biases. Responses to “A Normal student is (positive word)” were faster when “true” was the required response and responses to “A Normal student is (stigmatising word)” were faster when “false” was the required response.

When reviewing all IRAP trial type results together it can be interpreted that teachers as whole responded in a positive manner towards all students. They related both normal students and students with ADHD/anxiety to positive traits. Teachers also did not show a negative bias towards either group of students. These results are interesting as they seem to contradict previous research which has suggested that adults report stigmatising attitudes towards children with mental health problems (Pescosolido et al, 2008). It also contradicts

previous IRAP research carried out with teachers which found that teachers demonstrated a negative bias towards students with autism (Kelly & Barnes-Holmes, 2013). Although it should be noted that Kelly & Barnes-Holmes were not specifically looking at stigmatising attitudes and that they were looking at attitudes towards students with autism, not mental health problems. The disparity in results could indicate differences in attitudes towards the differing disorders.

The results from the implicit measures were similar to the results of the explicit, self-report measures. In the explicit measures, participants self-reported low stigmatising attitudes on both the SAB and the DMISS and all its subscales. However it is important to note that while both implicit and explicit measures provided similar results, no statistically significant correlations were found between the IRAP and the self-report measures. Previous research has also failed to find correlations between the IRAP and explicit measures (Ritzert et al., 2016; McEntaggart, Barnes-Holmes & Adekuoroye, 2016).

The correlation matrix provides some interesting results. There were statistically significant negative correlations between both of the *Disorder* trial types and years spent working as a teacher. This suggests that increased scores on the “How many years have you worked as a teacher?” question correlated with decreased scores on the Disorder-Bad and Disorder-Good trial types. Low scores (scores below zero) on these two trial types indicated a non-stigmatising, pro-disorder bias. Therefore it can be interpreted that the longer participants have worked as a teacher, the less stigmatising their attitudes towards students with ADHD/Anxiety. The age of participants also showed a statistically significant negative correlation with the Disorder-Good trial type. These results suggest that as a teacher’s experience and age increases, so does their pro-disorder, anti-stigmatising IRAP responses.

Although no stigmatising attitudes were found in Study 1, it was of relevance and interest to examine what other attitudes teachers may hold towards student with ADHD and

anxiety. Therefore Study 2 aimed to investigate teachers' attitudes in relation to gender and ADHD and anxiety. Specifically whether teachers showed a gender bias in relation to these disorders. There is existing research to suggest that teachers are more likely to report boys for ADHD than girls, even when both are displaying ADHD type behaviours (Scuitto, Nolfi & Bluhm, 2004; Isaksson, Ruchkin & Lindbald, 2016). Furthermore, it is acknowledged that there is an under-reporting of girls with ADHD and they are proportionally under-represented in clinical settings (Rucklidge, 2010). It is of relevance to examine whether teachers demonstrate an implicit gender bias in relation to ADHD, which may offer an explanation for teachers' likelihood to identify boys over girls as having ADHD, and could impact on the under reporting of girls. Very little research has been carried out in relation to gender bias and anxiety disorders. The small pool of research that is currently available uses explicit measures, an implicit measure such as the IRAP has not been used before to explore the relationship between gender bias and anxiety disorders. Thus, Study 2 aims to expand and enrich the existing literature on gender bias and ADHD by using an implicit measure to examine the topic, and to contribute to the small body of existing research on gender bias and anxiety disorders.

Chapter 3

Study Two

Investigating Teachers' Attitudes Towards Gender and
ADHD/Anxiety.

Study Two

Study 1 used implicit and explicit measures to investigate whether teachers showed stigmatising attitudes towards children with mental health problems. Overall the results of Study 1 found that primary school teachers do not show stigmatising attitudes towards students with mental health issues. These results are relevant as they contribute to the very small pool of knowledge and research on stigma and children. To further explore teachers' attitudes and add to the research in the area, it is appropriate to investigate whether teachers report any other bias in relation to students with mental health problems. It is important to examine teachers whether teachers display a gender bias in relation to mental health disorders as teachers play an important role in the identification and referral of such issues. Some research has indicated that teachers are often the first to recognise and suggest the presence of disorders such as ADHD in children (Sax & Kautz, 2003). It is also common clinical practice to include reports from teachers when considering making a diagnosis of mental health disorders (American Academy of Pediatrics 2000; American Academy of Child and Adolescent Psychiatry 2007). However, the gender of the child may impact the teacher's ability or likelihood of recognising certain disorders (Loades & Mastroiannopoulou, 2010). Due to these factors, it is of relevance to examine whether teachers demonstrate an implicit gender bias, and the direction of such a bias.

Study 2 aims to examine whether primary school teachers report a gender bias in relation to common childhood mental health problems, specifically ADHD and anxiety. Is a bias shown favouring ADHD/Anxiety for one or other gender when information is held constant? Study 2 aims to investigate if primary school teachers respond in a gender biased manner towards ADHD and anxiety, that is, do teachers more readily affirm ADHD-Boys versus ADHD-Girls or vice versa, and do teachers more readily affirm Anxiety-Girls versus Anxiety-Boys or vice versa. Previous research in this area, which has primarily used explicit

measures, has provided varying results. As with Study 1, implicit and explicit attitudes will be measured. Implicit attitudes will be measured using a behaviour analytic tool, the IRAP, and explicit attitudes will be measured using self-report questionnaires, in this case vignettes and Likert-Scale questionnaires.

Method

Recruitment Procedure

Six primary schools in the South Dublin and North Wicklow catchment area were contacted in the first instance by email or telephone call. The researcher communicated with the relevant liaison person in the school (principal/vice-principal/board of management representative), explained the research aims and requirements, and provided an information sheet. At the discretion of the relevant school principal, either the researcher met with the teachers to inform them about the study, or the principal themselves spoke with the staff to explain the research to them. Teachers within the schools subsequently signed up voluntarily if they wished to take part in the research. Participants were required to be qualified primary school teachers, and currently employed as teachers in a primary school setting to be included in the study. Non-teaching principals and vice-principals were excluded.

Participants

Thirty-eight teachers took part in the current study. Data from two participants were excluded from the analysis as they failed to meet predetermined pass criteria for the IRAP task (see p. 45). The final sample for analysis consisted of 32 females and four males, ranging in age from 23 to 63 ($M = 38.94$, $SD = 13.11$). Demographic information and participant characteristics are reported in Table 5.

Ethics

Participant sample was comprised of typically-developing adults. Principal ethical concerns were with voluntariness, informed consent and data protection. Permission was granted from each of the schools to take part in the study. Teachers from the schools volunteered to take part in the research, and were provided with a consent form and an information sheet at the start of each session (Appendix A&B). Participants were informed

Table 5.

Participant demographic information

Demographic Question	Number of teachers	
Age group of current students?		
4-6	7	
7-9	9	
10-12	12	
More than one age group	8	
Received education/training in mental health?		
Yes	23	
No	13	
Experience working with students with mental health problems		
No experience	0	
Little experience	5	
Some experience	20	
Quite a bit of experience	11	
A lot of experience	0	
	M	SD
Years teaching	16.81	13.69

that participation was voluntary and that all data would be treated with full confidentiality and coded from the outset. Thus, once they had completed the IRAP, due to the anonymous nature in which the data are stored, participants were told it would not be possible to remove their data or to receive individual IRAP results. Participants were de-briefed and thanked at the end of each research session.

As the topic of mental health in children could have caused the teachers some concern about children they were teaching, contact information was provided on the information sheet for appropriate child mental health services in Dublin. The current research was conducted in accordance with current ethical standards dictated by the appropriate professional bodies, and

was approved by the Research Ethics Committee at the Department of Psychology, Maynooth University.

Setting

Research was carried out on location in six schools that took part in the study. For five of schools the research was carried out during school hours, for one school the research was carried out after school hours. Research sessions were conducted in available empty rooms in the schools to minimise distractions. The researcher was present during all sessions but remained out of sight of the participants during the IRAP task.

Materials

The Implicit Relational Assessment Procedure (IRAP; Barnes-Holmes et al., 2006). The IRAP is a computer-based programme which requires participants to quickly and accurately respond to presented stimulus relations and automatically records participant data including percentage of correct responses and response latency data (duration). The IRAP was delivered to participants on the researcher's laptop provide detail as per previous research. The stimuli that the IRAP presents onscreen are broken down into three categories: label stimuli, target stimuli and response options. Label stimuli are presented at the top of the screen, target stimuli are presented in the middle of the screen and response options at the bottom of the screen. . Label stimuli were the words "ADHD" and "Anxiety". Target stimuli were boy's names and girl's names (e.g., Kevin, Becky, Ciara, Peter) and response options were "True" and "False". From this, four IRAP trial types were established, (a) ADHD-Boys (b) ADHD-Girls (c) Anxiety-Boys (d) Anxiety-Girls (see Table 6 for full list of stimuli).

Explicit measures. Two explicit, self-report measures were used to assess gender bias. The measures were a vignette based task and a Likert-scale questionnaire, both of which were paper questionnaires and participants completed them using a pen. A demographic

questionnaire was also completed by participants. More complete details of explicit measures can be found in Appendix ?

Demographic questionnaire. The demographic questionnaire was created by the researcher and this asked participants to indicate their gender, age, length of teaching experience, what age group they taught, whether they had any specific mental health training, and how much experience, on a scale of 1-5 (1 was none and 5 was a lot), they felt they had in working with children with mental health problems.

