An Investigation into the Effects of Tootling for Instruction- Following and On-Task Student Behaviour in a New Zealand Primary School

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Abstract

This study aimed to extend the literature on *tootling* interventions within a New Zealand. In a tootling procedure, students are taught how to report on their peers' prosocial behaviours, which is combined with public posting and inter-dependent group contingency components. This focus of this study was to determine if tootling affected the keystone skill of instruction-following for three target students and their comparison peers in one primary classroom. Additionally, on-task behaviour, teacher praise statements and teacher stress were measured in an A-B-A-B-C-D reversal design with a fading and follow-up phase. Increases in instruction-following and on-task behaviour occurred for two of the three target students and their peers. Mixed results were reported concerning teacher praise statements and teacher stress. Both the teacher and the students viewed the intervention as socially acceptable, and treatment integrity remained high across all phases. Strengths, limitations, and implications for further practice are discussed.

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Introduction

In education settings worldwide, teachers face an array of challenging and problematic student behaviours (Browne, 2013) that are increasing in intensity and severity in New Zealand contexts (Towl, 2007). Although several definitions exist, student behaviour is problematic or challenging when it interferes with a student's social, emotional, or academic development and harms their peers similarly (Artman-Meeker & Hemmeter, 2013; Wheldall & Merrett, 1988). Additionally, if a student’s behaviour interferes with the role and operations of the teacher, this is also considered problematic (Wheldall & Merrett, 1988).

Classrooms with high rates of inappropriate student behaviours ultimately have less instruction time and can hinder the academic, behavioural, and social achievement of all individuals in the class (Lane, 2007; Närhi et al., 2017). Additionally, students with problematic behaviours are also at an increased risk of adverse consequences later in life, including but not limited to, unemployment, criminal offending, mental health disorders, low self-esteem, relationship problems and substance use issues (Church, 2003; Owen et al., 2012). Research has also shown that student misbehaviour is linked to higher teacher burnout, stress, and job dissatisfaction (Evertson & Weinstein, 2011; Forlin, 2001). Appropriately managing these problematic behaviours helps create and maintain an optimal learning environment for students and teachers to succeed while preventing negative long-term consequences for individuals and society (Evertson & Weinstein, 2011). However, 83.8% of New Zealand teachers feel they are not sufficiently informed and trained in behavioural management techniques (Johansen et al., 2011). Based on these findings, it is not surprising that public interest has increased in how best to prioritise and respond to problematic student behaviours in the classroom (Hemmeter et al., 2012; Martella et al., 2011).

Literature Review

Previous Approaches for Managing Problematic Student Behaviours

Previously, New Zealand schools attempted to reduce and prevent the occurrence of problematic student behaviours through reactive and punishment-based methods (Savage et al., 2011), including strict rules, regulations and zero-tolerance policies (Lum et al., 2017). For example, student misbehaviour often results in office referrals, detention, suspension and sometimes the student is stood-down or expelled (Browne, 2013; Elder & Prochnow, 2016). Although many of these methods are still practised today, studies have shown that punishment-based techniques are mainly ineffective and often unethical (Browne, 2013; Clunies-Ross et al., 2008). Additionally, teachers can inadvertently reinforce student misbehaviour, thereby increasing the frequency of these behaviours in the future (Clunies-Ross et al., 2008; Cooper & Jacobs, 2011). For instance, students who are sent out of the classroom can escape the teaching demands of the environment (Ducharme & Shecter, 2011). Ultimately these methods do not teach students how to replace their inappropriate behaviours with prosocial alternatives (Elder & Prochnow, 2016; Hall & Hall, 2003). In reaction to the growing literature that opposed punitive techniques, researchers shifted towards identifying preventative, proactive and positive behavioural approaches for school environments (Savage et al., 2011).

Positive Behaviour for Learning School-Wide

Positive Behaviour for Learning School-Wide (PB4LSW) emerged from the shift away from punitive classroom management methods (Boyd et al., 2014) and is based on the guiding principles of Applied Behaviour Analysis (Koegel et al., 1996). PB4LSW is a New Zealand version of the successful Positive Behaviour Intervention and Support (PBIS) framework that was first developed in the United States of America (USA) (Boyd et al., 2014; Elder & Prochnow, 2016). Like its international counterpart, PB4LSW provides schools with the tools necessary to adjust their environment, practices and systems to prevent problem behaviours from occurring (Elder & Prochnow, 2016). In order to do this, PB4LSW uses a three-tiered framework that is organised in a hierarchy of primary, secondary, and tertiary tiers (Savage et al., 2011). This framework emphasises teaching appropriate skills by focusing on positive behaviours rather than punishing inappropriate behaviours (Savage et al., 2011). The foundation of this system is the primary tier, which provides support to all students including behavioural expectations that are implemented and, if followed, are positively reinforced throughout the school (Lane et al., 2013). Students whose behaviour does not improve with primary tier interventions, will also receive secondary and possibly tertiary level support (Lane et al., 2013). The secondary tier is typically reserved for small groups of children (around 15% of the school population) who have failed to respond to primary-level support and often have mild or moderate academic or behavioural difficulties (Keller-Bell & Short, 2019; Lane et al., 2013). Finally, the tertiary tier is usually reserved for students who have failed to respond to both primary and secondary support and are often children with the most challenging social or behavioural concerns (around 1-5% of the school population) (Lane et al., 2013). This tier typically involves a functional behavioural assessment (FBA), and interventions are based on the child’s individual needs (Lee & Gage, 2019). Secondary and tertiary-level initiatives aim to give students the skills necessary to return to the primary tier and remove their need for more intensive support (Lane et al., 2013). Central to the success of this framework is that teachers become equipped with evidence-based, effective, and easy-to-use behavioural strategies (Boyd, 2016). This ensures that students are provided with a preventative and proactive approach that teaches them the skills necessary to manage their behaviour and improve their academic and social functioning (Elder & Prochnow, 2016, p. 86).

Keystone Behaviours

It is clear that in today's school context, there is a need to manage problematic student behaviour in ways that align with a PB4LSW approach, which includes using proactive and preventative interventions (Elder & Prochnow, 2016; Horner et al., 2010). One method that fits nicely into this category is if schools adopt 'keystone' approaches to managing student misbehaviour (Barnett et al., 1996). According to several researchers, keystone behaviours are foundational skills that, when modified, can positively influence other behaviours exhibited that were not necessarily targeted (Barnett et al., 1996; Lalli et al., 1999; Rincover, 1981). In other words, modifying a keystone behaviour can improve other desirable and related behaviours of the same response class (Ducharme & Shecter, 2011). The idea of a keystone approach is significant, as students often exhibit a range of behavioural difficulties that occur concurrently (Ducharme & Shecter, 2011; Taylor et al., 1999). As a result, keystone intervention methods can potentially improve multiple problem behaviours by implementing an intervention that targets one key behaviour (Ducharme & Shecter, 2011). Additionally, keystone approaches can be less complicated, fit in well with a PB4LSW approach, are preventative, more time-efficient and can be applied class-wide (Ducharme & Shecter, 2011), making it a desirable behavioural management tool for teachers.

Instruction-Following Behaviour

The ability to follow simple instructions (previously referred to as compliance) is one keystone behaviour that is essential to a student's success (Ducharme & Popynick, 1993; Ducharme & Shecter, 2011; Owen et al., 2012). Interventions that successfully target this keystone behaviour can help students to improve their social and academic skills, without necessarily directly targeting these other prosocial behaviours (Ducharme & Shecter, 2011). Research has demonstrated classrooms with students who can effectively follow teacher directives are more productive, safe, and positive atmospheres (Bross et al., 2018; Lane et al., 2018). Additionally, improvements in instruction-following behaviour can also reduce the likelihood of students developing oppositional defiant or conduct disorders in the future (Owen et al., 2012).

The skill of learning to follow simple instructions typically starts to develop in early childhood and continues to improve as the individual grows older (Braungart-Rieker et al., 1997; Lin et al., 2003). By the time children are ready to enter the school system, there is an expectation that they can appropriately follow instructions in line with what is expected for that environment and their developmental level (Beaulieu et al., 2012). In this context, *instruction-following behaviour* is defined as “acting in accordance with a directive to engage in or to stop engaging in a behaviour” (Owen et al., 2012, p. 364). Typically, it is expected that an individual will change their behaviour, following the delivery of the instruction, within a reasonable time period (Atwater & Morris, 1988; Forehand, 1977). According to several researchers, an appropriate amount of time for a student to respond to a teacher-directed request is between 10-15 seconds (Dufrene et al., 2007; Higgs, 2019; Reynolds et al., 2011). Additionally, an adaptive rate of compliance is considered to be between 60% to 90% (McMahon & Forehand, 2005). However, recent research has demonstrated that an adaptive rate of compliance might be contextually dependent, as some classes show that they can follow instructions 90% to 100% of the time (Higgs, 2019). Based on these results, researchers must consider what is normal and expected for that specific context before assuming the adaptive rate of instruction-following behaviour.

Despite the expectation that children can follow simple instructions when they enter school, in reality, many struggle with this skill (Beaulieu et al., 2012; Houlihan et al., 1992) and are often labelled as ‘non-compliant’. However, non-compliance, in behaviour analytic terms, fails the ‘Dead Man’s Test’, as it can be seen as the absence of a behaviour or skill (Cooper et al., 2020). In response to this, some researchers have defined non-compliance as a behavioural excess that results in accompanying behaviours of concern (such as tantrums, defiance, or refusal) (Kochanska & Aksan, 1995). Several interventions have emerged that target non-compliant student behaviour by attempting to reducing these behavioural excesses (Kochanska & Aksan, 1995). However, reducing behavioural excess does not necessarily address compliance as a skill that can be taught. Consequently, new research has emerged that aims to target compliance as a skill that can result in an increase in desirable student behaviours (Higgs, 2019; Schoen, 1983).

If compliance is seen as a skill that can be taught, it is hypothesised to occur across a learning gradient (Schoen, 1983). In other words, compliance is learned as an individual progresses through three phases: Acquisition, fluency, and generalisation. During the acquisition phase, the individual learns how to respond to an instruction correctly. During the fluency phase, there is a focus on increasing compliance when passive non-compliance occurs (Schoen, 1983). Passive non-compliance is when an individual ignores the request and exhibits no response to what was asked of them (Kochanska & Aksan, 1995). Finally, the generalisation phase involves a student's demonstration that they can follow instructions in different environments and maintain this skill over time (Schoen, 1983).

Evidence-Based Strategies for Improving Instruction-Following Behaviour

The PB4LSW framework recommends using evidence-based practice to effectively manage classroom behaviour (Hepburn & Beamish, 2019) and is described as "*the* most essential part of teaching" (p. 3). In order for an intervention to be considered Evidence-based practice (EBP), it must be "evaluated using sound research methodology; have been shown to be effective; and are supported by at least three empirical studies published in peer-refereed journals" (Hepburn & Beamish, 2019, p. 83). Teachers who use EBPs help contribute to a more productive and positive classroom environment and reduce their workload by using proven techniques (Hepburn & Beamish, 2019). Ultimately, EBP allows for a greater chance of success of improving desirable behaviours (Hepburn & Beamish, 2019), including the ability to follow simple instructions.

Antecedent-Based Interventions

Antecedent-based interventions are a popular evidence-based approach for increasing prosocial classroom behaviours and typically involve changing the environment to increase desired behaviours or skills (Axelrod & Zank, 2012; Wilder et al., 2010). Frequently, antecedent-based interventions are used to improve instruction-following or compliant behaviour (Axelrod & Zank, 2012). The most widely researched antecedent-based interventions for targeting compliance, includes high probability request sequence (Nevin, 1996), errorless compliance training (Ducharme, 1996) and effective instruction delivery (Ford et al., 2001).

High probability request sequence (HPRS) involves manipulating the order of delivering instructions to individuals to increase compliant behaviour (Wilder et al., 2010). This involves, first, giving several requests that an individual is more likely to comply with appropriately, as these requests have historically received reinforcement and are easy to follow requests (Davis, 1995). These are known as high-probability requests (high-p requests). Following this, a request is issued that the individual typically does not comply with and can result in problem behaviour (Davis, 1995). In other words, this is a request they are less likely to respond to appropriately (low probability request) (Bross et al., 2018; Wilder et al., 2010). HPRS has reported primarily positive results across the literature (Axelrod & Zank, 2012; Bross et al., 2018), with a recent meta-analysis describing the intervention as “potentially evidence-based” (Common et al., 2019, p. 44).

Errorless compliance training (ECT) increases compliance by delivering simple instructions that are paired with prompts, which are eventually phased out (Rames-LaPointe et al., 2014). Results indicate that ECT effectively increases the compliant behaviour of children with disabilities (Ducharme & DiAdamo, 2005; Ducharme & Ng, 2012; Ducharme et al., 2007) and severe behavioural concerns in both home and school environments (Ducharme et al., 2010).

Finally, effective instruction delivery (EID) involves changing how instructions are issued to increase compliance rates (Ford et al., 2001). This includes the use of demanded eye contact, a quietened tone of voice, close proximity and direct instructions (rather than the use of questions) (Bellipanni et al., 2013). Consistent with previous antecedent-based interventions, positive results were reported in both home (Benoit et al., 2001) and school contexts (Bellipanni et al., 2013).

Although these antecedent-based interventions have relative strengths, they also have significant limitations in applied settings (Imasaka et al., 2019; Lui et al., 2014). This includes a pattern of impracticality, low rates of treatment fidelity and the demand for others (e.g., teachers or parents) to be skilled in implementing the procedures (Ducharme et al., 2007; Imasaka et al., 2019). Additionally, most of these interventions are designed for individual students and are not able to be applied at a class-wide level, limiting their effects to a few select students. In response to these limitations, the compliance literature has expanded and developed additional interventions, including self-management.