Vignettes. Vignettes have frequently been used in the area of mental health research (Loades & Mastroyannopoulou, 2010; Headley and Campbell, 2011; Groenewald, Emond & Sayal, 2009), and two were used in the current study. Vignettes depicted primary school aged students displaying ADHD type behaviours and anxiety disorder type behaviours. The ADHD vignette (Groenewald, Emond & Sayal, 2009) was used in previous research and was based on DSM-IV criteria (American Psychological Association, 1994). The original vignette was adjusted in two ways. Terminology was changed to fit to the Irish primary school system (e.g. changed from “Year 5” to “3rd class”). Further, the original vignette describes a child of a specific gender. As the aim of the study was to examine gender bias, all personal pronouns were made gender neutral (e.g. student’s name was changed to Student X, “she” was changed to “they”, “her” changed to “their” etc.). The Anxiety vignette (Headley and Campbell, 2011) was also used in previous research. This vignette was also based on the DSM-IV criteria. The original authors also validated the vignette by receiving feedback on the vignette from experts in childhood psychological disorders. Again, the original anxiety vignette was adjusted similarly as the ADHD vignette; terminology was adjusted to an Irish primary school context, and all personal pronouns were made gender neutral. Below each vignette teachers were asked “In your opinion, does the above paragraph describe the behaviour of a: _____”, participants were then given the option of selecting the word “boy”, “girl” or

“either”. The participants were instructed to circle whichever answer they felt was most appropriate.

Likert Questionnaire: The researcher designed a Likert-scale based questionnaire to further investigate explicit attitudes. As the majority of previous research in this area has used vignettes, no questionnaires to assess gender bias were readily available in the literature. The Likert-type scale is a frequently used measure in research and is commonly used to assess attitudes (Cohen, Manion & Morrison, 2000). The Likert scale questionnaire provided participants with a number of statements regarding ADHD and anxiety and gender. A 5 point Likert scale was used to measure responses, where 1 was “Strongly Disagree”, 3 was “Neutral” and 5 was “Strongly Agree”. Participants were asked to circle a number corresponding with their opinion on the given statement. As 3 on the Likert scale was labelled neutral, this was scored as 0 in analysis, resulting in a score of 1-4, where scores closer to 4 indicated stronger agreeance and scores closer to 1 indicated stronger disagreement.

Procedure

Participants were given an information sheet informing them about the nature of the study, this was also explained to them by the researcher. Once they understood the nature of the study they were asked to sign a consent form, one copy of which was returned to the researcher and one copy which they kept themselves. Participants were then asked to fill out the explicit measures, consisting of the demographic questionnaire, vignettes and Likert scale questionnaire. All paper questionnaires were given an alpha-numeric code which matched their participant code for the IRAP. When the participants finished the paper questionnaires they were asked to place them in an envelope to provide anonymity. Following the

demographic questionnaire participants completed the IRAP, the procedure for which is outlined below.

IRAP Procedure. All participants completed the same IRAP. Before the IRAP participants received visual instructions, which were also discussed with the researcher, to ensure that participants understood the concept and requirements of the IRAP. Participants were informed that they would be asked to respond to stimuli which were possibly consistent and inconsistent with their beliefs but that this was part of the procedure. The researcher also emphasised the importance of both speed and accuracy during the IRAP. Participants were also informed that if they needed to, they could take a break after each block.

The IRAP consists of a number of trials, which are grouped into blocks. On each trial the participant is presented with a label stimulus (ADHD or Anxiety), a target stimulus (Boy's name or Girl's name) and response options (True or False). All stimuli appear on screen simultaneously. Participants are required to select one of the two available response options (true or false) by pressing "d" or "k" on the laptop keyboard. If the participant selects the correct response option, the stimuli are cleared from the screen for 400ms and a new randomised combination of stimuli are presented. If the participant selects the response option designated as incorrect for the particular trial-block, a red "X" appears on the screen and remains on the screen until the participant selects the response option designated as correct, after which the procedure continues. For half of the blocks participants were required to respond in a Boys-ADHD/Girls-Anxiety consistent manner. For example, when presented with the label "ADHD" and the target "Kevin" the correct response would be "True". Similarly when presented with the label "Anxiety" and the target "Amy" the correct response would be "True". For the other half of the blocks participants were required to respond in a Boys-ADHD/Girls-Anxiety inconsistent manner. During these blocks if presented with the

label “ADHD” and target “Kevin” the correct response would be “False”. If presented with the label “Anxiety” and target “Amy” the correct response would also be “False”.

The IRAP consisted of at least two practice blocks (one consistent block and one inconsistent block), however participants could complete up to six practice blocks depending on the speed and accuracy of the participant responses. Practice blocks were followed by six test blocks (three consistent and three inconsistent blocks). Each block consisted of 24 trials – each of the 12 target stimuli were presented with the label stimuli in a randomised combination and order. The combination of stimuli yielded four IRAP “trial types”: (a) ADHD-Boys (b) ADHD-Girls (c) Anxiety-Boys (d) Anxiety-Girls. Before each block participants were presented with one of two rules for responding. The rules were, A. “During the next phase please respond as if boys have ADHD and girls have anxiety” and B. “During the next phase please respond as if girls have ADHD and boys have anxiety”. Consistent IRAP trial-types presented the following relations: (a) Boy’s name-ADHD-True (b) Girl’s name-ADHD-False (c) Boy’s name-Anxiety-False (d) Girl’s name-Anxiety-True. Participants were required to affirm Consistent and Inconsistent IRAP trial-types on alternate trial-blocks. Inconsistent IRAP trial-types presented reversed relations and on these trial-blocks participants were asked to affirm: (a) Boy’s name-ADHD-False (b) Girl’s name-ADHD-True (c) Boy’s name-Anxiety-True (d) Girl’s name-Anxiety-False.

The IRAP requires participants to respond as quickly and accurately as possible. In order to achieve this two criteria are set: (a) 80% accuracy and (b) maximum 2000ms median response latency. If participants met these criteria during the two practice blocks they moved on to the test blocks. If they did not meet these criteria they were presented with the practice blocks again until they achieved a criterion performance (up to a maximum of 6 practice blocks). The reason for the latency criterion is to ensure that the IRAP is accurately assessing “implicit attitudes” via immediate and brief relational responding, with the behavioural

system being put under pressure to respond quickly (Barnes-Holmes, Barnes-Holmes, Stewart & Boles, 2010). The accuracy criteria is implemented to avoid high rates of inaccurate responses which would lead to difficulty in interpretation of results (Hughes & Barnes-Holmes, 2011).

Table 6

Stimuli and Response Options for the Gender IRAP

Gender IRAP	
ADHD	Anxiety
Kevin	Amy
Mark	Becky
Peter	Ciara
Paul	Sarah
James	Jane
David	Laura
True	False

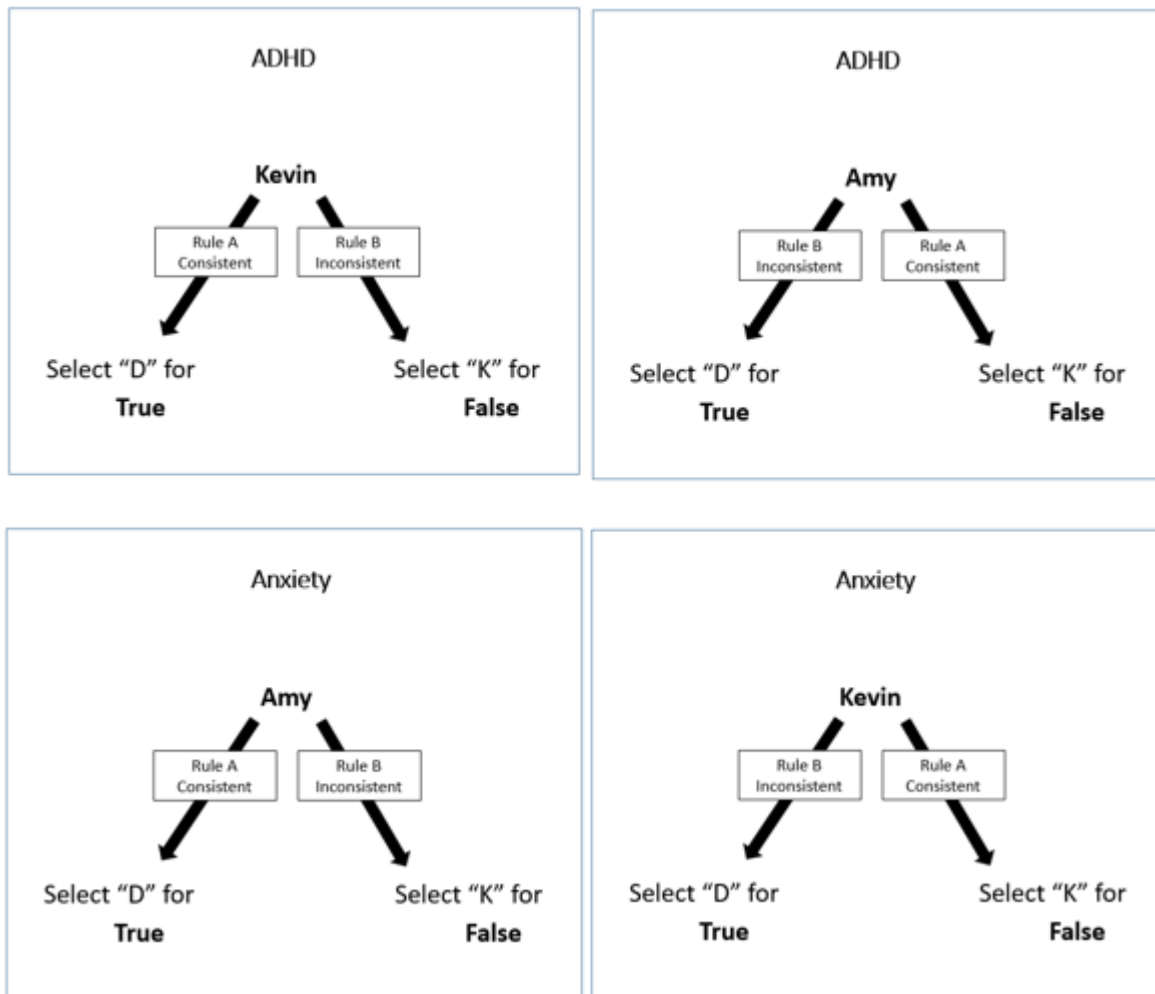


Figure 3. Representation of the screens that appear in the IRAP. Arrows and text boxes imposed for the purpose of this figure. Boy-ADHD (top left) Girl-ADHD (top right) Girl-Anxiety (bottom left) Boy-Anxiety (bottom right).