Self-Management Interventions

Self-management interventions overcome many of the limitations associated with antecedent-based interventions and have been found to reduce a wide array of challenging classroom behaviours (Smith et al., 2022). For instance, self-management requires less teacher involvement but is just as effective and easier to implement, making it a more practical option for applied settings such as schools (Cooper et al., 2020). At its most basic level, self-management is the "personal application of behaviour-change tactics that produces a desired improvement in behaviour" (Cooper et al., 2020, p. 734). Strategies commonly used by self-management interventions include self-monitoring, self-reinforcement, and self-evaluation. Self-monitoring is when an individual observes their behaviour and records the occurrence or non-occurrence of some targeted behaviour, self-reinforcement is when an individual delivers their reward when they have met a predetermined goal, and self-evaluation is when they evaluate their behaviour against a predetermined standard. Each of these strategies can be utilised as a stand-alone method, but they are often combined into one intervention (Cooper et al., 2020).

The research on self-management has reported positive results for improving a range of behaviours, including prosocial, on-task and compliant behaviour (Busacca et al., 2015; Smith et al., 2022). Over time, self-management has demonstrated that it is an effective and evidence-based intervention (Smith et al., 2022) that can be successfully implemented in school settings (Briesch et al., 2018; Higgs, 2019; Imasaka et al., 2019; Smith et al., 2022). Despite the apparent strengths of self-management interventions, limitations still exist (Briesch & Chafouleas, 2009; Cole & Bambara, 1992). For example, self-management has typically been applied to individual or small groups of students and has limited research when applied to a class-wide level (Cole & Bambara, 1992; Smith et al., 2022). Additionally, self-management is often described as requiring minimal teacher input, but in reality, they are "minimally student-directed" (Briesch & Chafouleas, 2009, p. 106). As a result, teachers may prefer a less demanding intervention that can address compliance on a class-wide level. Peer-mediated interventions may provide such an alternative by addressing the compliant behaviour of multiple students simultaneously and, hence, overcoming some of the limitations associated with self-management.

Peer-Mediated Interventions

Teachers face multiple competing stimuli in the classroom and cannot attend to every student at all times (Collins et al., 2018; Strain et al., 1976). One way to reduce teacher demand is to use a peer-mediated intervention (PMI) to facilitate behaviour change (Jimerson et al., 2015). Peer-mediated interventions are broadly defined as a class of interventions where a student is the primary agent of change that modifies the behaviour of one or more of their peers (Jimerson et al., 2015). PMIs are typically implemented in schools as behavioural management, social skills, and academic improvement tools (Kohler & Strain, 1990). PMIs include strategies such as modelling, assessment, mentoring, tutoring, and reinforcement (Kaya et al., 2015). Kaya et al. (2015) have argued that peer mediators can act as discriminative stimuli. In other words, reinforcement will be available from peer mediators when students respond in the appropriate way (Kaya et al., 2015). As peers are almost always present, this reduces the demand placed on teachers to implement these interventions (Dufrene et al., 2005).

The literature on peer-mediated interventions reports positive results (Beaulieu et al., 2013; Carden-Smith, 1984; Dart et al., 2014; Kaya et al., 2015; Kohler & Strain, 1990). PMIs have demonstrated that children can effectively monitor their peers' behaviour (Goldstein et al., 1992) and successfully facilitate school behavioural programmes (Carden-Smith, 1984). Recent reviews and meta-analytic reviews also support the use of PMIs on both students with emotional or behavioural disorders (Kaya et al., 2015), and those without (Dart et al., 2014). Of the 12 studies reviewed by Kaya et al. (2015), the results showed that PMIs effectively reduced inappropriate behaviours and increased appropriate behaviours. For instance, findings demonstrated decreases in negative peer interactions, aggressive conflicts, off-task, and disruptive behaviours and increases in active responding, on-task, and cooperative statement behaviours (Kaya et al., 2015).

There is also evidence that PMIs can be used to maintain the treatment's effects over time (Beaulieu et al., 2013). In a study by Beaulieu et al. (2013), the researchers were able to effectively teach four typically developed children to respond to their name and a group call (defined by the authors as precursors), improving their compliant behaviour. However, removing these treatment conditions saw a reduction in responding to precursors and overall compliant behaviour. The introduction of a peer-mediated intervention (in which peers reminded or praised these students for responding to a precursor) effectively increased student compliance to instructions and maintained these effects over time. In fact, compliance was at its highest with the least variability in the data when peer mediation was used (Beaulieu et al., 2013). Although the research is still limited, these findings suggest that peer-mediated interventions could improve the instruction-following behaviour of students in classroom contexts and maintain these effects over time.

Cooperative Learning

Cooperative learning (CL) can be used to manage classroom behaviour and is a variation on a peer-mediated intervention (Johnson & Johnson, 2009; Slavin, 1989). CL is where students need to work together to achieve a common target or goal (Siegel, 2005). According to Johnson and Johnson (2009), CL is based on a social interdependence theory. This theory suggests that the actions taken by individuals affect their outcomes and those of others. Social interdependence can either generate positive or negative results within the context. Positive interdependence occurs when joint goals are achieved by individuals acting together, whereas negative interdependence is when achievement is hindered because of the actions of individuals. CL, therefore, falls under the category of positive interdependence, as CL helps to create an environment of collaboration where the individual's success is reliant on the group's success (Johnson & Johnson, 2009). Based on this idea, a critical component of CL is a reward system dependent on the group's performance (or a group contingency component) (Slavin, 1991). According to Slavin (1991), a group contingency helps to "motivate students" to work together, as well as encourage students to reinforce each other's learning and appropriate behaviours in order to gain access to this reward (p. 105).

The majority of the CL literature reports favourable outcomes (Johnson & Johnson, 1987; Kyndt et al., 2013). For example, Kyndt et al. (2013) argued that CL improved students' peer relationships, self-esteem and attitudes, and enhanced peer acceptance and inclusion. Additionally, an early meta-analysis reported that most (over half) of the students favoured CL strategies over learning independently (Johnson & Johnson, 1987; Kyndt et al., 2013). An early study by Dugan et al. (1995) emphasises CL’s effectiveness. The authors investigated if CL could help better integrate two fourth-grade students with Autism Spectrum Disorder (ASD) into a social studies class. Four groups were formed, with each group having one high-functioning academically abled peer, two peers functioning at a moderate level and one low-functioning peer. CL strategies included methods such as a team activity, tutoring each other on keywords and a whole class wrap-up and review. Results showed that CL positively impacted all students’ social interactions and academic performance. These results are similar to previous findings reported by Fulya and Fatih (2019), where Learning Together (a variation of CL) made “positive contributions to students' success” (p. 200). Following on, Capodieci et al. (2019) also found that CL could improve the social acceptance of students diagnosed with attention-deficit hyperactivity disorder (ADHD). The CL method involved organising classes with neurotypical children and children with ADHD-related problems. Not only did the children with ADHD become more socially accepted by their peers, but teachers also noticed a reduction in some ADHD symptoms due to the CL condition (Capodieci et al., 2019). Ultimately, encouraging students to work together through CL, has been successfully implemented in different contexts, and with numerous behaviours and population groups (Gillies, 2016; Johnson & Johnson, 2002; Johnson et al., 1981).

Traditional peer-mediated interventions (including CL) can increase a student's awareness of their peers' prosocial behaviours and encourage students to work as a team towards one goal (Cashwell et al., 2001; Ervin et al., 1996; Kyndt et al., 2013). However, they can still require a lot of teacher demand as they require a reconsideration of classroom routines (Chan et al., 2009). In other words, PMIs can require a great deal of time and skills to prepare a classroom for these interventions. One alternative PMI that places fewer demands on the class teacher but also includes peer mediators and working together components is a tootling intervention (Lambert et al., 2015; Skinner et al., 2000).

Tootling

Tootling is one variation of a PMI that has demonstrated that it can improve a variety of adaptive classroom behaviours. Initially designed by Skinner et al. (2000), tootling procedures were proposed to be an alternative to the commonly used "tattling" or punishment-based system. In a typical tootling intervention, teachers train students to observe and privately report on the appropriate behaviour of other students. After training, students are given blank paper slips to document any prosocial behaviours they observe their peers engage in, which are then deposited into a tootle container. At the end of the time allocated for tootling (for that day), the class teacher randomly selects a number of tootles and reads them to the class while providing praise or corrective feedback. Reading the tootles aloud essentially functions as a differential reinforcement process, which increases prosocial reports and decreases reporting on negative behaviours (Murphy & Zlomke, 2014). Following this, the teacher counts the tootles and displays the students' progress on a visible progress chart. Throughout the tootling intervention, the class will engage in the procedures, and their combined effort will result in a predetermined class-wide reward (Skinner et al., 2000).

Generally, three main elements are considered integral to the success of tootling interventions.

Key Components of Tootling

Positive Peer Reporting: Positive Peer Reporting (PPR) if the first necessary element integrated in a tootling intervention. PPR is when students verbally praise a target student for engaging in positive behaviours during certain times of the day (Grieger et al., 1976). In typical PPR interventions, one student will be selected as the ‘star student’, and their peers are instructed to notice and report their prosocial behaviours in exchange for points towards a class-wide reward (Sherman, 2012). In the early 1970s, Grieger et al. (1976) found that rewarding students who publicly praised their peers increased cooperative play and reduced aggressive acts. Since this seminal study, PPR has shown that it is an can aid in the improvement of student behaviour in the classroom (Bowers et al., 2000; Collins et al., 2020; Smith et al., 2009).

Tootling is one variation of PPR, with the differentiating feature being that positive behaviour is reported privately on slips of paper, and students are encouraged to report on the behaviours of multiple peers. Additionally, prosocial reporting can occur at any point in the day, in various contexts and over a more extended period (i.e., a full day) (Murphy & Zlomke, 2014). Despite these differences, peer reinforcement is central to increasing appropriate behaviours while decreasing inappropriate ones (Collins et al., 2020).

Public Posting: A second integral tootling component is using public posting (McHugh et al., 2016), which is a method of providing visual feedback to students based on their performance on a specific task or skill (Houten et al., 1975; O'Handley et al., 2020). This visual feedback provides information about an individual's performance level and provides direction on how to sustain or improve their behaviour in the future (O'Handley et al., 2020). Public posting has demonstrated that it can reduce problem behaviours such as missing work (Camden & Ludwig, 2013) or speeding while driving (Houten et al., 1980; Ragnarsson & Björgvinsson, 1991). It has also been successful at increasing desirable behaviours such as teacher praise (Gross & Ekstrand, 1983), enhancement of dance movements for competitive dancers (Quinn et al., 2017)**,** and improving employee performance (Nordstrom et al., 1991). However, the research on public posting systems in a classroom setting is still limited (O'Handley et al., 2020). The existing research mainly includes public posting as one component of an intervention package (O'Handley et al., 2020). Despite this, researchers have reported that public positive praise can have positive effects on academically engaged behaviour (O'Handley et al., 2020). In a tootling intervention, public posting serves as a discriminative stimulus and a reminder for the students to engage in the tootling procedures (Lum et al., 2019).

Group Contingency: Incorporating a group contingency is the final component of a tootling intervention (McHugh et al., 2016). A group contingency is when students receive a predetermined and preferred reward contingent on the behaviour of one or multiple students in a group (Litow & Pumroy, 1975; Maggin et al., 2017). The three types of group contingencies include dependent, interdependent and independent contingencies (Deshais et al., 2019). A dependent group contingency is when only one person or a small group must meet the criteria for the entire group to receive the reward (Deshais et al., 2019). An interdependent group contingency is when all individuals must meet the criteria to receive a class-wide reward (Deshais et al., 2019). Lastly, an independent group contingency involves using the same criteria for all individuals, but each person who meets this criterion is individually rewarded (Deshais et al., 2019). Although a meta-analysis by Little et al. (2015) argued that dependent, interdependent and independent group contingencies create behaviour changes, some independent group contingencies can also create competitive environments. As a result, tootling interventions often use interdependent group contingencies to decrease competitiveness and encourage students to work together and collaborate towards one goal (Denune et al., 2015). Additionally, this contingency can simultaneously address the problem behaviour of multiple students, reducing teacher input (Denune et al., 2015).

The Literature on Tootling

Initial tootling research focused on increasing prosocial peer reporting by combining a public posting, positive peer reporting and an interdependent group contingency component (Cashwell et al., 2001; Skinner et al., 2000). Over time, the tootling literature expanded, and evidence showed that it can increase a number of classroom behaviours with a various student populations (Chaffee et al., 2020; Cihak et al., 2009; Dillon et al., 2019; Kirkpatrick et al., 2019; Lambert et al., 2015; Lum et al., 2019; Lum et al., 2017; McHugh et al., 2016; Miller, 2017; Powell, 2020).

Skinner et al. (2002) and Cashwell et al. (2001) were the first to formally investigate tootling interventions in classroom contexts. Using an ABAB withdrawal design, positive results were reported across both seminal studies, supporting the argument that students can be taught to increase their awareness and reporting of prosocial behaviour (Cashwell et al., 2001; Skinner et al., 2000). However, variability was reported in both investigations, restricting the authors' ability to make definitive conclusions. Additionally, both studies did not measure the social validity, treatment integrity, or long-term maintenance effects, ultimately limiting an understanding of the acceptability, validity, and longevity of tootling. Despite these limitations, both research studies revealed the importance of positive peer reporting, public display of progress and a group contingency for increasing the number of prosocial peer reports (or tootles) (Cashwell et al., 2001; Skinner et al., 2000).

In an ABAB withdrawal design, Cihak et al. (2009) and Lambert et al. (2015) replicated and extended the above research by investigating if a tootling intervention could reduce the disruptive behaviour of 19 primary school students. Of the 19 students who participated some had disabilities, and some did not. The researchers also measured the social validity and treatment integrity (a measure of reliability for the teacher's performance) of the intervention. Positive results were reported with reduced disruptive behaviour during both intervention phases compared to baseline and withdrawal, with three consecutive days where zero disruptive behaviours occurred. Additionally, social validity and treatment integrity scores were both high, indicating that tootling was viewed as an acceptable, effective, and efficient intervention and it was easy to implement. However, the authors note how using teachers to observe and record disruptive behaviour from students may have lowered the accuracy of the data. Despite this, the authors were able to conclude that tootling was an effective and relatively easy-to-implement classroom management tool for reducing disruptive behaviours of students who had a disability and those who did not (Cihak et al., 2009).