Results

Table 7 contains the mean scores and standard deviations of the implicit and explicit measures used.

IRAP Data Preparation

IRAP data are primarily based on response latencies defined as the duration of time in milliseconds elapsed from the time the stimulus is presented onscreen to the time the participant correctly responds. These response latency data are transformed into D_{IRAP} scores using the D-algorithm (Barnes-Holmes et al., 2006). The D-algorithm involves a series of steps, as per Barnes-Holmes et al., (2010): (1) Data were only used from the test trial blocks, not the practice blocks; (2) latencies above 10,000ms are eliminated; (3) participants who scored less than 300ms on 10% or more of their test trials are eliminated; (4) twelve standard deviations for the four trial types are calculated (4 SDs from test-blocks 1 and 2, 4 SDs from test blocks 3 and 4, and 4 SDs from test blocks 5 and 6); (5) 24 mean latencies were calculated for the four trial-types in each of the 6 test-blocks; (6) difference scores were calculated from the mean latencies of each test block pair of consistent and inconsistent trial-blocks. This was done by subtracting the mean latency of the consistent trials from the mean latency of the corresponding inconsistent trials in each pair (subtracting the smaller mean latency from the larger mean latency); (7) each difference score was then divided by its corresponding standard deviation from step 4. This created 12 D-IRAP scores. (8) Four overall trial-type D-IRAP scores were calculated by averaging the three scores for each trial-type across the three pairs of test blocks (see means and SDs for 4 IRAP trial-types in Table 7).

Table 7

Means and Standard Deviations of IRAP Scores and Explicit Measures

Assessment	<i>M (SD)</i>
Gender Bias IRAP	
<i>Boys-ADHD</i>	.569 (.370)*
<i>Girls-ADHD</i>	-.183 (.444)*
<i>Boys-Anxiety</i>	.310 (.405)*
<i>Girls-ADHD</i>	-.414 (.389)*
Questionnaire scores	
<i>Boys are more likely to have ADHD than girls</i>	3.30 (1.28)
<i>Girls are more likely to have an anxiety disorder than boys</i>	2.77 (1.17)
<i>Girls are more likely to have ADHD than boys</i>	1.58 (.906)
<i>Boys are more likely to have an anxiety disorder than boys</i>	1.77 (.929)

**p* < .05 significant IRAP effect (one-sample *t* test; significant from zero)

IRAP Data Analysis

Mean D_{IRAP} scores for the four IRAP trial-type conditions are outlined in Figure 4. Positive D_{IRAP} scores indicated stereotype consistent responding (i.e. Boys-ADHD/Girls-Anxiety), and negative D_{IRAP} scores indicated stereotype inconsistent responding (i.e. Girls-ADHD/ Boys-Anxiety). The graph shows that participants responded more rapidly (e.g., shorter response latencies recorded) in affirming Boys-ADHD-True / Girls-Anxiety-True versus the converse (e.g., Girls-ADHD-True), and participants responded more rapidly when affirming Girls-ADHD-False / Boys-Anxiety-False versus the converse (e.g., Boys-ADHD-False). In order to facilitate comparisons across trial-types using SPSS software for statistical analysis, the data for trial-types 2 and 4 were inverted (multiplied by -1; as per Hussey, Thompson, et al., 2015). Fig. 4 shows the (un-inverted) trial-type data for visual analysis.

A one-way repeated measures ANOVA was carried out to compare IRAP D-scores across the four trial-type conditions. Mauchly's Test of Sphericity indicated that the assumption of sphericity had been violated, $\chi^2(5) = 21.830, p = .001$. Wilks' Lambda was used for the results as this is a multivariate test which does not require sphericity (Pallant, 2013). There was a statistically significant effect found, Wilks' Lambda = .31, $F(3,33) = 24.733, p < .0005$, multivariate partial eta squared = .692, indicating a very large effect size (as suggested by Cohen, 1988).

Pairwise comparisons using the Bonferroni adjustment revealed that there was a statistically significant difference in IRAP D-scores between all four IRAP trial-types. Boys-ADHD and Girls-ADHD ($p < .0005$), Boys-ADHD and Boys-Anxiety ($p = .015$), Boys-ADHD and Girls-Anxiety ($p < .0005$) and also between Girl-Anxiety and Girl-ADHD ($p = .015$), Girl-Anxiety and Boy-Anxiety ($p < .0005$), Girl-ADHD and Boy-Anxiety ($p = .001$).

Furthermore, one-sample t-tests were carried out to examine whether the IRAP D-scores differed significantly from zero, and to determine the presence of an IRAP effect. Each trial type was found to be significant (Boy-ADHD: $t(35)= 9.223, p<.0005$; Girl-ADHD: $t(35)= -2.476, p=.018$; Anxiety-Boy: $t(35)=4.601, p<.0005$; Anxiety-Girl: $t(35)= -6.382, p<.0005$).

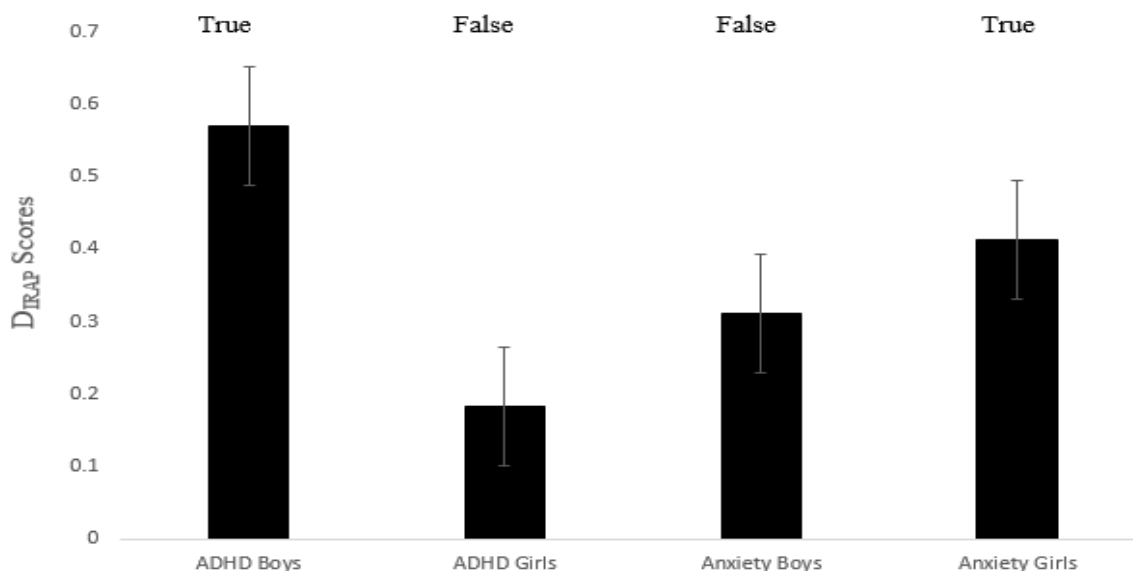


Figure 4. Mean Gender *D*-IRAP Scores. Positive *D*-scores (above the x-axis) represent ADHD-Boys/ Anxiety-Girls responding; negative *D*-scores (below the x-axis) represent ADHD-Girls/ Anxiety-Boys responding.

Explicit Measures Data

Results for vignettes showed that 61% of participants (teachers) responded that Vignette 1 described the behaviour of a boy and 39% of responses said it could describe the behaviour of either a boy or a girl. No participants said that the vignette described the behaviour of girl. For Vignette 2, a total of 58% of teachers responded that the vignette described the behaviour of a girl. Again, 39% of participants of responses said the behaviour could be that of either a boy or a girl and only 3% of participants identified the behaviour as

likely to be that of a boy. Responses were recorded by participants circling the word “boy” “girl” or “either” under the vignettes. The above data is also presented in Table 8 below.

Mean score data and standard deviations for the Likert measure can be found in Table 7 above. Higher scores indicated higher levels of agreement (score range 1-4). The mean score for “Boys are more likely to have ADHD than girls” is 3.30, indicating high agreement with this statement. The mean score for “Girls are more likely to have an anxiety disorder than boys” is 2.70. The majority of teachers (31%) agreed that boys are more likely to have ADHD than girls. Similarly the majority of teachers (31%) agreed that girls are more likely to have an anxiety disorder than boys. Only 3% of participants agreed that girls were more likely to have ADHD than boys. No teachers agreed that boys were more likely to have an anxiety disorder than girls, however 33% were neutral (neither agreed nor disagreed). An individual break down of teachers’ responses on questionnaire data is available in Appendix H.

Table 8

Vignette Data

	Boy	Girl	Either
Vignette 1 (ADHD type behaviours)	61%	0%	39%
Vignette 2 (Anxiety type behaviours)	3%	58%	39%

Percentage of teachers who selected Boy/Girl/Neither for Vignettes.

Correlations. Correlational matrices examined associations between the IRAP trial-type data and the data from explicit measures, and demographic data. As the questionnaire

data were ordinal data, Spearman's Rank Order Correlation was used. No statistically significant correlations were found between the questionnaire data and IRAP trial-type data. The demographic variables "age of participant" and "years spent teaching" were analysed for normality using the Kolmogorov-Smirnov statistic. These variables were found to violate the assumptions of normality and so were also analysed using Spearman's Rank Order Correlation. No statistically significant correlation was found between these variables and the IRAP trial-type data. Correlation between teachers' self-reported experience teaching students with mental health disorders and IRAP trial-type data was analysed using Spearman's Rank Order Correlation. Again, no statistically significant correlations were found (all p 's > 0.05).

Multiple regression. A multiple linear regression was calculated to predict overall D-IRAP scores based on participants' vignette answers. A significant regression equation was not found ($F(2,33) = .346, p = .710$). Neither Vignette 1 nor Vignette 2 results were predictors of overall D-IRAP scores.

Discussion

Study 2 aimed to investigate if primary school teachers responded in a gender biased manner towards ADHD and anxiety, that is, did teachers more readily affirm ADHD-boys versus ADHD-girls, and anxiety-girls versus anxiety-boys, or vice-versa. Potential gender bias was investigated using explicit and implicit measures. The Gender IRAP was used to measure verbal relations between ADHD and anxiety and gender.

Overall the IRAP results indicated strong gender bias consistent responding. Each trial type result was statistically significant from zero, indicating a significant IRAP effect on all trial types. Teachers demonstrated an ADHD-Boy-True relational bias and an Anxiety-Girl-True bias. Teachers also demonstrated an ADHD-Girl-False relational bias and an Anxiety-Boy-False relational bias. For example, on “*ADHD-Boy’s name*” trial types, teachers responded faster when “true” was the required response. On “*Anxiety-Boy’s name*” trial types, teachers responded faster when “false” was the required response. Similar results were found on the Girl trial types, but in the opposite direction. On “*Anxiety-Girl’s name*” trial types teachers responded faster when “true” was the correct response, and on “*ADHD-Girl’s name*” trial types they responded faster when “false” was the correct response. Results from all four trial types show clear stereotype consistent responding and show an evident Boys-ADHD/Girl-Anxiety bias. This suggests that teachers’ pre-existing verbal histories relate girls with anxiety and boys with ADHD.

Explicit measures correspond with the results of the IRAP. The vignette and questionnaire data indicated that teachers associated boys with having ADHD, with the majority of teachers agreeing that boys are more likely than girls to have ADHD. High mean agreeance scores for the statement “boys are more likely to have ADHD than girls” were reported. The explicit measures also indicated that teachers were more likely to associate anxiety with girls, however this association is weaker than the association between boys and

ADHD. The majority of teachers agreed that girls are more likely to have an anxiety disorder than boys, however mean agreeance scores on the Likert scale were lower than that of boys and ADHD. The majority of teachers also disagreed that boys are more likely to have an anxiety disorder than girls, but this does not automatically infer that they agree that girls are more likely to have an anxiety disorder. When presented with descriptions of the disorders (in vignette form), a large majority of teachers were more likely to attribute ADHD type behaviours to boys and anxiety type behaviours to girls.

Results from the ADHD trial types on the IRAP, and the explicit results relating to ADHD are supported by previous research. A number of previous studies have found that teachers are more likely to identify and refer boys for ADHD than girls (Sciutto et al., 2004; Isaksson, Ruchkin & Lindbald, 2016; Gershon, 2002). One study found that even when presented with descriptions of boys and girls displaying identical ADHD type behaviours, teachers were still more likely to refer boys for ADHD evaluation (Sciutto et al., 2004). Although previous research has used explicit measures, it seems to identify teachers as having a gender bias in relation to ADHD. The current research indicates that teachers report an implicit relational bias towards Boys-ADHD, and do not have a verbal history of associating girls with ADHD. In terms of the Anxiety IRAP trial types and explicit results, the findings of the current research may contradict previous research. Previous research has indicated that teachers do not report a gender bias in relation to anxiety, and are equally likely to refer or identify anxiety in both boys and girls (Headley & Campbell, 2010). This seems at odds with the findings of the current research which indicates that teachers do not relate anxiety with boys, on either explicit measures or implicit measures. IRAP results suggest that teachers hold an Anxiety-Girls bias and do not have a verbal history of associating boys with anxiety.

There were no statistically significant correlations between the questionnaire data and the IRAP results. Nor were there any statistically significant correlations between demographic information and IRAP results. This suggests that factors such as age and number of years teaching did not relate to implicit responses. A multiple regression did not find a significant equation to predict overall D-scores based on vignette responses. This indicates that how a participant responded to the vignettes did not predict IRAP scores.

Chapter 4

General Discussion

General Discussion

This research aimed to investigate teachers' attitudes towards students with ADHD and anxiety. Specifically the research was interested in investigating whether teachers showed stigmatising attitudes towards children with these disorders, and whether teachers showed a gender bias in relation to ADHD and anxiety. The research aimed to address the questions, do primary school teachers show an implicit negative bias towards students with mental health issues and what is the nature of any bias shown? Also, is a bias shown favouring ADHD/anxiety for one or other gender when information is held constant? Both implicit and explicit attitudes were of interest in the studies. The importance and validation for exploring implicit attitudes has been discussed frequently in recent literature. Explicit measures can be subject to a host of factors which can impact accurate assessment of attitudes. Issues such as social desirability factors, self-preservation and faking all arise with explicit measures (Hinshaw, 2007; Egloff & Schmukle, 2003). Furthermore it has been suggested that explicit measures may not accurately represent stigma attitudes (Steir & Hinshaw, 2007). This research used a behavioural method of assessing implicit attitudes, the IRAP. A key outcome of the IRAP as a measure is the presence of an "IRAP effect". The importance and relevance of an IRAP effect can be interpreted by how much the IRAP effect differs from zero, where zero is neutral, or no effect. Although an IRAP effect is almost always found, it is important for researchers to establish whether it is a significant effect (i.e. is there a statistically significant difference between the IRAP effect and zero). It should be noted that for this research, all IRAP effects in both studies were found to be significant effects. Furthermore, a recent meta-analysis recommended participant numbers of greater than 29 for sufficient power to conduct analysis in IRAP studies (Vahey, Nicholson & Barnes-Holmes, 2015). This research met this recommendation for both studies. Considering

these factors, it is reasonable to have relative confidence in the results and interpretations of the IRAP data.

Stigmatising attitudes. The results of Study 1 found that teachers did not show an implicit negative bias towards students with ADHD/anxiety. On both “*Disorder*” trial types participants responded in a manner that was inconsistent with stigmatising attitudes. Teachers responded in a *Disorder-Good-True* manner and a *Disorder-Bad-False* manner. From an RFT point of view this suggests that teachers have a verbal history of relating students with ADHD/anxiety with good stimuli as opposed to bad, stigmatising stimuli. Similar results were also found for the “*Normal*” trial types. Teachers responded in a *Normal-Good-True* manner and a *Normal-Bad-False* manner. Again, from an RFT standpoint this suggests that teachers have a verbal history of associating “normal” students with positive traits. Considering the “*Normal*” and “*Disorder*” trial types together, it can be seen that teachers responded in a manner that related both sets of students (“normal” students and students with ADHD/anxiety) with positive traits and did not show a negative bias towards either set. Similar results were found on the explicit measures. Teachers reported low, mean stigmatising scores on all subscales of the DMISS, as well as low, mean scores on the SAB questionnaire.

Very little research exists in the area of stigma towards children with mental health issues, and even less exists which examines implicit attitudes. There are a limited number of comparable studies and the results from the current study seem to be in contrast with these. Previously, researchers have used an IRAP to assess teachers’ attitudes towards students with autism versus normally developing students. Results from this research found that teachers showed a negative bias towards children with autism (Kelly & Barnes-Holmes, 2013). Although the results from the current research and the results from Kelly and Barnes-Holmes seem to contradict each other, it is worth noting that there are some significant differences

between the studies. Primarily, the current research is assessing teachers' attitudes towards students with mental health problems, whereas Kelly and Barnes-Holmes were assessing teachers' attitudes towards students with autism. Autism is a developmental disorder, characterised by delays and impairments in a number of developmental areas, particularly social interaction and communication (Volkmar, Rogers & Pelphrey, 2014). Whereas ADHD is characterised by hyperactive/impulsive behaviours or an inability to attend or a combination of both, and anxiety disorders are characterised by persistent worry, accompanied with physical and or cognitive symptoms (American Psychiatric Association, 2013). The differences in presenting symptoms of the disorders and their associated behaviours may account for differences in attitudes towards students with said disorders, and therefore could explain differing results between this study and Kelly and Barnes-Holmes' study. It should also be noted that the target stimuli were different in the two studies. This current research used words which were specifically identified as stigmatising, whereas Kelly and Barnes-Holmes used simply negative and positive words (such as "bad", "sad", "happy" etc.). The stigmatising words in this study were selected from a list of 250 labels used to stigmatise individuals with mental health problems (Rose, et al., 2007). They were identified as being derogatory terms and were strongly negative in relation to people with mental health problems (Rose, et al., 2007). The chosen stimuli in the Kelly and Barnes-Holmes paper were words with negative connotations, but were not words identified as being used to describe individuals with autism. Despite the fact that the results of these two studies are not similar in their findings, the studies may indeed be complimentary to one another, as they both add to the body of research on teachers' attitudes towards students with disorders. It is worth noting that in his detailed report on stigma, Hinshaw (2005), discussed the necessity for research to investigate attitudes towards various disorders separately, by highlighting the fact that the

assumption that teachers' attitudes towards students with various disorders are the same, could in itself be stigmatising.

Other research has used the IAT as an implicit measure of attitudes towards mental health problems. Kopera et al., (2015) found that mental health professionals, and trainee medical students both reported negative implicit attitudes towards mental illness. Again, results from the current research seem to disagree with this previous research, as the current study did not find negative implicit attitudes towards mental illness. This difference in results between the two studies could be due to a number of factors, however a salient difference is that Kopera et al., used the term "mental illness" in their measure. The term "mental illness" is a broad umbrella term encompassing a host of different disorders, the current research narrowed the focus by referring specifically to ADHD and anxiety. It is possible, therefore, that results from Kopera et al., relate to the wider label of "mental illness", while the results from the current study relate more specifically towards ADHD and anxiety. A further difference between the two studies is that the current study aimed to investigate attitudes towards children specifically, which was not a focus of Kopera et al.,. Their study simply focused on "people" with mental illness and did not specify adults or children.