Lambert et al. (2015) aimed to replicate this previous research, measuring appropriate and disruptive student behaviour in two primary school classrooms. Unlike the above study, the researchers were responsible for recording behavioural observations in an attempt to improve the data collection process and accuracy of the data. Additionally, the authors were the first to collect follow-up data to investigate if tootling had any maintenance effects two weeks after its completion. Before collecting follow-up data, teachers could choose to continue or discontinue tootling procedures. Finally, the authors calculated effect sizes for appropriate and disruptive behaviour rather than relying exclusively on visual analysis. Results of this study revealed that in both classrooms, disruptive behaviour reduced, and appropriate behaviour improved during the intervention phases, with moderate to strong effect sizes across all comparisons. The intervention was rated as acceptable, and both classrooms continued the tootling procedures after its completion, with positive behaviour maintaining at the follow-up period two weeks later (Lambert et al., 2015). However, the authors note that by measuring class-wide behaviour, it was not possible to measure individual student behaviour (Lambert et al., 2015).

In response to the above limitation, McHugh et al. (2016) evaluated the effects of tootling on class-wide and individual target student behaviour in three lower primary school classrooms. . Participants included 64 students from two different schools, with one target student selected in each classroom. The target student was selected based on high rates of disruptive classroom behaviour. McHugh et al. (2016) also changed the tootle criterion so that it could be achieved every day, thus increasing the likelihood of instant and more frequent access to rewards. Results demonstrated that when tootling was in place, disruptive behaviour reduced and academically engaged behaviour improved at a class-wide and individual student level, with moderate to large effect sizes. The authors noted that making the reward criterion number achievable daily did not have a different effect than increasing the reward criteria over time. As the authors did not directly compare the two criteria, there is no way to know which is superior (McHugh et al., 2016). However, a higher criterion and less frequent reinforcement reduced teacher input, which could increase the interventions social validity for applied settings.

Following on, Miller (2017) was the first to investigate if tootling procedures could be adapted for four and five-year-old preschool students in a multiple baseline design implemented in four classrooms in four different cities. Additionally, teacher stress was also measured as a function of the intervention and was administered prior to and after introducing the intervention. Where other tootling procedures reported prosocial behaviours on note cards, this investigation encouraged students to vocally tootle directly to their teacher. The teacher then gave the student a coloured token corresponding to the reported prosocial behaviour, adding this to the token tower. Miller (2017) used videoconferencing technology in order to reduce participant reactivity, train the class teachers and observe the students during data collection. Results showed an increase in prosocial classroom behaviours and a reduction in disruptive and tattling behaviours for three of the four classrooms. Additionally, class-wide on-task behaviour increased in two of the classrooms. However, technological issues interfered with the collection of on-task behavioural data in classroom four. In addition to these results, a reduction in teacher occupational stress (measured through the Teacher Stress Inventory (TSI; Fimian, 1984) occurred when tootling was in place versus its absence. Although Miller (2017) had mixed results, the study demonstrated that tootling could be adapted for preschool environments and could possibly reduce teacher occupational stress by reducing student misbehaviour.

Extending the tootling literature, Lum et al. (2017) investigated if the intervention could be effectively used to improve the classroom behaviour of adolescent students in three general education secondary school classrooms. To make the intervention more age-appropriate, the authors asked the students to vote on a new name for the tootling procedures. Like previous authors, Lum et al. (2017) measured the effects of tootling on disruptive and academically engaged behaviours within an ABAB withdrawal design. Unlike previous tootling researchers, Lum et al. (2017) also included a fading phase to measure maintenance effects. The authors reported positive results, with increases in academically engaged behaviour and reductions in disruptive behaviour across all three classrooms when the intervention phase was compared to baseline. Despite these positive results, behaviour did not maintain at the two-week follow-up, as the teachers chose to discontinue the procedure. This is an interesting finding as teachers rated the intervention as acceptable and indicated they would use it again in the future. No reason was given as to why the teachers discontinued the procedures, but the authors note that this could be an area of future investigation that measures teacher attitudes and behaviour following the completion of an intervention. The authors also highlighted that one teacher stated the intervention reduced her stress, but teacher occupational stress was not formally investigated and measured (Lum et al., 2017).

Recently there has been a growing interest in combining technology with classroom-based interventions (Kirkpatrick et al., 2020). In response to this, Lipscomb et al. (2018) and Dillon et al. (2019) investigated the effects of combining a ClassDojo component (an online behavioural managed tool that allows teachers to monitor and provide feedback to students in real-time) into the procedure of tootling. Lipscomb et al. (2018) investigated if a ClassDojo alone or a ClassDojo plus tootling was more effective at reducing the disruptive behaviour of seven university students with disabilities in an alternating treatment design. During the ClassDojo alone condition, students were given points for appropriate behaviour, by their teacher, through the online system. In the ClassDojo plus tootling condition, students used the ClassDojo technology to write tootles about their peers' prosocial behaviours. Results showed that both treatment conditions effectively decreased disruptive student behaviour with strong effects. However, the authors did not include a tootling only condition (with no technological component), thus limiting the conclusions that could be drawn about how effective tootling was, with and without the use of technology (Lipscomb et al., 2018). Similarly, Dillon et al. (2019) combined tootling with ClassDojo to evaluate its effects on disruptive and academically engaged behaviour with 35 fifth-grade students across three classrooms. The authors instructed students to make mental notes of prosocial peer behaviour and then record this on the ClassDojo at the end of the observation session. Results from this study were comparable to previous tootling research, with decreases in disruptive behaviours and improvements in academically engaged behaviours. Although the study found positive effects for their ClassDojo-enhanced Tootling intervention, the authors conceded that using technology comes with possible malfunctions. For instance, the technology malfunctioned on one occasion and tootles could not be recorded that day. Despite this limitation, the authors argued that incorporating a technological component into tootling allows more regular and immediate positive feedback for the students (Dillon et al., 2019).

Following on, Lum et al. (2019) sought to determine the effects of replacing an interdependent group contingency with an independent group contingency in a tootling intervention with 72 participants in three high school classrooms. In an ABAB withdrawal design, the authors measured the effects of tootling on disruptive (DB) and academically engaged behaviours (AEB). The independent group contingency ensured that three random students would be rewarded if they received a tootle written about them and another two random students would be rewarded if they correctly wrote a tootle that day. Results revealed that academically engaged behaviour increased while disruptive behaviour decreased in the intervention phases compared to baseline and withdrawal. Very large Tau-U effect sizes were also reported. In addition to changing the group contingency, Lum et al. (2019) were also the first to include a measure of teacher and student acceptability ratings, which revealed that both found the intervention acceptable. Despite these positive results, research has not yet established a superior group contingency over any other (Denune et al., 2015; Theodore et al., 2004). For example, results in this study were comparable to previous tootling investigations, which utilised an interdependent group contingency. Typically, interdependent group contingencies are easier for teachers to use (as they can reward all students simultaneously), making this a more practical option for classroom environments.

Following on, Kirkpatrick et al. (2019) examined if tootling could improve other problematic student behaviours, including antisocial and disrespectful behaviour. In an ABAB withdrawal design, the authors applied tootling in an after-school programme with four at-risk students between the ages of 8- to 10 years old. Importantly, a modification in the reward criterion occurred, whereby rewards were based on a randomly selected number that outlined how many students needed to receive a tootle written about them to reach the criterion. The authors argued that this modification encouraged students to report on multiple peers' prosocial behaviours, providing a solution to the possibility that students only report on their friends or those who were popular. The results of the study were positive, with antisocial/disrespectful behaviours decreasing in the intervention phases when compared to the baseline and withdraw phases. However, limitations were reported, including threats to internal validity because attendance was not mandatory, so absenteeism was high among all students, including the four participating students. Despite this limitation, Kirkpatrick et al. (2019) expanded the tootling literature and provided evidence that tootling can also address other problematic classroom behaviours (Kirkpatrick et al., 2019).

Derieux (2019) and Goss (2019) attempted to determine the importance of a single tootling component, in order to understand what is driving behaviour changes. Derieux (2019) investigated the written component of tootling by comparing traditional tootling procedures to a writing procedure and a no-treatment condition as a control group. To evaluate the effects of each condition on disruptive and academically engaged behaviours, the authors implemented an alternating treatments design that was embedded within a multiple-baseline design in three high school classrooms. The traditional tootling condition consisted of procedures typically found in previous tootling studies. The writing condition included all tootling procedures; however, students were encouraged to write two things they had learned that day instead of reporting on their peers' prosocial behaviour. Finally, the control condition was identical to the writing condition, except for the fact that reinforcement was withheld. Derieux (2019) reported small to moderate effect sizes for disruptive, academically-engaged and passive off-task behaviour in all three conditions and classrooms. Based on these results, the author concluded that the writing component of tootling was not a controlling variable in behaviour changes (Derieux, 2019).

Goss (2019), on the other hand, investigated the importance of a reward contingency within a tootling intervention implemented in one lower-elementary Montessori classroom with 24 students, using an AB design. Before discussing correct classroom etiquette, Goss (2019) gave all students a self-assessment form that allowed them to reflect on their peers and their behaviour. Following this, the researchers defined, discussed, and provided examples of correct classroom etiquette or behaviour, which all students then role-played. Correct classroom etiquette included talking when it was their turn, raising their hand before speaking, and making eye contact with other students while they spoke. After this, the students read two books before introducing tootling. One of the books focused on prosocial behaviour, and the other outlined how to let others know when they do nice things. Results indicated that tootling had very little effect on negative student behaviours when a reward criterion was excluded from its procedures. On the other hand, the self-assessment showed a slight increase in the positive opinions the students had about their peers' and their own behaviour. However, results should be interpreted cautiously as the authors used an AB design and introduced several new components alongside the tootling procedures, which could have had an effect on the findings. Additionally, negative student behaviour was not operationally defined. In fact, negative student behaviours were actually defined according to behaviours observed in a previous class cohort. Despite these limitations, the author argued that a lack of goals and rewards was not effective in decreasing negative classroom behaviours (Goss, 2019).

More recently, Chaffee et al. (2020) broadened the tootling literature by evaluating if this intervention improved academically-engaged behaviour while reducing students' disruptive behaviour in two sixth-grade (or year seven) classrooms. This age group is particularly susceptible to the influences of their peers and had not previously been investigated in the tootling literature. Mixed results were reported, with modest improvements in academically engaged behaviour and only a slight reduction in disruptive student behaviour across both classrooms. Additionally, the authors disclosed that there were possible threats to the internal validity of the study, limiting any evidence of a clear functional relationship between the independent and dependent variables. For instance, classroom B’s teacher was changed mid-study, limiting the author's ability to determine if behaviour changes occurred as a result of the intervention or unpredictable changes in the environment, or both. The authors argued that only tentative conclusions could be drawn about the effectiveness of tootling in secondary schools. Despite these mixed findings, this study did provide a practical way that tootling could be phased out from classrooms and possibly be maintained over time. During the maintenance phase, Chaffee et al. (2020) encouraged the teachers to continue all tootling procedures but removed the interdependent group contingency. Results indicate that student behaviour was maintained over time, with moderate to large effects for classroom A and large effects for classroom B, despite removing the reward component. These findings support the author’s hypothesis that tootling creates a more positive environment, which promotes an entrapment process. Entrapment is when students shift from relying on external and programmed sources of reinforcement to more natural sources (such as teacher or peer social praise). Removing the reward criterion reduces teacher demand and increases the likelihood that the intervention will be used indefinitely, ultimately increasing its social validity (Chaffee et al., 2020).

Finally, Powell (2020) added to the tootling literature by evaluating its effects on student and teacher behaviour in a multiple baseline design across three classrooms with a total of 52 primary school students. Groups 1 and 3 included students aged 10 to 11, and Group 2 included students aged 5 to 6. Powell (2020) aimed to determine if tootling increased on-task behaviour and decreased disruptive behaviour and she was also the first researcher to evaluate its effects on teacher praise statements. *Teacher praise statements* were defined as a “positive vocal statement or gesture indicating approval of appropriate behaviour” (p. 42). Additionally, Powell (2020) collected follow-up data where teachers could choose to continue or discontinue the procedures. The results revealed that on-task behaviour improved, with large Tau-U effect sizes in all three classrooms. However, student disruptions (measured functionally by recording teacher corrective statements) only decreased in Group 2. The author argued that age could have factored into these results, with older children learning to avoid getting caught for disruptive behaviours more effectively than younger children. In line with the findings of Lambert et al. (2015), when following up, behaviour was maintained in classrooms that chose to continue the intervention procedures. However, teacher praise statements remained low and did not improve with the introduction of the intervention. The reason stated is related to the theory of reinforcement, whereby behaviour followed by reinforcement is more likely to occur again (Skinner, 1968). For instance, teachers are negatively reinforced when they respond to student disruptions as the student’s misbehaviour often ceases. On the other hand, praising a student provides the teacher with no positive reinforcement as the environment does not change, thus, this the rate of this behaviour is unlikely increase (Cooper et al., 2020; Skinner, 1968). Despite this, students and teachers still rated the intervention as acceptable, increasing its social validity (Powell, 2020).

Overall, tootling interventions have successfully improved adaptive behaviours across students of all ages, with and without disabilities and in multiple contexts (Chaffee et al., 2020; Cihak et al., 2009; Dillon et al., 2019; Kirkpatrick et al., 2019; Lambert et al., 2015; Lum et al., 2019; Lum et al., 2017; McHugh et al., 2016; Miller, 2017; Powell, 2020). Additionally, social validity scores were in the moderate-to-high range when rated by teachers alone, as well as by teachers and students together (Chaffee et al., 2020; Cihak et al., 2009; Dillon et al., 2019; Lambert et al., 2015; Lipscomb et al., 2018; Lum et al., 2019; Lum et al., 2017; Miller, 2017), indicating that this intervention is valued in school contexts. Despite this positive consensus, gaps are still evident, and further research is needed.