However in contrast to Kopera et al., a separate piece of research, also using the IAT, indicated that individuals with higher levels of mental health training are less likely to show implicit and explicit negative bias towards individuals with mental health problems (Peris, Teachman & Nosek, 2008). This study examined the implicit and explicit attitudes of different groups towards people with mental illnesses. The groups were divided based on their levels of mental health training. Peris's study found that overall, participants did not show a negative bias towards individuals with mental illnesses, however there was a significant difference between groups. Compared to the groups without mental health training, the groups with mental health training demonstrated more positive implicit and

explicit evaluations of people with mental illnesses. It is worth noting that 60% of teachers in Study 1 of the current research reported having received training in mental health. Although not all teachers in the current study received mental health training, and the training received is not equivalent of participants in Peris and colleagues study (which included clinical psychologists), the training received by teachers may be an influencing factor into the results of the current study.

The results of the current study also contradict the “National Stigma Study – Children” (Pescosolido et al, 2007; Martin, Pescosolido, Olafsdottir, McLeod, 2007) which found stigmatising attitudes in adults towards children. The “National Stigma Study – Children” was a large scale study (over 1000 participants) carried out in the United States, the results of which have produced a number of studies. Researchers identified many stigmatising attitudes from the data, including stigmatising attitudes held by adults towards children with ADHD and childhood depression, stigmatising beliefs towards the treatment of such disorders and a preference for “social distance” from children with ADHD and depression (Pescosolido et al., 2007; Martin et al., 2007; Pescosolido, Jensen, Martin, Perry, Olafsdottir, & Fettes, 2008). The “National Stigma Study – Children” looked at adults as a population group, not specifically teachers. The adult population in the “National Stigma Study – Children” was a general population sample which attempted to be as representative of the US Census as possible. This is in contrast to the current research which examined a population of primary school teachers specifically. Research from the “National Stigma Study – Children” do not give details of participant’s jobs, training, education or exposure to mental health issues. Participants’ exposure to mental health issues would be of relevance, as there is a body of research which indicates that exposure to, and contact with, mental health disorders reduces stigmatising attitudes (Patten et al., 2012; Kolodziej & Johnson, 1996). As the disorders used in this research have a relatively high prevalence rate (ADHD prevalence

rate 3-5% school goers, anxiety disorders prevalence rate of 2.5-5%) it would not be uncommon for teachers to come in contact with students with these disorders (Cartwright-Hatton, McNicol & Doubleday, 2005; Ford, Goodman & Meltzer, 2003; NHS, 2015). Therefore teachers' exposure and contact with children with mental health disorders may result in lower reported stigmatising attitudes in comparison with the general population such as the one in the "National Stigma Study – Children".

The results of this study may be viewed through the lens of the contact theory. The contact theory suggests that personal contact with individuals with mental health problems results in less stigmatising attitudes, and this theory has been examined in a wide range of previous research (Corrigan et al., 2001; Holmes et al., 1999; Roth et al., 2000; Patten et al., 2012). The interpersonal contact theory was first suggested in the 1950's as a way of altering prejudicial attitudes between different ethnic and racial groups, but since then has been applied to other stigmatised groups, such as individuals with mental illnesses (Allport, 1954; Couture & Penn, 2003). A broad review of the literature surrounding contact and stigma reduction was carried out by Couture and Penn. This comprehensive review found that previous contact with individuals with mental illnesses does relate to less stigmatising attitudes (Couture & Penn, 2003). More recently, research was carried out with pharmacy students, employing a contact based intervention to reduce stigmatising attitudes towards individuals with mental health problems, and this was found to be successful in stigma reduction (Patten et al., 2012). While there is a wide body of research on contact theory, no study has focused on teachers as a population group in relation to contact and stigma reduction. Although there are some accepted issues with the contact theory and contact theory research (quality of contact, equality of status between individuals involved, voluntary nature of contact etc.) it should still be considered as an influential variable on stigma results (Couture & Penn, 2003). It should be noted that all the teachers in this study reported having

had at least some experience teaching students with mental health problems, and 46% of teachers said they had either quite a bit, or a lot of experience teaching student with mental health problems. Therefore it is reasonable to say that the participants in this study had contact with students with mental health problems, and thus the contact theory is relevant as a potential explanation for the non-stigmatising implicit and explicit results found in this research.

The Stigma IRAP used in this study produced four different trial types, two “disorder” trial types and two “normal” trial types. Students with ADHD and anxiety were compared against “normal” students. On the two disorder trial types, teachers more rapidly affirmed *Disorder-Good-True* than *Disorder-Good-False* and also more rapidly affirmed *Disorder-Bad-False* than *Disorder-Bad-True*. These results can be interpreted as meaning that teachers did not show an implicit negative bias towards students with ADHD/anxiety. It is worth remembering that first and foremost the data collected by the IRAP is response latency data. When these results and data are considered from a contemporary behaviour analytic viewpoint, shorter latencies indicate stronger relational repertoires and longer latencies indicate weaker relational repertoires. From this, researchers can then infer bias. In this study, shorter latencies were seen on *Disorder-Good-True* trials and *Disorder-Bad-False* trials. Therefore it can be interpreted that teachers have a stronger repertoire of associating students with ADHD and anxiety with positive, non-stigmatising traits and thus we infer that they did not show a negative bias towards these students. A strength of the IRAP is that by examining the four trial types it is possible to see directionality of bias, and patterns of responding which may not be identified by other measures, such as the IAT. From examining the four trial type results, we can see that as well as not showing a negative bias towards students with ADHD/anxiety, teachers also showed a pro-normality bias. Teachers rapidly affirmed *Normal-Good-True* and *Normal-Bad-False* on the “normal” trial types. When looking at the

“disorder” and “normal” trial type results together it can be seen that teachers responded in a pro-student manner overall. That is, response latencies were shorter when teachers were relating positive traits with both the “normal” students, and the students with ADHD/anxiety. This suggests that teachers have a stronger relational repertoire for associating students with positive traits than stigmatising traits. An interesting result from Study 1 found that there was a statistically significant negative correlation between the number of years a teacher had worked for and the two *Disorder* trial types. There was also a statistically significant negative correlation between teachers’ ages and the *Disorder-Good* trial type. Lower scores on the *Disorder* trial types indicated non-stigmatising, pro-disorder responding. These correlations could be interpreted to say that the longer a teacher has taught for, the less stigmatising their attitudes towards students with ADHD/anxiety. Also the older a teacher was, the more likely they were to have a positive bias towards students with ADHD/anxiety. These correlations correspond with previous research by Anderson et al, (2012). Anderson and colleagues found that as teachers gained more experience of working with students with ADHD, the more they reported favourable behaviours towards these students (Anderson et al., 2012). This would also appear to be consistent with the contact theory which was previously discussed.

In summary, Study 1 found that teachers did not show an implicit or explicit negative bias towards students with ADHD/anxiety and did not show stigmatising attitudes. These results seem contrary to previous research which has suggested that adults do show stigmatising attitudes towards children with mental health problems (Martin et al., 2007; Mukolo et al., 2010), and previous research which has shown that teachers show negative bias towards students with developmental disorders (Kelly & Barnes-Holmes, 2013). It is possible that the lack of stigmatising attitudes in teachers may be due to education or contact, as these two factors have been seen to reduce stigmatising attitudes (Rusch et al., 2005). This study contributes to the gap in the literature surrounding teachers’ attitudes and bias towards

students with mental health problems. The study examined both implicit and explicit attitudes. The importance of measuring implicit attitudes has been highlighted in recent literature, as explicit measures alone have been found to be lacking when researching stigma (Dovidio et al., 1997). This study's use of an implicit measure supplements and adds to the existing research, which is lacking in this area. By using the IRAP as a measure of implicit attitudes, the research was able to identify that teachers not only showed an implicit *Pro-Disorder* bias, but also showed an implicit *Pro-Normality* bias, which can be interpreted to say that teachers showed a Pro-Student bias overall. The ability to identify the directionality of potential bias, and to provide this additional information is a trait of the IRAP and would not be possible with other implicit measures. Although no stigmatising bias was found in the results of Study 1, it was of interest and relevance to examine whether teachers showed any other bias towards students with ADHD/anxiety. There is some research to suggest that these mental health disorders, especially ADHD, may be subject to a gender related bias (Groenewald, Emond & Sayal, 2009; Scuitto, Nolfi & Bluhm, 2004; Loades & Mastroyannopoulou, 2010). How teachers identify, recognise and react to students with externalising disorders such ADHD or internalising disorder such anxiety can potentially be influenced by the gender of the child (Loades & Mastroyannopoulou, 2010; Jackson & King, 2004). For this reason it is of relevance to examine whether teachers hold a gender bias in relation to ADHD and anxiety. That is to say, do teachers show a bias favouring ADHD/anxiety for one gender or another when information is held constant?

Gender bias. The results of Study 2 found that teachers responded in a gender-biased manner when relating to ADHD and anxiety. On IRAP results a strong ADHD-Boy/Anxiety-Girls effect was found. On the ADHD trial types teachers responded in an *ADHD-Boy-True* manner and an *ADHD-Girl-False* manner. On the anxiety trial types teachers responded in an *Anxiety-Girl-True* manner and an *Anxiety-Boy-False* manner. Interpreting these results from

an RFT perspective tells us that teachers' verbal histories associate boys with ADHD and girls with anxiety. It also tells us that teachers do not have a verbal history of associating girls with ADHD or boys with anxiety. These results are of particular interest. On the *ADHD-Girls* and *Anxiety-Boys* trial types teachers responded faster when the correct answer was "false". It is worth noting that the IRAP effect on both of these trials was statistically significant. This means that teachers more quickly rejected the association of girls with ADHD than accepted it, and also more quickly rejected the association of boys with anxiety than accepted it. In short, teachers associated boys with having ADHD but not anxiety and girls with having anxiety but not ADHD. Similar results were found in the explicit measures. On the vignette questionnaire the majority of teachers attributed ADHD type behaviours to boys, and anxiety type behaviours to girls. Scores on the Likert-scale questionnaire also showed that teachers more strongly associate boys with ADHD and girls with anxiety.