Teacher Behaviour

When managing a classroom, teacher behaviour has a “direct impact on their students’ probability of success” (Gage et al., 2018, p. 302). Effective behaviour from teachers improves the academic and social functioning of students (Mitchell et al., 2017), enhances student peer relations (Hendrickx et al., 2017), subject-specific motivation (Brok et al., 2005) and can even positively influence the overall well-being of students (Van Petegem et al., 2008).

Most of the research on teacher behaviour measures how it changes student academic outcomes and/or behaviour (Hendrickx et al., 2017; Spilt et al., 2016). However, what is often neglected in the literature is how teacher behaviour changes as a function of interventions that are designed to improve student behaviour. One of the most widely researched forms of teacher behaviour is praise statements that are contingent on appropriate student behaviour (Partin et al., 2009). A study from Pisacreta et al. (2011) emphasised the strength of using teacher praise to improve student behaviour. This study demonstrated that teachers could be taught to maintain a 1:1 praise-to-behaviour correction ratio. This method reduced student disruptions in three different general education classrooms. Additionally, the authors reported moderate levels of generalisations across classrooms (Pisacreta et al., 2011). Regardless of these positive results, Pisacreta et al. (2011) focused on measuring how student behaviour changed as a function of teacher behaviour.

Even though teacher behaviour is essential for effective classroom management, very few studies have investigated the effect of a behavioural intervention on student and teacher behaviour simultaneously. Subsequently, there is a need to investigate if student interventions have a reciprocal positive effect on teacher behaviour (i.e., teacher praise) (Elswick & Casey, 2011). The main reasoning behind this is that, as student behaviours improve, teachers have more opportunities to notice and praise these behaviours (Slavin, 2013). An increase in teacher praise provides more opportunities for desired student behaviour to be reinforced, increasing the likelihood that appropriate behaviour will occur again in the future (Cooper et al., 2020). In addition, a higher teacher praise rate also contributes to positive classroom interactions (Epstein et al., 2008). Positive teacher-student interactions improve student behaviour, including compliance, academic achievement, social skills, and emotional regulation (Epstein et al., 2008).

Several studies researching the Good Behaviour Game (GBG) at a primary school level reported mixed results when teacher behaviour (such as praise) was measured alongside student behaviour (Lannie & McCurdy, 2007; Lynch & Keenan, 2018; Rubow et al., 2018). For example, Lannie and McCurdy (2007) and Lynch and Keenan (2018) reported positive behavioural improvements when the GBG was in place, but this had hardly any impact on teacher praise statements. Based on this, the authors argued that overt student behaviour (such as correct academic responding or calling out) is more likely to elicit a reaction from the teacher than passive student behaviours (including on-task behaviour) (Lannie & McCurdy, 2007). These findings are consistent with the phenomenon where teachers typically provide more reprimands for inappropriate behaviour patterns and more praise for correct academic responses (Harrop & Swinson, 2000). Overall, this supports the argument that inappropriate behaviours are noticed and attended to, while appropriate behaviours often go unnoticed (Sterling-Turner et al., 2001). Contrary to the above results, Elswick and Casey (2011) and Rubow et al. (2018) reported an increase in teacher praise statements when student disruptions decreased as a function of the GBG. Elswick and Casey (2011) defined *teacher behaviour* as behaviour-specific praise, while Rubow et al. (2018) included correct academic responses. The mixed findings of these studies suggest that more investigations are needed to determine if increases in appropriate student behaviours have a reciprocal effect on teacher behaviour (i.e., praise).

It is yet to be determined if a peer-mediated intervention (such as tootling) would have the same effect as the GBG. Tootling interventions increase appropriate behaviours and decrease inappropriate classroom behaviours (Chaffee et al., 2020; Cihak et al., 2009; Dillon et al., 2019; Kirkpatrick et al., 2019; Lambert et al., 2015; Lipscomb et al., 2018; Lum et al., 2019; Lum et al., 2017; McHugh et al., 2016; Miller, 2017; Powell, 2020), making it likely that teachers will have an increased opportunity to praise behaviour when tootling is in place. However, only one previous study formally investigated if tootling would indirectly increase teacher praise statements (Powell, 2020). The study did not report an increase in teacher praise, with low levels of praise observed across all phases of the study (Powell, 2020). However, this was the first tootling study to investigate its effect on teacher behaviour, highlighting the need for subsequent studies.

Teacher Stress

As a profession, teaching is extremely stressful (Clunies-Ross et al., 2008; Johnson et al., 2005; Keiper & Busselle, 1996; Kokkinos, 2007), which can have a negative effect on teachers' well-being (Harmsen et al., 2019), student behaviour (Jennings & Greenberg, 2009) and student academic achievement (Ronfeldt et al., 2013). A teacher's occupational stress, in this context, is defined as the experience of negative emotions (such as frustration, anger, anxiety, or tension) as a consequence of some aspect of their profession (Kyriacou, 2001). Teachers who are highly stressed due to work related concerns, are at risk of emotional exhaustion, burnout, and less personal accomplishment in their profession (Embse et al., 2019). These factors often increase the risk of a teacher leaving their profession (known as attrition) (Darling-Hammond, 2003; Harmsen et al., 2019). With as many as 40% of beginning teachers moving professions within their first five years, attrition is clearly a significant issue within the teaching profession (Skaalvik & Skaalvik, 2011).

Teacher stress can be influenced by various sources, including excessive student misbehaviour (Clunies-Ross et al., 2008; Geving, 2007; Kokkinos, 2007). When students misbehave and teachers feel stressed, they may use reactive or punishment-based methods to try and control behaviour (Haydon et al., 2018; Jennings & Greenberg, 2009; Skiba & Peterson, 2000; Von der Embse et al., 2017). Research has consistently shown that reactive and punitive responses to negative behaviour often fail and can inadvertently increase these behaviours (Clunies-Ross et al., 2008; Cooper & Jacobs, 2011). Aiming to reduce student misbehaviour may also have the secondary outcome of also reducing teacher stress (Embse et al., 2019). Reducing teacher stress could improve the overall classroom atmosphere as there is less reliance on reactive or punishment methods.

Most teacher stress research has investigated how mindfulness, knowledge-based, cognitive-behavioural, or behavioural interventions affect teacher stress (Embse et al., 2019). These interventions are primarily directed toward the teacher and often do not attempt to improve classroom behaviour (Embse et al., 2019), despite the finding that inappropriate student behaviour increases teacher stress (Clunies-Ross et al., 2008; Kokkinos, 2007). The limited research that has explored the link between classroom management and teacher stress found indirect reductions in teacher stress when student behaviour improved, with a medium-large effect size (Embse et al., 2019). These findings indicate that effective classroom management can also reduce teacher stress, enhancing teacher-student relationships (Embse et al., 2019).

Currently, only one tootling study has incorporated a measure of teacher occupational stress into its procedures (Miller, 2017). Teacher stress was measured by administering the Teacher Stress Inventory (TSI) to one primary school teacher (Fimian, 1984) during the baseline and the intervention phase. Positive results were reported, with a reduction in teacher stress when tootling was in place. Despite these positive results, teacher stress was only measured as a function of working with kindergarten students. Currently, the tootling literature has not investigated whether these results can be replicated with a different teacher and an older population demographic. As primary school teachers describe being “highly stressed” (Hasan & Azad, 2014, p. 15), it is critical to conduct additional research to determine if tootling has the added benefit of reducing teacher stress, which could reduce teacher attrition.

Promoting Maintenance of Behaviour

The tootling literature has reported mixed results when investigating response maintenance (Lambert et al., 2015; Lum et al., 2019; Powell, 2020). For example, positive behaviour continued when teachers continued tootling procedures (Lambert et al., 2015; Powell, 2020). However, when tootling was discontinued, behaviour returned to similar levels found in the baseline (Lum et al., 2017). A reason for these results could be that tootling’s apparatus acts as a discriminative stimulus, indicating that reinforcement is available, which controls student behaviour (Lum et al., 2017). When tootling is discontinued, no discriminative stimuli are present to suggest that reinforcement is available, and behaviour returns to similar levels observed before its introduction. Based on this argument, tootling acts as an environmental adaptation, or antecedent intervention, which creates an environment that supports better behaviour. If tootling acts as an environmental adaptation, it is important to keep its procedures in place to promote the maintenance of positive behaviour over time. As a result, tootling fits into the category of a continuous primary tier support within a PB4LSW framework. However, there is also evidence that tootling can act as a secondary tier support, which can improve the behaviour of individual students with moderate behavioural concerns (McHugh et al., 2016). Consequently, tootling could also act as a secondary-tier intervention, with the aim of returning some students back to the primary tier by providing the necessary behavioural supports (Lane et al., 2013). If these students successfully return to the primary tier, positive behaviour most likely will continue to be maintained over time through the environmental adaptations this intervention requires.

Research has revealed that teachers often struggle to sustain interventions over time (Han & Weiss, 2005). The existing tootling literature supports this argument (Lum et al., 2017). For example, there are instances when teachers chose to discontinue tootling, despite improvements in behaviour and high social validity ratings from the teachers (Lum et al., 2017). These results indicate a need to modify tootling procedures to increase the likelihood that teachers will continue to implement this intervention and that the increase in positive behaviour will be maintained. A recent study by Chaffee et al. (2020) provides one possible way that tootling could be successfully modified. Following the final phase of the ABAB reversal design, the authors removed the interdependent group contingency and evaluated if both academically engaged and disruptive behaviour was maintained under these circumstances. Chaffee et al. (2020) argued that tootling essentially creates a positive environment and, therefore, and entrapment process whereby students become more reliant on natural sources of reinforcement rather than programmed reinforcers. Results revealed that both behaviours continued to endure, despite removing the reward contingency. Although it was not formally investigated in this study, removing the reward contingency most likely increased its social validity, as teacher demand was further reduced. Finding ways to further reduce teacher demand increases the likelihood that teachers can sustain tootling interventions over time.

Gaps in the Literature

Many empirically validated interventions improve compliant or instruction-following behaviour (Lipschultz & Wilder, 2017; Radley & Dart, 2015). However, research has identified clear limitations when some of these interventions have been implemented in applied settings (Lui et al., 2014). For instance, compliance interventions can require sustained teacher attention and effort, are resource and time-intensive and can be complicated to implement (Imasaka et al., 2019). Self-management interventions overcame many of these issues and have shown to be successful at improving a variety of classroom behaviours, including the ability to follow simple instructions (Smith et al., 2022). However, self-management interventions are typically designed to act as secondary PB4LSW supports (for individual or small groups of children) and are often not feasible when applied class-wide (Chafouleas et al., 2012; Cole & Bambara, 1992). Peer-mediated interventions, such as tootling, can overcome the same issues that self-management targets and have the added benefit of being a group intervention that targets all students in the class. As a result, tootling can act as a primary and secondary tier PB4LSW intervention that can support individual target students and entire class cohorts. Ultimately, tootling could improve the instruction following of multiple students without the need to single these students out, making it a more inclusive intervention and filling a gap in the compliance literature.

Teachers may prefer interventions applied at a class-wide level for several reasons (Cole & Bambara, 1992). For example, teachers face multiple competing stimuli in the classroom and cannot monitor all student behaviour simultaneously (Skinner et al., 2002). Inevitably, some behaviours will go unnoticed (Skinner et al., 2002). To overcome this, teachers may rely on students' incidental reports of their peers' behaviour (Lambert et al., 2015). Typically, this peer-reporting system is given in the form of tattling, where inappropriate behaviours are brought to the attention of an authority figure (Skinner et al., 2000). For some negative behaviours (like aggression or bullying), notifying an authority figure is vital (Lambert et al., 2015). However, teachers can also use this existing system to encourage students to report on their peers' appropriate behaviours (Skinner et al., 2000). As peers significantly influence each other's behaviour in the classroom, teaching students to report their peers' appropriate classroom behaviours increases the chance that these behaviours will be noticed and positively reinforced (Carden-Smith, 1984). Additionally, relying on peer reports of appropriate behaviour ensures that these behaviours are encouraged and increase while reducing teacher demand.

Tootling has demonstrated that it can improve different classroom behaviours across various age groups, disabilities, and environments (Chaffee et al., 2020; Cihak et al., 2009; Dillon et al., 2019; Kirkpatrick et al., 2019; Lambert et al., 2015; Lum et al., 2019; Lum et al., 2017; Miller, 2017; Powell, 2020; Skinner et al., 2000). Promising but limited research has also demonstrated an improvement in the behaviour of individuals and groups of students (McHugh et al., 2016). However, in the tootling literature, 'appropriate' behaviour is often defined broadly to include both on-task and instruction-following behaviours (Derieux, 2019; Lambert et al., 2015; Lum et al., 2019; Lum et al., 2017; McHugh et al., 2016; Powell, 2020). Although it is likely that following instructions and being on-task are two closely related classroom behaviours, combining them into one definition means there is no way to know if tootling improves one more than the other or if they are equally affected. Additionally, instruction-following is considered a "keystone" behaviour (Barnett et al., 1996; Ducharme et al., 2001; Ducharme & Shecter, 2011). A keystone behaviour, when exhibited, "promotes engagement in other prosocial or appropriate behaviours" (Radley & Dart, 2015, p. 39). In other words, following instructions is a necessary skill that children must develop to successfully engage in other prosocial or appropriate classroom behaviours (Radley & Dart, 2015). Based on these factors, there is a need to separate instruction-following and on-task behaviour and investigate the effects tootling has on each. Separately investigating these two behaviours could reveal whether instruction-following behaviour is a mechanism to increase on-task behaviour or not. Additionally, investigating this line of research could extend the tootling literature to include instruction-following as another prosocial behaviour that tootling improves.

Purpose of this Study

The purpose of this current study was to replicate, extend and adapt the work by Powell (2020) to address some of the identified research gaps. Up until this point, the tootling literature has not investigated if has any effect on the keystone skill of instruction-following behaviour. Additionally, limited literature exists on the effects that tootling has on teacher behaviour (including teacher praise statements and teacher stress). As a result, the current study aimed to answer the following research questions:

1. Will a tootling intervention, when implemented in a Year Two general education classroom, increase the rate of instruction-following behaviour (IFB) of three target students who are less effective at following instructions than their peers?
2. Will a tootling intervention, when implemented in a Year Two general education classroom, increase the on-task behaviour of these same target students?
3. Are positive behaviour changes maintained when the interdependent group contingency component is phased out?
4. Will a tootling intervention, when implemented in a Year Two general education classroom, increase teacher praise statements?
5. Will a tootling intervention, when implemented in a Year Two general education classroom, decrease teacher occupational stress as a secondary outcome?
6. Will a tootling intervention, when implemented in a Year Two general education classroom, be rated as acceptable by the classroom teacher and the students?

Method

Participants and Setting

The school that participated in this study was a mainstream New Zealand government school that followed a PB4LSW framework. At the time of the study, the school had approximately 664 students, 56% of whom identified as Māori, 10.39% as Pacific, 7.38% as Asian, 22.98% as European and 3.17% as other. Additionally, the school was rated as a decile 3 school, indicating which socio-economic status it draws its students from (Ministry of Education, 2021). Decile ratings range from 10 (highest socio-economic status) to 1 (lowest socio-economic status) (Ministry of Education, 2021). The decile rating assigned to the school also determines what level of government funding they receive to help overcome barriers to education (Ministry of Education, 2021).

One (inclusive) general education classroom and its teacher participated in this research. The class consisted of 23 students, one class teacher and one teacher aide. The classroom teacher was a 57-year-old female who identified as NZ European. She had taught for 38 years and had been at this school for six months. During an initial interview with the teacher, she identified and recommended three target students (TS) to participate. The three selected students were Rawiri, Sally and Alea (pseudonyms), all of whom were recommended based on behavioural concerns, including a failure to follow simple instructions and lower rates of on-task behaviour when compared to their same-age peers. Preliminary observations confirmed this. For normative data purposes, two comparison students (CS) were randomly selected each observation session from the remainder of students present that day. CS would differ in each observation session.

At the time of recruitment, Rawiri (TS1) was seven years and six months old and was described by his teacher as performing well below the expected academic level. Rawiri was also described as often failing to follow simple instructions, easily bored, was often aggressive to other students and teachers and sat apart from the group during most class activities. Sally (TS2) was seven years and eight months old at recruitment. She was reported to be performing well below the expected academic level, struggling to follow instructions, and was easily distracted by others. Both Rawiri and Sally had no previous behavioural or disability diagnosis and were not receiving additional help for their problem behaviours at the time of recruitment. Lastly, Alea (TS3) was seven years and one month old and her academic functioning was unknown. The class teacher described Alea as failing to follow through with requests and having an intense interest in doing activities with the rest of the class. This, at times, interfered with her ability to follow teacher-directed instructions. Before starting the study, the class teacher disclosed that Alea did have a previous diagnosis of Autism Spectrum Disorder (exactly when and from whom is unknown). Additionally, her verbal language was described as being “very limited”. Despite this, she could understand instructions issued to her, which was confirmed during preliminary observations. At the time of recruitment, her only support was a teacher aide for classroom activities.

Ethical Approval and Consent

Ethical approval for this study was granted by the University of Waikato’s Division of Arts, Law, Psychology, and the Social Sciences Human Research Ethics Committee (FS2021-30). Permission to conduct the study was granted by the school's principal in collaboration with the participating teacher. Before the start of the study, informed consent was obtained from the class teacher (see Appendix B), and all target students (see Appendix A). Passive consent was also obtained from all other students in the classroom (see Appendix C), as tootling is a class-wide intervention.

Materials

Data Collection

Separate data collection forms for teacher and student behaviour were developed and adapted from previous tootling studies (Powell, 2020; Wright, 2016). All data collection forms included an operational definition for the behaviour being measured and included examples and non-examples of each behaviour at the top of the page. These forms also included a place to write the date, the class's activity, start and end time, the observer's name, and any field notes.

Instruction- following behaviour (IFB). IFB was measured using an event-recording data collection form (see Appendix G & H). The data collection form was divided into five columns, each assigned to one of the three target students (TS) or a randomly selected Comparison Student (CS). Two CS were selected randomly at the start of each observation session. This form was adapted from Higgs (2019) and included a place to record whether the target student or CS student followed the issued request and the instruction delivered (directed, undirected or routine). At the bottom of the data collection form was a place to calculate the percentage of instructions followed by each target student and each comparison student, as well as a place to calculate the normative data percentage.

On-Task Behaviour. A momentary time-sampling form captured on-task behaviour for TS and CS (see Appendix I). This data collection form included intervals that were numbered with a student code that was assigned to each interval. The numbered intervals started with TS1 and then progressed to CS1, TS2, CS2 and TS3 before repeating for 105 intervals. At the bottom of the page was a place to calculate the total number of intervals and the percentage of intervals when each student engaged in on-task behaviour. Additionally, there was a place to calculate the normative data.

Teacher Praise Statements. An event-recording data collection form captured teacher praise behaviour (see Appendix J). This data collection form included a place to record the frequency of teacher praise (represented by tally marks), the total amount of praise per observation session, the rate per minute and any other field notes.

Teacher Stress. The Teacher Stress Inventory (TSI; see Appendix F) is a 49-item, 10-factor instrument used to measure the self-reported levels of teacher occupational stress across ten subscales (Fimian, 1984). Similar to adaptations made by Miller (2017), only five of the ten subscales were administered, as these items look specifically at the source of teacher occupational stress. The subscales administered included; Time Management (measures how overcommitted teachers feel in their profession), Work-Related Stressors (measures the extent to which the broader school environment contributes to teacher stress), Professional Distress (measures how a teacher perceives themselves as a professional), Discipline and Motivation (measures how frustrated teachers feel as a consequence of discipline problems in the classroom and how stressed they feel while instructing poorly motivated students) and Professional Investment (measures how personally involved teachers feel in their job and how valued they feel their opinions are). All items were rated on a 5-point Likert scale, ranging from “not noticeable” (represented by 1) to “extremely noticeable” (represented by 5). On all subscales, internal consistency was found to be acceptable and correlational analysis revealed that each item related to the other and strongly related to the “total strength of stress” (Fimian & Fastenau, 1990, p. 33).

Interval Timer. During observations, a mobile app device called ‘Interval Timer’ was downloaded. At the end of the 20-second interval the app would deliver an audio signal and vibration. Headphones were used to reduce disruptions and conceal the audio signal.

Stopwatch. During observations, a stopwatch measured the time it took for a student to respond to the teacher’s instruction.

Tootling

A tootling script (see Appendix E) was developed and given to the class teacher to read to all of the students to train them in tootling procedures. The script explained what tootling was, how it worked, examples and non-examples and a discussion that confirmed that they would receive a reward for reaching the tootle goal.

To record the prosocial reporting of peers, tootle cards (8cm x 11cm) were developed. Based on teacher recommendations, the written component of tootling was reduced as the students were all young and could not write full tootles. As a result, each tootle card (see Appendix O) included a place to write the name of the person receiving a tootle and a checklist of behaviours they could select. Students were encouraged to select one prosocial behaviour per tootle. The checklist was made in collaboration with the class teacher and was based on behaviours she wanted to increase in her classroom. Behaviours students could select on this checklist included observing a peer following the teacher's instruction(s), working quietly, allowing another student to help them, the student helping others, listening quietly, and raising their hand before speaking and doing or saying something kind.

Additionally, the class teacher was given a colourful tootle box (length: 20cm, height: 12cm, width: 20cm) to collect all written tootles, and a progress chart (see Appendix P). The Progress chart displayed how close the students were to reaching their goal and receiving a reward. Other materials included a drawstring bag with slips of paper that were numbered and represented how many students must receive a tootle written about them for the class to meet their reward criteria of the day. Additionally, each student had a small white box (length: 12cm, height: 5cm, width: 10cm) placed on their desk to hold their allocated tootles for that day. Each student received three tootle cards each day to report their peers' prosocial behaviours. The decision to limit tootle cards to three each day was made in collaboration with the class teacher to prevent students from using tootling to avoid engaging in their work.

Integrity Measures

Procedural Integrity. Two procedural integrity checklists were developed and adapted from Powell (2020). The first 13-item procedural checklist (see Appendix K; Adapted from Powell, 2020) ensured that the class teacher was trained appropriately by this researcher. The second 8-item procedural checklist (see Appendix L; Adapted from Powell, 2020) ensured that the teacher included all the necessary information needed to train students in the intervention.

Treatment Integrity. A 9-item daily teacher-treatment integrity checklist was developed to ensure adequate implementation of the intervention by the teacher (see Appendix M; Adapted from Powell, 2020). A second researcher-integrity checklist (see Appendix N; Adapted from Powell, 2020) was developed to ensure that this researcher observed the adequate implementation of tootling procedures.

Social Validity

Teacher Ratings

Modified Behaviour Intervention Rating Scale (BIRS). Following the completion of the maintenance phase, the class teacher completed the BIRS (BIRS; Von Brock & Elliott, 1987; see Appendix P). The BIRS (see Appendix Q) is a 6-point Likert scale that measures social validity and has a total of 24 items that range from strongly disagree to agree strongly. The BIRS measures three factors, including Acceptability, Effectiveness and Time Effectiveness (Time). Elliott and Treuting (1991) reported that the BIRS has high internal consistency (α = .92) and good construct and content validity. Following the changes made by Powell (2020), words that referred to future tense were modified to be in the past tense. Additionally, “tootling” was used instead of “intervention”, and since tootling is introduced class-wide, the word “children” was used instead of “child”. Small changes, such as these, have not been found to have any significant bearing on the instrument's psychometric properties (Sheridan et al., 2001).

Student Ratings

Children's Intervention Rating Profile (CIRP). Following the completion of the maintenance phase, all of the students were invited to complete a modified CIRP (Turco & Elliott, 1986), which is a seven-item questionnaire of social validity (see Appendix R). This measure includes a six-point Likert scale that ranges from strongly disagree (1) to agree strongly (6). Modifications were in line with those made by Powell (2020), including changing the number system to the use of smiley faces, which was more appropriate for a younger demographic. Additionally, "tootling" was used instead of "intervention". Other research has shown that internal consistency remains high when these minor changes occur (Mitchell et al., 2015). To calculate the mean item score of the CIRP, students' scores for each item are added together and divided by the total number of students who completed the CIRP. The overall item mean is calculated by adding all the individual item means together and dividing them by the total number of items (7). Following this, the total score across all items (for each student) is added together and divided by the total number of students who completed the CIRP, which gave a total mean score out of 42 (total possible range= 7 – 42) (Turco & Elliott, 1986).

Dependent variables

Student Behaviour

The dependent variables for target students and the comparison students were comprised of instruction-following behaviour (IFB) and on-task behaviour.

Instruction-following behaviour (IFB). The primary dependent variable was IFB, operationally defined as initiating the required response within 10 seconds following the teacher's request or instruction (Higgs, 2019). The teacher's instruction was recorded and classified as *directed*, *undirected*, or *routine*. A *directed instruction* was a request issued to a specific student, and an *undirected instruction* was defined as a request not specific to one individual and addressed to the whole class. Lastly, a *routine instruction* was a request that was not said out loud, but the students were expected to follow due to the recognition of previous routines. Routine instructions depended on factors including if the teacher was wearing a stop necklace, which indicated to the students that the teacher was busy, and they needed to quietly wait for her to address them. During mat time, the students were also expected to sit down or stand up, following certain routine activities.

On-Task Behaviour. After a consultation with the class teacher and considering previous research, on-task behaviour was identified as a secondary dependent variable. On-task behaviour was operationally defined as any behaviour related to the teacher-assigned task. This included students paying attention or attending to (eyes orientated towards) the teacher or the assigned task, using appropriate materials related to the task, sitting appropriately, or engaging in task-related vocalisations with their peers or the teacher. This definition also included if a student was actively seeking to receive task-related materials.

Teacher Behaviour

The dependent variables of teacher behaviour consisted of teacher praise statements and teacher stress.

Teacher Praise Statements. Teacher praise statements were also identified as a secondary dependent variable. Praise, in this context, was defined as showing approval of correct academic work or appropriate student behaviour, using positive vocal statements or gestures. Examples could include “well done for listening”, “I love the way you are sitting so beautifully”, and “good job at finishing the task” and could even include simple statements such as “good job” or “well done”. Non-examples included the teacher giving the students stickers or tokens without explanation.

Teacher Stress. Teacher stress was also identified as a secondary dependent variable and was defined as the experiencing of negative emotions (such as frustration, anger, anxiety, or tension) as a consequence of some aspect of the teaching profession.

Independent Variable

The design of the tootling intervention closely matched the procedures outlined by Powell (2020), including the use of positive peer reporting, public posting, and an interdependent group contingency component. However, this study did make some modifications to the intervention. For example, the reward criterion was altered and was contingent on the number of students that must receive a tootle written about them rather than a pre-determined goal. The reward criterion was randomly selected from a drawstring bag that had numbers representing how many students were in the class. For example, if 20 students were in class that day, then the numbers ranged from one to 20. Each morning the class teacher would select a random number and keep the criterion secret from the class, only to reveal the target immediately before reading the daily tootles. Changing the reward criterion was intended to motivate students to report on multiple peers (Kirkpatrick et al., 2019), and to make tootling more engaging and game-like.

Data Collection

Observation times were collaboratively agreed upon between myself and the class and depended on the teacher's timetable, availability and when problem behaviours occurred most frequently. Observations took place twice a day from Monday to Thursday and were 35 minutes long (the length of a lesson). The first observation time occurred in the first teaching block (during writing), and the second observation occurred in the second teaching block (during mathematics). The class was observed over nine weeks, followed by a four-week break (which included two weeks of school holidays) before follow-up data was collected. During this time, some observations were missed due to Coronavirus (COVID-19) closures, teacher or researcher illness or unexpected changes in the timetable. For instance, the entire class went into a seven-day isolation period the day the intervention was set to be introduced, delaying all observation sessions by a week. Additionally, after observation session 19, a clash in the timetable arose and only one observation session was possible on a Monday moving forward. Finally, Rawiri was absent from observations 20 to 31, Sally was absent in sessions 18, 22 and 23, and Alea was absent from observation sessions 29 to 34 due to COVID-19.