Again, due to the four trial-type methodology of the IRAP, we are able to examine the directionality of bias in more detail, and this provides us with a richer overview of results. Of particular interest in this study are the results from *ADHD-Girls* and *Anxiety-Boys* trial types. On these trial types, the response latencies were shorter when the required response was "false". Viewing these results from a contemporary behaviour analytic viewpoint, shorter latencies indicate stronger relational repertoires. Therefore it can be interpreted that teachers have a verbal history of rejecting the association of boys with anxiety and girls with ADHD. Looking at all the IRAP results as a whole it can be said that not only did teachers show a gender bias favouring girls for anxiety and boys for ADHD, they also showed a bias for rejecting associations between boys and anxiety and associations between girls and ADHD. Although they may occur at different prevalence rates, both ADHD and anxiety disorders occur in both boys and girls (Mash & Barkley, 2003). Therefore the results of this

study are of interest and importance for their potential practical implications, which will be discussed below.

Although there has been no previous research carried out using implicit measures to assess gender bias towards mental health problems, there is a large body of research which has used explicit measures to address similar topics. In particular the issue of ADHD and gender has received significant attention in the research literature. A number of studies have found that teachers are more likely to identify and refer boys for having ADHD than girls (Sciutto et al., 2004; Isaksson, Ruchkin & Lindbald, 2016; Gershon, 2002; Coles, Slavec, Bernstein & Beroni, 2012). Sciutto and colleagues provided teachers with vignettes of students with ADHD type behaviours and asked teachers how likely they were to refer the child for evaluation. Regardless of symptom variances, teachers were more likely to refer boys than girls. Although it is accepted that there is a higher prevalence rate of ADHD in boys than girls, girls still make up to 30% of ADHD cases (Groenewald et al., 2009). However girls are severely under-recognised and under-reported, with clinical/referral based cases almost 9 times more likely to be boys (Rucklidge, 2010; Sciutto et al., 2004). The importance and relevance of teachers in the identification of these disorders has been widely acknowledged, with teachers often being the first to recognise symptoms and often being asked for their opinions by mental health professionals to aid diagnosis (Sayal et al, 2006; Sax & Kautz; 2003, Coles et al., 2012). The results of the current study may contribute to the body of knowledge around teacher recognition of ADHD. The current research suggests that implicitly teachers do not associate girls with having ADHD, and that they show an implicit gender-bias towards boys having ADHD. These implicit attitudes are relevant as they may contribute to the under-recognition and under referral of girls with ADHD, which has been identified as being an issue (Bussing et al. 2003; Novik et al., 2006; Groenewald, Emond & Sayal, 2009). The implicit gender bias found in this study also relates to the findings of

previous explicit research which has indicated that teachers are more likely to identify boys as having ADHD than girls (Jackson & King, 2004; Sciutto, Nolfi & Bluhm, 2004). The previous research has attributed these findings to various factors such as conceptualisation of the disorder and symptomology, however the current research suggests that teachers may have an implicit gender bias, based on verbal histories which do not associate girls with ADHD.

In terms of gender bias and anxiety, there is far less existing research in comparison with that of ADHD and gender. No previous research has used implicit measures to measure gender bias and anxiety, however some research has used explicit measures. In their research, Headley and Campbell, (2010) provided teachers with vignettes of students describing varying levels of anxiety type behaviours and varying for gender. Teachers were asked how likely they would be to refer the children described to mental health services for anxiety related issues. The results suggested no gender bias, as teachers were equally likely to refer boys and girls. Pearcey and colleagues (1993) also found that gender did not impact on a teacher's likelihood of referring a child to mental health services for anxiety based issues. The results from these previous studies suggest that teachers do not show a gender bias when it comes to recognising and referring students with anxiety disorders. This is in contrast to both the implicit and explicit results of the current study. Results from the explicit measure (vignettes) of the current study found that the majority of teachers (58% of participants) were more likely to report girls as having anxiety related behaviours than boys. The implicit measure results also showed that teachers significantly related girls with anxiety and did not relate boys with anxiety. These results suggest the presence of a gender-bias in relation to anxiety disorders in students. It is worth noting that the small pool of previous research in this area has mainly focused on teachers' recognition of anxiety disorders across genders, or on the likelihood of teacher referral based on student gender, which was not the focus of the

current study. Previous research has also solely used explicit measure to collect information. An explanation for the difference between this study's implicit results and previous studies explicit results may be found in the Relational Elaboration and Coherence (REC) model (Barnes-Holmes et al., 2010).

The REC model postulates that when individuals are responding to explicit measures they engage in extended, complex relational responding. As participants are not under time pressure to respond, they may ignore their initial, automatic, relational response and respond in a manner that has a history of being socially reinforced, based on extended relational responding. This extended responding may produce answers which correspond with one or more relational response other than the relation which the explicit measuring is attempting to target. Essentially, explicit measures are more likely to produce results which are the product of extended, coherent relational networks - whereas the IRAP captures brief, immediate relational responding (Barnes-Holmes et al., 2010). For example, Headley and Campbell (2010) used vignettes describing male and female students with anxiety disorders. Their results found no gender difference in relation to which students teachers were more likely to refer to mental health services for anxiety related issues. The authors suggested that the lack of gender difference found in their study could be due to participants responding to the content in the vignette describing the disorder, as opposed to the gender of the student in the vignette. This could be an example of participants engaging in extended relational responding and providing responses based on socially reinforced rule governed behaviour, as suggested by Hughes, Barnes-Holmes and Vahey (2012). The results from the vignette questionnaires in the Headley and Campbell may not be an accurate representation of the participant's initial, automatic responses to the gender of the student in the vignette. This could explain the disparity between the results of previous research, which has used explicit measures and indicated no gender bias, and the results of the implicit measures in the current research

which suggests the presence of a gender bias. The vignettes used in this study as explicit measures were gender neutral, and teachers were asked to associate a gender with the behaviours described. Headley and Campbell provided the gender of the student in their vignettes. This difference in format and methodology may account for the difference in the results between the explicit measures of the current study and the results of Headley and Campbell.

Relationship between explicit and implicit measures. The results from the DMISS and the SAB used in Study 1 of this research indicated that teachers did not report stigmatising attitudes towards students with mental health problems, this was consistent with the IRAP results. The results from the vignette and questionnaire explicit measures used in Study 2 indicated that teachers were more likely to associate ADHD with boys and anxiety with girls. Again, the explicit data and the implicit data are consistent with each. Interestingly, although both the IRAP and the explicit measures suggested the same results for both studies, there was no statistically significant correlations between the IRAP and any of the explicit measures used in this research. Although this may seem unusual it is not unprecedented. Some previous IRAP studies have failed to find statistically significant correlations between explicit measures and the IRAP (Ritzert et al., 2016; Murphy et al., 2015, Cullen et al., 2009). In a study of ageist attitudes both IRAP results and explicit measure results showed a pro-young bias, however the results were not statistically significant (Cullen et al., 2009). In general the IRAP has been shown to demonstrate concurrent validity with established explicit measures of targeted attributes (Golijani-Moghaddam, Hart & Dawson, 2013). In a review of IRAP validity Moghaddam and colleagues found that subject specific IRAPs have correlated in expected ways with established explicit measures of many phenomena including spider fear, sexual practices, obsessive-compulsive tendencies, self-esteem and diet (Golijani-Moghaddam, Hart &

Dawson, 2013; Nicholson & Barnes-Holmes, 2012a, 2012b; Stockwell et al., 2010; Nicholson, McCourt & Barnes-Holmes, 2013; Vahey et al., 2009; Barnes-Holmes et al., 2010). These studies have contributed to supporting concurrent validity in relation to the IRAP. The lack of statistically significant correlations in the current research may be due to the explicit measures used. As the areas of focus in the current studies are lacking in research, there are very few established measures for assessing stigma towards children or students with ADHD or anxiety and none in relation to gender bias. Explicit measures used in the current research were adapted from existing measures of stigma to relate to children/students. Had appropriate, established and validated explicit measures been available, these may have been more likely to produce statistically significant correlations with the IRAPs.

However, although there were no statistically significant correlations between the explicit and implicit results, and explicit scores did not predict IRAP scores or vice versa, it is still of value to note that in both studies the explicit and implicit measures produced similar results to each other. Both implicitly and explicitly teachers showed non-stigmatising attitudes, and both implicitly and explicitly teachers demonstrated a gender bias towards ADHD and anxiety.

Limitations and Future Research. As with all research, this research comes with some limitations which should be noted. A consideration for the first study relates to the label stimuli. Participants were presented with the label stimulus “A student with ADHD/Anxiety is...” This sentence combines both students with ADHD and anxiety together. It is plausible that teachers have different opinions of students with these disorders and this stimulus, and therefore the data, do not separate the two. An option may have been to use a stimulus such as “A student with a mental illness is...” However, the overall aim of this research was to look at attitudes towards ADHD and anxiety specifically. “Mental illness” is a broad term and includes disorders beyond ADHD and anxiety. Indeed Hinshaw (2005) recommends that

in order to enrich stigma research, researchers should move away from using broad terms such as “mental illness” and examine specific disorders. This research is a step in that direction. Future research may consider separating these disorders, and comparing each one individually to “normal” students. Of further note is that the length of the sentences in the stimuli for Study 1 may have had an impact on reaction times. This is in comparison to Study 2, which used single word label stimuli (“ADHD” and “Anxiety”). However a key aspect of the IRAP is the ability to use full and naturalistic sentences, and indeed this method has been used many times previously (e.g. Hussey & Barnes-Holmes, 2012; Nicholson & Barnes-Holmes, 2012). Recent research has also supported the use of naturalistic sentence structure in the IRAP (Kavanagh, Hussey, McEnteggart, Barnes-Holmes & Barnes-Holmes, 2016).