Observation Methods

Direct observations of instruction-following behaviour were recorded through an event-recording procedure, whereby the target or comparison students' ability to follow instructions was documented. IFB was converted into percentages by dividing the number of instances the student complied with an instruction by the total number of requests directed at them.

On-task behaviour was recorded using a 20-second momentary time sampling (MTS) technique with an audio recording to indicate the end of each interval. Each student was allocated a number before observations began and observed sequentially during each interval. Rawiri was allocated to number 1, a randomly selected comparison student was allocated to number 2, Sally was allocated number 3, another randomly selected peer was allocated to number 4 and Alea was allocated to number 5. Once all students were observed once, observations would return to Rawiri (TS1) until the end of the interval timer. An MTS technique was chosen as it reduces observation errors and is a more accurate estimate of observed behaviour than other interval recording procedures (Meany-Daboul et al., 2007; Zakszeski et al., 2017). In order to allow adequate time to gather data concerning on-task behaviour, IFB and teacher praise behaviours (without compromising the accuracy of the data), 20-second intervals were decided upon (Wirth et al., 2014). Additionally, 20-second intervals were chosen because, according to Cooper et al. (2013), intervals of less than two minutes closely match results reported in continuous recording procedures. Consequently, there is less of an under or overestimation of data when MTS remains under two minutes (Cooper et al., 2013). In this study, the interval returned to student 1 after 1 minute and 40 seconds, thus fulfilling the Cooper et al. (2013) criteria of interval lengths. If any selected student was not visible, these intervals were not scored, and they were not included in the total number of intervals. On-task behaviour was calculated with the percentage of intervals. This was achieved by dividing the number of occurrences by the total number of intervals that the student was visible for and multiplying this by 100 (Johnston et al., 2020).

Teacher praise statements were defined as visible approval of correct academic responses or appropriate student behaviour indicated by positive vocal statements or gestures. An event recording procedure recorded this behaviour in the data collection as described above. Each time the teacher praised any student within the classroom, according to the definition, it was recorded. The rate of teacher praise per minute was then calculated by dividing the total number of teacher praise behaviour (that occurred during that session) by the number of standard units of time during the observation period. For example, if teacher praise occurred 12 times over a 35-minute observation period, then the calculation would be 12/35= a rate of 0.34 teacher praise per minute. Data collection methods remained consistent throughout the entire study and within all phases.

Experimental Research Design

This study used an A-B-A-B-C-D withdrawal design, with a fading and follow-up phase. Phase change decisions were made using a visual analysis of level, variability, and trends of IFB. In line with recommendations by Kratochwill et al. (2010), a minimum of five data points per phase was gathered before phase change decisions to ensure confidence in the reliability of the data (Kratochwill et al., 2010).

Procedure

Teacher Interview

Before the start of the school term, I conducted an informal 20-minute interview with the class teacher where general information was gathered about the class, including its size, the students' ages, how the class was run, etc. Additionally, the interview helped identify which students had low rates of instruction-following and on-task behaviour, and who would be recommended as target students. During this initial interview, the class teacher voiced concerns over the written component of tootling due to the students' ages. Following this, a checklist of behaviours was decided upon and behaviours the teacher wanted to improve were adapted into this list.

Preliminary Observations

Before the start of the data collection, I completed four preliminary observation sessions in the classroom that spanned the course of the entire day. This allowed me to become familiar with the teacher, their schedule, and classroom behaviours. Additionally, it allowed for the refinement and operationalisation of the behavioural definitions, the finalisation of data collection forms, and reduced participant anxiety by normalising my presence. These preliminary observations also confirmed the need for an intervention targeting the selected students who had lower instances of instruction-following and on-task behaviour than their peers. During this time, I also discovered that collecting normative data every day for IFB proved too challenging, and the accuracy of the data may be affected, resulting in the decision to collect normative data for these behaviours every second day. This same issue did not exist while collecting normative data for on-task behaviour, which was collected daily.

Baseline

The baseline condition occurred over 11 separate sessions for all three target students and their peers. The teacher was encouraged to continue classroom activities as normal, while I collected data on instruction-following, on-task, and teacher praise statement behaviours for each target student and two of their peers. Additionally, the TSI was administered to the teacher during this phase.

Teacher Training

After deciding to introduce the intervention, teacher training began, and all tootling materials (including the public posting chart, tootle box, tootle cards and individual white boxes to hold daily allocated tootles) were handed to the teacher. Teacher training occurred one morning before school started and lasted around 30 minutes, during which this researcher introduced the principles of tootling and handed over the teacher script (see Appendix E) in the participating classroom. The class teacher and this researcher went through the script together and reviewed the examples and non-examples and possible rewards the class could engage in. The reward criterion (the number of students that need to receive a tootle written about them) was also explained and the drawstring bag consisting of the slips of numbered paper was given to the teacher. Following on, we rehearsed the script to ensure the teacher could inform and train the students appropriately.

Student Training

Once the participating teacher was confident in the tootling procedures and the school day had begun, she presented the class-wide intervention to the students during mat time and read the instruction script. The script explained the tootling procedures and trained the students to observe and record their peers' prosocial behaviour. Students were instructed to write the name of the peer they were reporting on at the top of the tootle card and tick the behaviour they saw them engage in. The teacher also explained the reward criterion to the students and instructed them on where to post their tootles (in the tootle box) when completed. Examples and non-examples of a correct tootle were presented to the students by the class teacher. For instance, the teacher emphasised that an example of a correct tootle was if they observed a peer following an instruction issued by the class teacher. Other examples included if they observed a peer raising their hand before answering the teacher, working quietly, or helping other students in some way. Following this, the teacher explained the public progress chart and how meeting or exceeding the reward criterion would result in a sticker on the chart. The teacher then explained that if the class achieved three stickers in a row, they would receive their group reward. Finally, the teacher allowed the students to suggest possible group rewards. During this collaborative discussion, it was decided that the group reinforcement would consist of a choice between 15 minutes of a class game, playtime outside or free time to engage in any activity. Any one of these rewards could be selected by the students if they reached their goal.

Tootling Intervention

Once sufficient data was collected in the baseline and a prediction could be made, the intervention was implemented. On the first day of the intervention, the teacher read the instruction script to the class and made the tootle container and public progress chart visible to all students. The progress chart was placed at the front of the class (on the whiteboard) and the tootle container was located at its front left. Following this, the teacher selected her random tootle target, and all students were given their allocated daily tootles (three tootles per student), indicating that the intervention had started. After mat time, the students were encouraged to put their tootles in the white boxes on their desks and they could record tootles during their usual classroom routines. Ten minutes before the second break, the teacher prompted all students to submit their final tootles. When the second break was ten minutes from ending (and all children were eating their lunches at their desks quietly), the teacher selected a handful of tootles and silently read them, checking for accuracy. The class teacher read a selection of tootles until the target was met or exceeded and then revealed the secret tootle target. If the target was reached, the teacher would select one student at random to add a sticker to the progress chart. If the goal was not reached, the teacher praised the students for their effort, but no sticker would be added to the progress chart. Teacher praise during this time was not collected as part of the data on teacher praise statements as this occurred outside of the scheduled observation times. After the class received three stickers in a row, students voted and selected one of the three reward choices. The reward was then issued immediately, and the progress chart would start over. Near the end of the intervention phase, the Teacher Stress Inventory was re-administered to the class teacher.

Withdrawal

Following clear treatment effects on IFB, the teacher indicated to all of the students that the tootling game would be withdrawn from the classroom. All tootling material was removed prior to the start of the school day. Typical classroom activities resumed that were similar to those in the baseline phase.

Re-implementation

Following the withdrawal phase, all tootling materials were re-implemented in the same way as they were during the initial intervention phase. Progress on the progress chart reset again from zero stickers.

Fading & Follow-up

Once data stabilised, the teacher moved to the fading out phase. This included keeping all components of the tootling intervention present, except for the interdependent group contingency (or reward) component. This phase lasted for a total of five observation sessions.

Follow-up data was collected three to four weeks after the last fading observation session. During this time, the teacher could decide whether to continue or discontinue tootling procedures. At the time of the follow-up, the teacher had chosen to remove all tootling material and discontinue the intervention. Follow-up data were gathered on two separate days, a week apart, with one observation session in the morning and the other in the mid-morning session.

Social Validity

Following the fading phase, the BIRS and the CIRP rating scales were administered to the class teacher and all students in the classroom, respectively. Children who did not want to complete the CIPR were instructed to continue with a different task during this time (such as silent reading). Due to the age level of the students and their reading capabilities, the teacher read the CIRP aloud to the students, who then circled their responses.

Interobserver Reliability

Interobserver agreement (IOA) was measured as a way to ensure the accuracy and reliability of the observational data (Cooper et al., 2013) gathered by myself and a trained secondary observer. This study had two trained secondary observers, as one observer was affected by COVID-19 mid-way through the research study. The first trained secondary observer was a Master's in Applied Psychology student, and the second was a Master of Science Psychology Student at the same major university. They were both trained by myself prior to any data collection, on all observational and recording procedures, and operational definitions. On the days that IOA was collected, we would independently and simultaneously record the students' behaviours while sitting in close proximity to each other but far enough away that neither of us could see what the other was recording. We would also ensure that we could view the entire class and the teacher. According to IOA regulations, a minimum of 80% was required prior to and during all data collection (Cooper et al., 2020; Johnston et al., 2020). If IOA scores fell below 80% at any point, retraining of the operational definitions and procedures would occur. Retraining was needed on one occasion when the IOA score for IFB was 79%. IOA for IFB was calculated by using the trial-by-trial method, which included the number of trials (items) in agreement divided by the total number of trials (items) multiplied by 100 (Cooper et al., 2020). The IOA for on-task behaviour was measured using the interval-by-interval method by calculating the total number of agreements divided by the total number of intervals agreed plus the total number of intervals disagreed, multiplied by 100 (Cooper et al., 2020). Finally, the total agreement method was used to calculate IOA for teacher praise statements. This involved dividing the smaller total by the larger total of teacher praise statements, multiplied by 100.

IOA was obtained for 12 (26.7%; range: 20%-50%) of the study's 45 sessions, meeting the recommendations that at least 20% of observations should have an IOA present across the different phases of the study (Kennedy, 2005). Table 1 shows the mean IOA scores for each of the different behaviours observed across the study. Overall, the mean percentage of IOA did not fall below the 80% threshold.

Table 1

Mean percentage IOA Scores for each Type of Behaviour in each Phase

Type of behaviour:	Mean % IOA score (range):	
Instruction-Following Behaviour	Baseline	96 (93-100)
	Tootling	91 (84-100)
	Withdrawal	80 (79-81)
	Re-implementation	89 (89-89)
	Fading	84 (no range)
	Follow-Up	89 (no range)
	Across Phases	**88**
On-Task Behaviour	Baseline	93 (90-95)
	Tootling	90 (85-95)
	Withdrawal	91 (89-93)
	Re-implementation	91 (87-95)
	Fading	82 (no range)
	Follow-Up	93 (no range)
	Across Phases	**90**
Teacher Praise Statement	Baseline	92 (80-100)
	Tootling	95 (91-100)
	Withdrawal	85 (80-89)
	Re-implementation	97 (94-100)
	Fading	87 (no range)
	Follow-Up	83 (no range)
	Across Phases	**89**

Data Analysis

Visual Analysis

Following each observation session, raw data sets were entered into a Microsoft Excel spreadsheet and graphs were created using this software. The visual analysis allowed an evaluation of the data's level, trend and variability within and between conditions (Lane & Gast, 2014). As a result, decisions could be made about when phases should be introduced as well as help determine if any functional relationship existed between the independent and dependent variables (Kratochwill et al., 2010; Lane & Gast, 2014).

Effect Size Calculations

Tau-U effect size calculations were utilised to evaluate the treatment's effects between the baseline and intervention phases. When evaluating these treatment effects, typically, non-overlapping of all pairs (NAP) (Parker & Vannest, 2009) is a standard method previously employed in the tootling literature (Lambert et al., 2015; Lipscomb et al., 2018; McHugh et al., 2016). However, other tootling research has primarily chosen to employ Tau-U for nonoverlap with baseline control (Tau-U) (Parker et al., 2011), including authors such as Chaffee et al. (2020); Kirkpatrick et al. (2019); Lum et al. (2019); Lum et al. (2017), and Powell (2020). Tau-U was used as a measure of the effect size because it is a more conservative method than NAP, with no artificial ceiling effects (Parker et al., 2011). Most importantly, Tau-U can also "estimate and correct for an undesirable baseline trend" (Balthazar & Vendrely, 2021, p. 346) and it is less influenced by possible outliers in the data (Lee & Cherney, 2018; Şen & Şen, 2019). A Tau-U score between 0.00 to 0.20 indicates a small change, a score between 0.20 to .60 is a moderate change, 0.60 to 0.80 shows a large change and anything above 0.80 is a very large change (Vannest & Ninci, 2015). While calculating Tau-U, baseline data were analysed for any significant trends, with a trend level score above 0.30 requiring a trend correction (Vannest & Ninci, 2015). A baseline trend correction was necessary when calculating Tau-U for Rawiri.

Results

Measures of Integrity

Procedural Integrity

Procedural integrity scores were calculated by dividing the number of steps completed by the total number of steps required on the procedural integrity forms, which was then multiplied by 100. Procedural integrity was 100% for teacher and student training sessions during both intervention phases.

Treatment Integrity

The teacher-rated treatment integrity had a mean score of 98%. The teacher reported that she did not complete three of the nine steps during the last day of the tootling re-implementation phase. This included step 6, *Read several tootles and provide praise/corrective feedback*; step 7, *Count tootles (up to the secret tootle goal for that day)*; and step 8, *Update progress chart if the goal was met*. The mean observer-rated treatment integrity was 95%. During my observations, in the re-implementation phase, I noted three occasions where tootles were not handed out first thing in the morning and one occasion where the teacher failed to update the progress chart (despite students meeting the tootle target).