For Study 2 there were no previously published, readily available questionnaires to assess gender bias. The researcher created the questionnaires used, therefore the validity and reliability of the measures have not been established. Currently the most common form of assessing gender bias is through the use of vignettes. For future research the development of another measure may be useful.

A final limitation of the study relates to counter-balancing the order of consistent and inconsistent IRAP blocks. An unequal number of participants received consistent versus inconsistent trials first. This was not deemed problematic as IRAP research to-date has not found any significant impact of the order of block presentation (Barnes-Holmes et al., 2010; Heider, Spruyt & De Houwer, 2015; McKenna, Barnes-Holmes, Barnes-Holmes, & Stewart, 2007; Ritzert et al., 2016).

Conclusion and practical implications. This research sought to add to the very small existing body of research surrounding attitudes towards children with mental health problems. Even more-so, it aimed to add to the specific area of stigma and children with

mental health problems, an area in which there is a considerable dearth of research. This research makes a novel contribution to the literature by using a behaviour analytic tool to assess the implicit attitudes of teachers towards children with mental health problems. The use of an implicit tool has not previously been used to examine stigmatising attitudes in teachers, or gender bias.

Overall the research has found that teachers do not report implicit or explicit stigmatising attitudes towards children with ADHD/anxiety. Teachers demonstrated a *Disorder-Good-True bias* relational bias and a *Disorder-Bad-False* relational bias. These results were significantly correlated with teachers' years of experience teaching. The *Disorder-Good-True* bias was significantly correlated with a teacher's age. Teachers also reported low stigmatising attitudes on explicit measures. These results may seem at odds with other existing research which suggests that people are likely to hold stigmatising attitudes towards individuals with mental health problems, however this research focuses on teachers and children. The correlations found in this research suggest that older, more experienced teachers show less stigmatising attitudes. As a practical implication this finding suggests that younger, less experienced teachers could benefit from further education or interventions to reduce potential stigmatising attitudes. The current research broadens and diversifies the existing stigma research by highlighting the specific attitudes of teachers as a population group, and by focusing on the disorders of ADHD and anxiety. Future research would benefit from examining attitudes towards students with further mental health disorders, and indeed examining attitudes towards ADHD and anxiety separately. This research also highlights the need for appropriate explicit measures of stigma towards children to be developed and validated. It would also be of interest to further examine which variables, such as mental health training or contact with students with mental health problems, influence teachers' stigma attitudes.

The research also found that although teachers may not report a stigmatising attitude towards ADHD and anxiety, they do report a gender bias. Teachers demonstrated a *Boys-ADHD/Girls-Anxiety* relational bias. These implicit attitudes were mirrored in the explicit measure results, which also found teachers more likely to attribute ADHD to boys and anxiety to girls. These results are supported by previous research finding in the area of gender bias and ADHD. This study suggests that teachers hold a relational bias which does not associate girls with ADHD. This implicit attitude may impact on teachers' ability to recognise and report incidents of ADHD type behaviours in girls. The under-reporting of girls with ADHD has been outlined in the literature and in clinical practice as an issue (Bussing et al., 2003, Grskovic & Zentall, 2010). As teachers are often influential in the recognition and referral of such disorders this finding is of significance. Similarly the finding that teachers have a bias which does not associate boys with anxiety may impact their ability to recognise anxiety behaviours in boys. This result in particular is of note, as previous studies using explicit measures have not found a gender bias in relation to anxiety. However these previous studies did not use an implicit measure. It is possible that teachers do hold an implicit gender bias in relation to anxiety, but do not report it on explicit measures due to factors such as social validity concerns. It would be of value for future research to examine in more depth the role gender plays on teachers' attitudes towards students with anxiety disorders. As a practical implication of this research it may be beneficial for teachers' awareness of ADHD in girls and anxiety in boys to be increased through education.

It is evident that the topics of interest covered in these studies are lacking in previous research and would benefit from future investigation. The area of stigma towards children in particular is an area which warrants further investigation and would be an appropriate area of research for implicit measures. Further research can only benefit children with mental health disorders and their teachers.

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Appendices

Appendix A: Information sheet given to participants

INFORMATION SHEET

PLEASE KEEP THIS PAGE FOR YOUR INFORMATION

Research topic: Mental Health in the Classroom: Exploring Teachers' Attitudes Using an Implicit Measure of Attitudes**Information Sheet for Participants:**

You have been invited to participate in a research study. Thank you for taking the time to read this information leaflet. My name is Conor Nolan and this research is being completed as part of my doctoral studies in behaviour analysis and therapy. I am working with Dr. Michelle Kelly and Dr. Carol Murphy, Maynooth University School of Psychology, for whom contact details are available at the end of this sheet. The current study aims to look at how teachers attitudes towards mental health disorders in children.

Why is this research being carried out? With reports of 1 in 10 children experiencing a mental health problem (Ford, Goodman and Meltzer, 2003), it is common that teachers will be exposed to mental health issues in the classroom. This research aims to look at teachers implicit attitudes towards students with mental health problems. Previous research has indicated that student's gender may have an influence on differing attitudes. For example, gender may play a role in whether a student is more likely to be considered to have ADHD or anxiety disorder. Stigma involving negative perceptions is another area which greatly affects mental health problems. Previous research has extensively used explicit measures that ask people to self-report information related to stigma in mental health. However such measures have been reported to have significant limitations and may not be reliable on their own. This research differs by using an implicit measure (the IRAP) to measure implicit attitudes. This means that faster responding is used as an indicator of bias, for example, if a group of participants show faster responding to "thin-positive" compared to "fat-positive", this is interpreted as pro-thin bias. A questionnaire will also be used to measure teacher attitudes to students with mental health disorders such as attention deficit hyperactive disorder (ADHD) or anxiety disorder.

Specific objectives include:

The aim of this research is to investigate primary school teachers' attitudes towards students with mental health issues. These attitudes will be investigated using a computer programme and the researcher will show you how to interact with it. Specifically the research will investigate:

1. Teacher attitudes to students with mental health disorders.
2. Gender bias in attitudes towards an externalising disorder (ADHD) and an internalising disorder (social anxiety disorder).

Who should participate? Qualified primary school teacher in current employment in a teaching capacity.

What does participation involve?

You will then be asked to fill out a demographic questionnaire which will ask questions such as the age and gender of the teacher, how long they have been teaching, what age group they teach, however, please note that this information will not be linked to your name. You will then be asked to fill out questionnaires based on stigma and attitudes towards individuals with psychological disorders. Following this you will be asked to carry out research conducted on a computer programmed called the IRAP. This programme uses word associations and responses and speed or responding is measured automatically. The words involved will relate to ADHD, Anxiety disorder, positive and negative attributes. The researcher will go through the computer programme instructions in detail with participants. The length of time it takes to complete this research will vary depending on individual response times, however it is expected that the whole session will not take longer than 30 minutes. You have the right to withdraw from the study at any time during the process.

Confidentiality

No identifying information such as the name of individual participants or schools participating will be retained or published in any subsequent research article. All data are recorded using a code and not your name. Due to the anonymous nature of the data, once your data have been submitted they cannot be removed from the study. It should be noted that participation is entirely voluntary and you are not obliged to take part and can withdraw at any stage without penalty of any description. As is customary, research data will be retained for 10 years after completion of the study, after which time it will be destroyed.

What will happen to the data from the surveys? The data will be used as part of a doctoral thesis and may be published in an academic journal. If you would like further information about the results of this project, please email me at the address below.

Are there any benefits from my participation? There will be no direct benefit from participation. It is not anticipated that your attitudes will change and this research should not be understood to be an intervention of any kind. It is the aim of the research to contribute to our understanding of attitudes around mental health. It is possible that it may or may not impact on your attitudes but the process is not designed to do so.

What are the risks of taking part in this research study? Due to the use the computer programme and onscreen stimuli, individuals who have photosensitive epilepsy or a history of seizures are advised to avoid participation. Otherwise, it is not expected that there will be any risks involved in taking part. However, should you become concerned about any children you teach after being involved in this study, I have provided a list of supports and contacts at the bottom of this sheet. It is important to note also that this is not a test or examination of ability; it is an exploration into attitudes.

If during your participation in this study you feel the information and guidelines that you were given have been neglected or disregarded in any way, or if you are unhappy about the process, please contact the Head of Department, Dr Andrew Coogan. Tel: (01) 7086624 Email: andrew.coogan@nuim.ie. Please be assured that your concerns will be dealt with in a sensitive manner.

Contact Details

If you have any further questions about the research you can contact:

Name: Conor Nolan, conor.nolan.2015@nuim.ie

Supervisor: Dr. Carol Murphy, Lecturer of Psychology, Maynooth University, carol.a.murphy@nuim.ie, 01 7086723

Should the content of this research cause you any concern, the following organisations may be of help:

Headstrong - www.headstrong.ie

Lucena Clinic – 59, Orwell Road, Rathgar, Dublin 6. 01 492 3596. www.lucena.ie

St. Patrick's University Hospital – James Street, Dublin 8. 01 249 3200. www.stpatrickhosp.ie

St. Joseph's Child, Adolescent and Family Service – St. Vincent's Hospital, Convent Avenue, Richmond Road, Fairview, Dublin 3. 01 8842400. www.svhf.ie

Appendix B: Consent form given to participants

**Maynooth
University**
National University
of Ireland Maynooth

CONSENT FORM***PARTICIPANT:***

I(please print name) consent to participate in experimental psychology research being carried out by Conor Nolan (conor.nolan.2015@nuim.ie), as part of a doctoral thesis. Conor is currently a registered student on a doctoral programme (Doctorate in Psychological Science (Behaviour Analysis and Therapy) at the Department of Psychology, Maynooth University and the research will be conducted under the supervision of the Programme Director Dr. Carol Murphy (Carol.A.Murphy@nuim.ie)

I understand that my participation is completely voluntary and that I may withdraw at any time; but that once my data has been submitted it cannot be removed because it will not be identifiable.

Further more I also agree and understand that:

- Confidentiality is assured and neither my name nor the name of my school will appear on any resultant publication. My personal demographic information will not be identifiable once collected.
- All my data will be assigned a number/letter code from the outset, and will not bear my name.
- All data obtained will be analysed at a group level rather than an individual level, and findings will be reported at a group level.
- The anonymous data will be retained for 10 years and then destroyed.
- I have been advised not to take part in this study if I have a history of photo-sensitive epilepsy, as this research involves use of a computer screen and may pose a risk.
- The computer based experiment will not last longer than 1 hour on any given day and should be about 2 hours in total.
- Data are being collected as part of a doctoral thesis and may be further used for publications.
- I have been assured that my concerns will be dealt with in a sensitive manner.
- I have received this information in an understandable way.
- All my questions at this stage have been answered.

Please sign your name below if you understand and are willing to participate.

Signature:

Date: _____

EXPERIMENTER:

I, Conor Nolan, as primary researcher, accept full responsibility for the care of all research participants and data resulting from research, and I confirm that all the necessary precautions have been taken.

Signature of experimenter: _____ **Date:** _____

Appendix C: Demographic Questionnaire

**Maynooth
University**

National University
of Ireland Maynooth

Please complete this demographic questionnaire as part of doctoral research being carried out by Conor Nolan, under the supervision of Dr. Carol Murphy, Maynooth University. Completing and returning this questionnaire indicates that you have read the information sheet and signed the consent form relating to this research, and that you are aware of issues surrounding confidentiality and data storage/use.

Do not put your name or any other identifying information on this survey form.

Demographic questionnaire

Gender: Male ____ Female ____

Age (in years): _____

How many years have you worked as a teacher? _____

Which age group best describes the class you currently teach? (please tick box below age group)

4-6 years	7-9 years	10-12 years
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Have you ever, as part of your teacher training or otherwise, received education/training in the area of child mental health, ADHD, or anxiety disorder? (please circle Yes or No)

Yes

No

If you answered "yes" to the above question, please give brief details:

On a scale of 1 – 5, how much experience of working with children with mental health problems (such as ADHD or anxiety disorder) in the classroom would you rate yourself as having? Please circle.

Mental health problems do not include: Down's Syndrome, physical disorders such as dyspraxia, cerebral palsy

1	2	3	4	5
no experience	little experience	some experience	quite a bit of experience	a lot of experience

Appendix D: Stigmatising Attitudes and Beliefs Questionnaire (SAB)

Please rate the following statements on how believable you find them

Scale

1 2 3 4 5 6 7

Not at all believable

Completely believable

- | | |
|--|---------------|
| a. Those with psychological disorders are dangerous to others | 1 2 3 4 5 6 7 |
| b. A person with a psychological disorder is unpredictable | 1 2 3 4 5 6 7 |
| c. Those with psychological disorders are hard to talk to | 1 2 3 4 5 6 7 |
| d. I feel that I am different from those with psychological disorders | 1 2 3 4 5 6 7 |
| e. A person with a psychological disorder is the one to be blamed for his or her problems | 1 2 3 4 5 6 7 |
| f. A person with a psychological disorder cannot pull himself/herself together in order to appropriately function in society | 1 2 3 4 5 6 7 |
| g. Those with a psychological disorder will not improve even if they are treated | 1 2 3 4 5 6 7 |
| h. Those with psychological problems will never recover | 1 2 3 4 5 6 7 |

Appendix E: Day's Mental Illness Stigma Scale (DMISS)

Please indicate the extent to which you agree or disagree with the statements listed below using the following scale:

1 2 3 4 5 6 7

completely disagree

completely agree

- ___ 1. There are effective medications for psychological disorders that allow people to return to normal and productive lives.
- ___ 2. I don't think that it is possible to have a normal relationship with someone with psychological disorders.
- ___ 3. I would find it difficult to trust someone with a psychological disorder.
- ___ 4. People with psychological disorders tend to neglect their appearance.
- ___ 5. It would be difficult to have a close meaningful relationship with someone with a psychological disorder.
- ___ 6. I feel anxious and uncomfortable when I'm around someone with a psychological disorder.
- ___ 7. It is easy for me to recognize the symptoms of psychological disorders.
- ___ 8. There are no effective treatments for psychological disorders.
- ___ 9. I probably wouldn't know that someone has a psychological disorder unless I was told.
- ___ 10. A close relationship with someone with [a psychological disorder] would be like living on an emotional roller coaster.
- ___ 11. There is little that can be done to control the symptoms of psychological disorder.
- ___ 12. I think that a personal relationship with someone with a psychological disorder would be too demanding.
- ___ 13. Once someone develops a psychological disorder, he or she will never be able to fully recover from it.
- ___ 14. People with psychological disorders ignore their hygiene, such as bathing and using deodorant.
- ___ 15. Psychological disorders prevent people from having normal relationships with others.
- ___ 16. I tend to feel anxious and nervous when I am around someone with a psychological disorder.
- ___ 17. When talking with someone with a psychological disorder, I worry that I might say something that will upset him or her.
- ___ 18. I can tell that someone has a psychological disorder by the way he or she acts.
- ___ 19. People with psychological disorders do not groom themselves properly.

___20. People with psychological disorders will remain ill for the rest of their lives.

___21. I don't think that I can really relax and be myself when I'm around someone with a psychological disorder.

___22. When I am around someone with a psychological disorder I worry that he or she might harm me physically.

___23. Psychiatrists and psychologists have the knowledge and skills needed to effectively treat psychological disorders.

___24. I would feel unsure about what to say or do if I were around someone with a psychological disorder.

___25. I feel nervous and uneasy when I'm near someone with a psychological disorder.

___26. I can tell that someone has a psychological disorder by the way he or she talks.

___27. People with psychological disorders need to take better care of their grooming (bathe, clean teeth, use deodorant).

___28. Mental health professionals, such as psychiatrists and psychologists, can provide effective treatments for psychological disorders.

Appendix F: Vignettes

Please read the below paragraphs and answer the following question by circling your answer.

Student X is 9 years old and in 3rd class. Their teacher for the past 6 months observed that, in comparison to their peers, they talk excessively in the classroom, fidget with their hands and often leave their seat without permission. The class is generally quiet and task-focused. In relating with others, Student X struggles to wait their turn and frequently interrupts conversations. They shout out the answers to questions even before they have been completed. They find it difficult to pay close attention to detail and often make careless mistakes in their schoolwork. They avoid tasks that take a lot of mental effort for a long period of time, and their mum reports a similar situation at home where they avoid doing homework. They are easily distracted and often appear to be daydreaming. They struggle to get organized for any activity, do not follow instructions and fails to finish work. This does not seem to be due to a failure to understand instructions. In general they are often forgetful.

In your opinion, is the above paragraph describing the behaviour of a:

Boy

Girl

Either

Student A is 10 years old and in 4th class. They are a shy student who worries about tests and results. They bite their nails and approach the teacher's desk with several questions and complaints of "sore tummy" just before a test is to begin. Student A often cries if they receive a poor result or if they are criticised. They very much want to please their teacher and parents, and thus fear making mistakes and feel guilty when they do poorly. They often worry so much about their teachers' and parents' expectations that they feel they cannot breathe and will ask to stay home from school.

In your opinion, is the above paragraph describing the behaviour of a:

Boy

Girl

Either

Appendix G: Gender Likert-scale questionnaire

Please read the below statements and rate on a scale of 1 – 5 how much you agree with them, where 1 is “Strongly Disagree” and 5 is “Strongly Agree”

	1	2	3	4	5
	Strongly Disagree		Neutral		Strongly Agree
1. Boys are more likely to have ADHD than girls	1	2	3	4	5
2. Girls are more likely to have an anxiety disorder than boys	1	2	3	4	5
3. Girls with anxiety disorders are odd	1	2	3	4	5
4. Boys with ADHD are unpredictable	1	2	3	4	5
5. Girls with anxiety disorders could snap out of it if they wanted to	1	2	3	4	5
6. Boys with ADHD misbehave because they are bold	1	2	3	4	5
7. Girls with anxiety disorders are to blame for their problems	1	2	3	4	5
8. Boys with ADHD could control their behaviour if they really wanted to	1	2	3	4	5
9. Girls with anxiety disorders are self-centred	1	2	3	4	5
10. Boys with ADHD could do better if only they tried harder	1	2	3	4	5
11. Girls are more likely to have ADHD than boys	1	2	3	4	5
12. Boys are more likely to have an anxiety disorder than girls	1	2	3	4	5
13. Boys with anxiety disorders are self-centred	1	2	3	4	5
14. Boys with anxiety disorders are odd	1	2	3	4	5
15. Girls with ADHD are unpredictable	1	2	3	4	5
16. Boys with anxiety disorders could snap out of it if they wanted to	1	2	3	4	5
17. Girls with ADHD misbehave because they are bold	1	2	3	4	5
18. Girls with ADHD could control their behaviour if they really wanted to	1	2	3	4	5
19. Girls with ADHD could do better if only they tried harder	1	2	3	4	5
20. Boys with anxiety disorders are to blame for their problems	1	2	3	4	5

Appendix H: Study 2 Questionnaire Data

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Boys are more likely to have ADHD than girls	11%	17%	22%	31%	19%
Girls are more likely to have an anxiety disorder than boys	19%	19%	28%	31%	3%
Girls are more likely to have ADHD than boys	61%	25%	11%	3%	0%
Boys are more likely to have an anxiety disorder than girls	56%	11%	33%	0%	0%

Appendix I: Correlation table for Study 1.

Variable	1	2	3	4	5	6
(1)Years Working	1					
(2)Age	0.807	1				
(3)Disorder-Bad IRAP	-0.439	-0.317	1			
(4)Disorder-Good IRAP	-0.562	-0.428	0.428	1		
(5)Normal-Bad IRAP	0.139	0.051	-0.26	-0.007	1	
(6)Normal-Good IRAP	0.194	0.109	-0.233	-0.308	0.521	1