Student Behaviour

Instruction-Following Behaviour

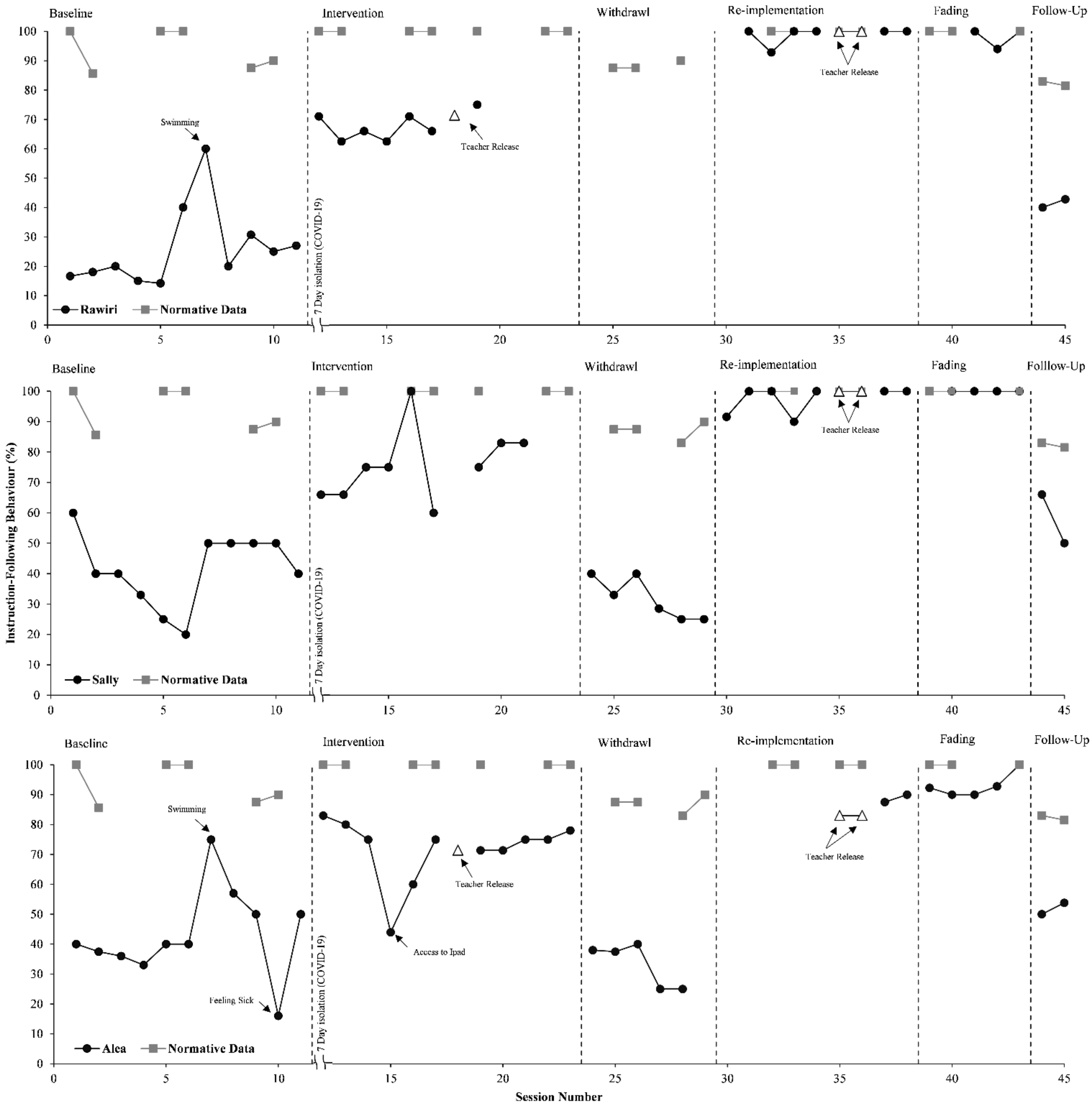
Instruction-following behaviour (IFB) was the primary dependent variable measured in this study. Figure 1 illustrates the percentage of IFB for each observation session across conditions for all target students and comparison students (normative data).

Visual analysis revealed that normative data remained high across all phases, with an overall mean of 95.7% IFB. When the intervention was in place, normative data increased further with less variability in the data than when the intervention was absent. These positive results were maintained during the fading phase when the interdependent group contingency was absent, but all other tootling procedures remained in place.

A relief teacher was present for 6.7% of all observation sessions (sessions 18, 35 and 36) and is represented by open triangles. When a relief teacher was present, tootling procedures continued to be implemented. IFB continued to be collected during these sessions as an indication of generalisation; however, these results are not represented in the mean, range, or effect size calculations.

Figure 1

Percentage of Instruction-Following Behaviour (IFB) for Target Students and Normative Data across Conditions.



Rawiri. At the baseline, Rawiri's instruction-following behaviour was substantially lower than the normative data of his same-age peers, except for an unusually high percentage of IFB in the seventh observation session. A possible reason for this spike could be that the class teacher encouraged all students to behave well in order to have access to the swimming lesson in the next teaching block, possibly influencing his IFB during this session. If this outlier is included in the trend analysis, Rawiri's IFB was variable with an accelerating trend and an overall mean of 26% (range = 14.2% - 60%). If this outlier is excluded, his behaviour is reported fairly stable with a slightly accelerating trend and an overall mean of 22.7% (range = 14.2% - 40%). In the intervention phase, Rawiri's IFB immediately increased from the last data point in the baseline (27%) to the first data point in the intervention phase (71%). Rawiri's overall IFB increased to a mean of 67.7% (range = 62.5% - 75%) with a gradually increasing stable trend. No data was collected for Rawiri during the withdrawal phase as he was absent from school due to contracting COVID-19. Rawiri's IFB remained high during the re-implementation, with no observable trend and a mean of 98.8% (range = 92.8% - 100%). These results were maintained during fading, where overall IFB had a mean of 98% (range = 94% - 100%). During follow-up, Rawiri's IFB decreased, with a mean of 41.4%.

Sally. At the baseline, Sally's IFB was low compared to her same-age peers, with high variability in the data and no visible trend (M = 41.6%; range = 20% - 60%). When tootling was introduced, Sally's IFB immediately increased from the last data point in the baseline (50%) to the start of the intervention (66%). Additionally, her mean IFB increased to 75.9% (range = 60% - 100%) with a variable accelerating trend. During the withdrawal phase, behaviour immediately decreased, with relatively stable data and a slightly decelerating trend (M = 31.9%; range = 25% - 40%). During the re-implementation phase, Sally's IFB exceeded levels found in the initial treatment condition and had a mean of 97.4% (range = 90% - 100%). Additionally, IFB was relatively stable with no observable trend during this phase. These results were maintained during the fading phase (*M* = 100%; range = 100% - 100%). Finally, follow-up data revealed that Sally's IFB reduced to similar levels found in the baseline with a mean of 58%.

Alea. During the baseline, Alea had two clear outliers in her IFB data during observation sessions seven (swimming lesson) and ten. In observation session ten, Alea's IFB reached its lowest point, which could be explained by the fact that she was observably sick that day. If these outliers are included in the trend analysis, her IFB was highly variable with an accelerating trend and a mean of 43.1% (range = 16% - 75%). If the outliers are excluded, Alea's IFB was somewhat variable with an accelerating trend and a mean of 42.6% (range = 33% - 57%) during the baseline. When tootling was introduced, Alea's IFB immediately increased from 50% at the end of the baseline to 83% at the start of the intervention. One outlier was present in the intervention data with a sudden drop in IFB during observation session 15. A possible reason for this decrease in behaviour could be that Alea was given access to an iPad (a highly valued item), which could have affected her ability to attend to instructions effectively. Including this outlier in the data, her IFB was variable with an increasing trend and a mean of 71.6% (range = 44% - 83%). Excluding this outlier, Alea's behaviour stabilised and had a slightly decelerating trend with a mean of 74.4 (range = 60% - 83%). During the withdrawal phase, Alea's IFB immediately returned to similar levels seen in the baseline, with a mean of 33% (range = 25% - 40%) and a decelerating trend. During re-implementation, Alea's IFB immediately increased with a gradually increasing stable trend (*M* = 88.6%; range = 87.5 - 90). There was little change in the data during the fading phase and IFB remained high (*M* = 90.7%; range = 90%-92,3%) with an increasing trend. Finally, Alea's mean IFB lowered to 51.9% at the follow-up.

Effect Size. The Tau-U effect size was calculated to determine whether the tootling intervention impacted the IFB of the target students and their peers (comparison students).

The Tau-U for the comparison students was 0.36 (95% CI [-0.1667, 0.8810]), indicating a moderate change in instruction-following behaviour from the baseline to the intervention phase (95% CI [-0.1667, 0.8810]). The Tau-U for Rawiri, after correcting for the baseline trend, was 0.73 (95% CI [0.2516, 1]), indicating a large change in IFB. The Tau-U effect size for Sally (TAU = 0.99 (95% CI [0.6214, 1])) and Alea's (TAU=0.84 (95% CI [0.4672, 1])) IFB was very large, indicating a significant change in instruction-following behaviour for both target students. Overall, Tau-U calculations, for all three students, resulted in an effect size score of 0.86 (95% CI [0.529, 1]), revealing that tootling was a highly effective intervention with a high level of non-overlap between the baseline and intervention phases.

Table 2

Mean, Ranges and Tau-U Scores for the Instruction-Following Behaviour of all Three Target Students and Normative Data but Excluding Outliers.

Phase	**Normative Data**		**Rawiri**		**Sally**		**Alea**	
	Mean (range)	Tau-U	Mean (range)	Tau-U	Mean (range)	Tau-U	Mean (range)	Tau-U
	%		%		%		%	
Baseline	93.9 (87.5 - 100)		22.7 (14.2 - 40)		41 (20 - 60)		42.6 (33 – 57)	
Tootling	100 (100 - 100)	.36	67.7 (62.5 - 75)	.73*	77.9 (60 - 100)	.99**	74.4 (60 – 83)	.84**
Withdrawal	88.3 (87.5 - 90)				31.9 (25 - 40)		33 (25 – 40)	
Re-implementation	100 (100 - 100)		98.8 (92.8 - 100)		97.4 (90 – 100)		88.6 (87.5 - 90)	
Fading	100 (100 - 100)		98 (94 - 100)		100 (100 – 100)		90.7 (90 – 92.3)	
Follow-up	82.3 (81.5 - 83)		41.4 (40 - 42.8)		58 (50 – 66)		51.9 (50 – 53.8)	

** Very large effect size
* Large effect size

Instructions Delivered

Figure 2 shows the percentage of instructions (directed, undirected or routine) delivered to each of the target students across the different phases of the study. Of the total instructions delivered to the comparison students (normative data), 31% were directed instructions, 55% were undirected instructions and 14.3% were routine instructions. It is worth nothing that the number of directed and routine instructions could vary across students. This was mainly due to the fact that not all students were present in the classroom at all times. If a student was absent or outside of the classroom and could not hear the routine instruction delivered to them, this type of instruction was not recorded in the total number of instructions delivered to them. Each time an instruction was given by the teacher, the type of instruction delivered was recorded on the data collection forms. This was then converted into percentages per phase. Figure 3 shows the total number of directed instructions issued in each observation session across phases.

Figure 2

Percentage of Directed, Undirected, and Routine Instructions Delivered across Conditions for each Target Student.

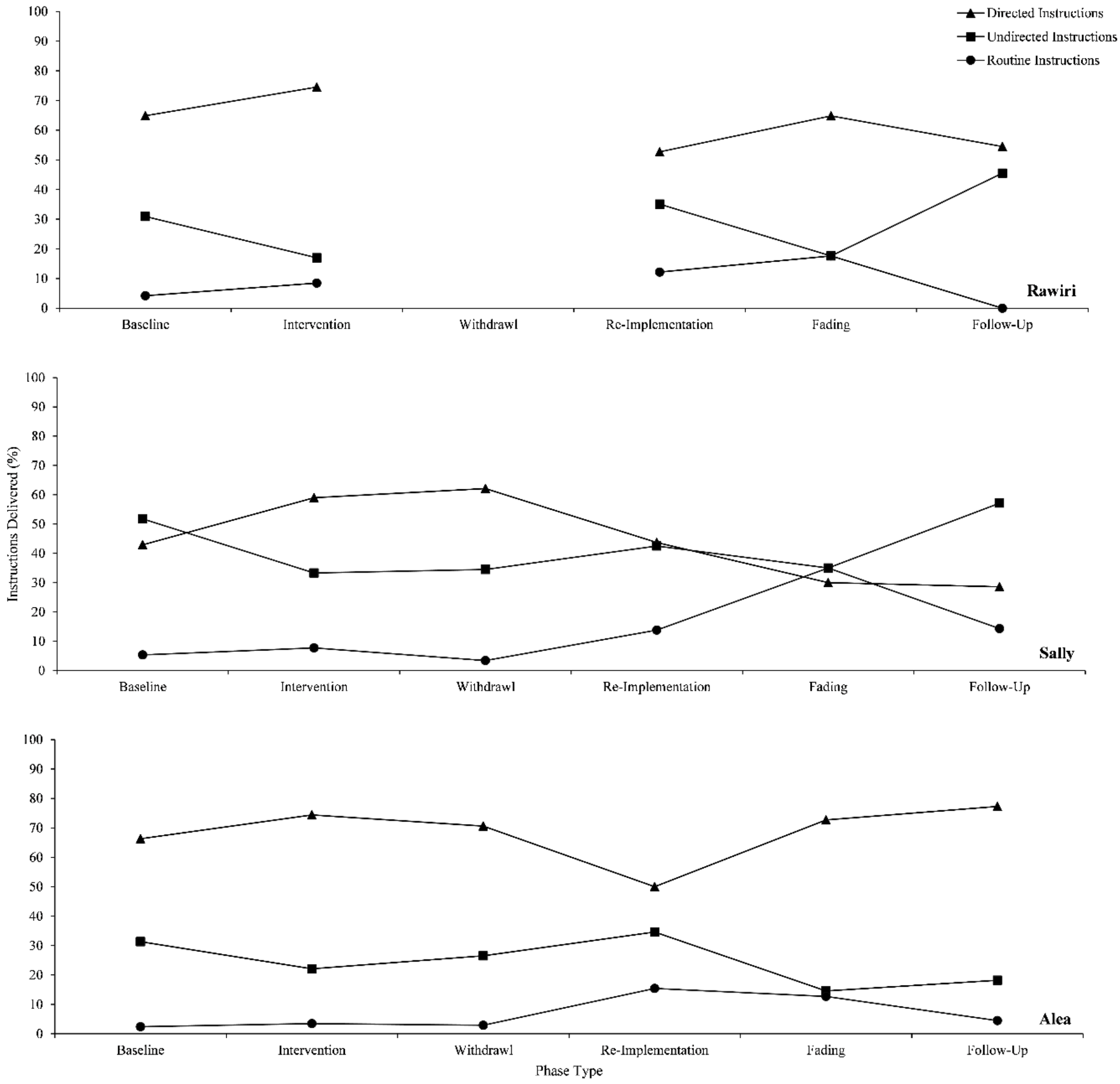
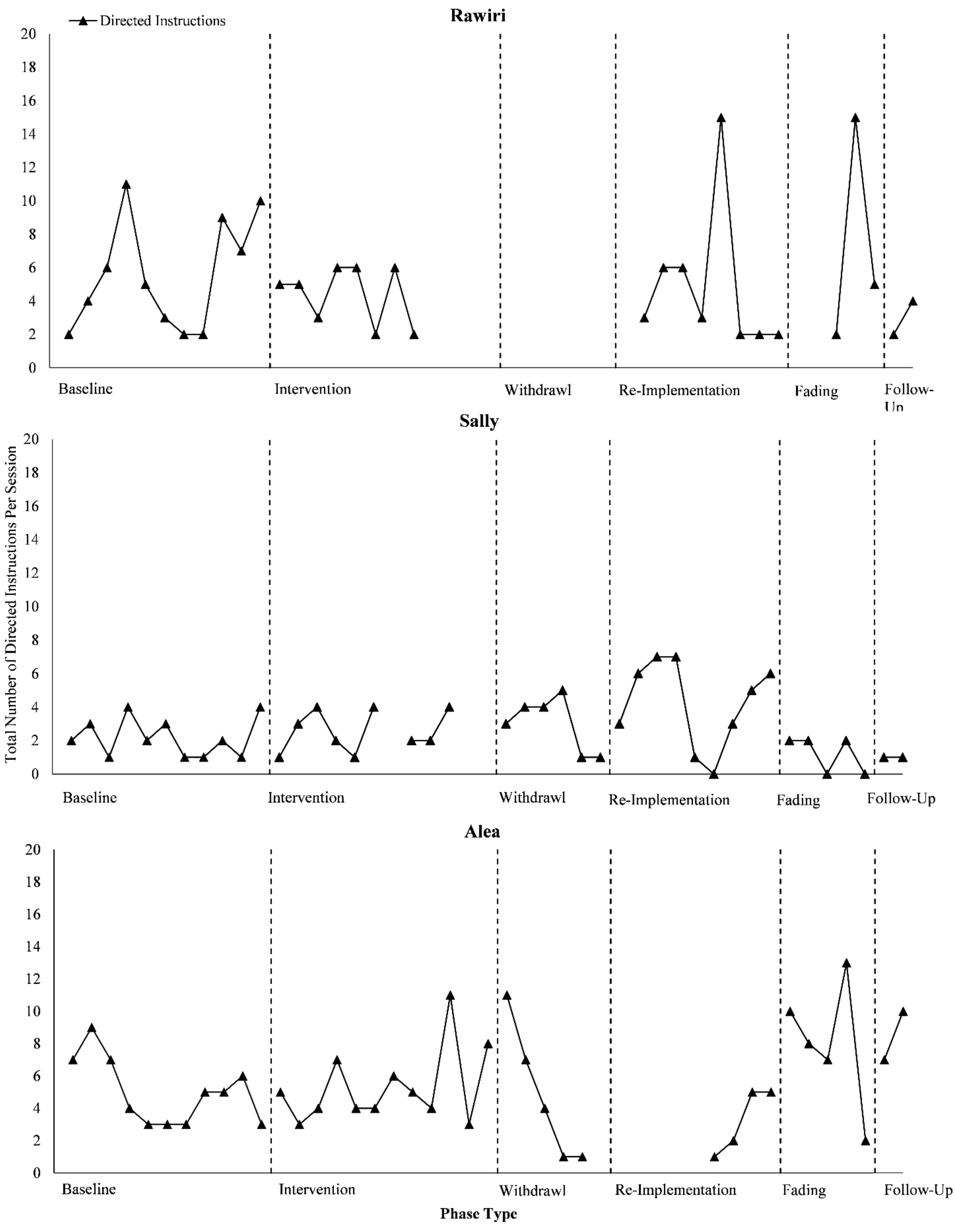


Figure 3

Total Number of Directed Instructions Issued in Each Observation Session across Phases.



Rawiri. In baseline the number of directed instructions issued to Rawiri was highly variable with a decelerating trend and a mean of 5.5 (range = 2 – 11). When the intervention was introduced the number of directed instructions decreased but continued to be variable and had a decelerating trend with a mean of 4.4 (range = 2 – 6). During re-implementation the number of directed instructions increased slightly but remained variable with a slightly decelerating trend and a mean of 4.9 (range = 2 – 15). High variability was also observed in the fading phase with a mean of 7.3 (range = 2 – 15). The number of directed instructions during the follow-up (*M* = 3; range = 2 - 4) remained similar to the levels seen across the phases.

Sally. In baseline the number of directed instructions issued to Sally was low, fairly stable with no observable trend and a mean of 2.2 (range = 1 – 4). Little change was observed during the intervention phase with a slightly increased mean of 2.5 (range = 1 – 4). During withdrawal the number of directed instructions issued was initially higher, followed by a reduction in the number of instructions delivered. Additionally, a decelerating trend was observed with a mean of 3 (range = 1 – 5). In re-implementation the number of directed instructions was more variable with a decelerating trend and an increased mean of 4.2 (range = 1 – 7). During fading the number of directed instructions was lowered with a decelerating trend and a mean of 1.2 (range = 0 – 2). The follow-up data showed little change in the number of directed instructions issued to Sally with an overall mean of 1 (range = 1 – 1).

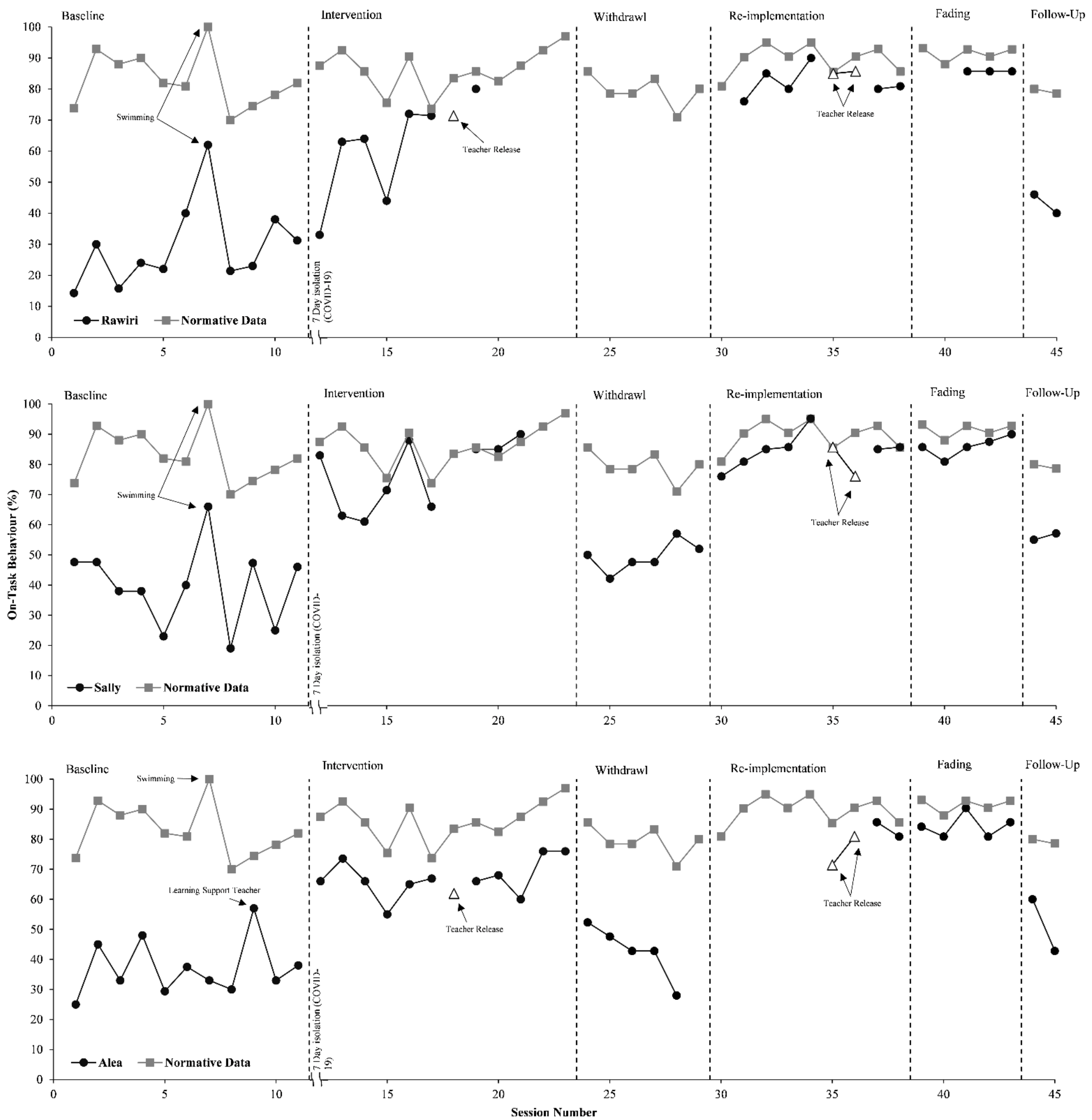
Alea. In baseline the number of directed instructions issued to Alea was highly variable with a decelerating trend and a mean of 5 (range = 3 – 9). During the intervention phase little change occurred. The number of directed instructions issued remained highly variable with a slightly accelerating trend and a mean of 5.3 (range = 3 – 11). In withdrawal a rapidly decelerating trend with a mean of 4.8 (range = 1 – 11) was observed. During re-implementation the number of directed instructions issued had a rapidly increasing trend with a mean of 3.3 (range = 1 – 5). In fading the overall mean increased to 8 (range = 2 – 13) with no observable trend. The number of directed instructions remained high during the follow-up phase with a mean of 8.5 (range = 7 – 10).

On-Task Behaviour

A secondary dependent variable measured in this study was on-task student behaviour. Figure 4 represents the percentage of on-task behaviour for each target student across the different phases and the mean normative on-task behaviour of two randomly selected comparison students. Across all phases the mean normative on-task behaviour remained high (M = 85%). During baseline normative on-task behaviour was variable with a decelerating trend and an overall mean of 82.9% (range = 70%-100%). During intervention normative on-task behaviour remained somewhat variable with a slightly increasing trend and a mean of 86.2% (range = 73.7% - 92.5). During withdrawal normative on-task behaviour decreased with a mean of 81.4% (range = 78.5% - 85.6%) and a decreasing trend. In re-implementation, normative IFB had a mean of 79.5% (range =71%-85.7%) with relatively stable data and a slightly decelerating trend. In fading normative on-task behaviour increased, with a mean of 91.4% (range =88%-93.2%) and a non-observable trend. When the teacher removed the tootling intervention, follow-up data revealed that normative on-task behaviour decreased with a mean of 79.2%.

Figure 4

Percentage of On-Task Behaviour for Target Students and Normative Data across Conditions.



Rawiri. Rawiri's on-task behaviour was significantly lower than his peers during baseline. The only exception to this was in observation seven, where his on-task behaviour increased to 62%, which may have been caused by the teacher's encouragement for the students to behave well to have access to the subsequent swimming lesson. Including this outliner, Rawiri's on-task behaviour was highly variable with a slightly increasing trend and a mean of 29.2 (range = 14.3% - 62%). Excluding this outlier, Rawiri's on-task behaviour was somewhat variable with a slightly accelerating trend and an overall mean of 26% (range = 14.3% - 40%). During intervention Rawiri's overall on-task behaviour increased with a mean of 61% (range = 33%-80%) but continued to have variability in his data with an accelerating trend. No data was collected during the withdrawal phase due to Rawiri's absence. During re-implementation Rawiri's on-task behaviour increased and was more stable with no obvious trend (*M* = 82%; range =79%-90%). These results were maintained in the fading phase with Rawiri's on-task behaviour remaining high (*M* = 85.7%; range = 85.7%-85.7%). When the intervention was removed completely, on-task behaviour decreased with a mean of 43% in the follow-up phase.

Sally. During baseline Sally's on-task behaviour was clearly lower than her same-age peers. In observation seven, the same outlier as Rawiri (swimming lesson) could be responsible for an increase in Sally's behaviour. If this outlier is included, on-task behaviour was highly variable with a slightly increasing trend and a mean of 39.8% (range = 19%-66%). Excluding the outlier, Sally's on-task behaviour was highly variable with a decreasing trend and a mean of 37.2% (range = 19% – 47.6%). During intervention Sally's on-task behaviour immediately increased from 46% at the end of the baseline to 83% at the start of the intervention. Sally's on-task behaviour remained variable in this phase, with an accelerating trend and an increased mean of 76.9% (range = 61% - 90%). During withdrawal Sally's on-task behaviour returned to similar levels found in the baseline, with a reduced mean of 49.3% (range = 42.1%-57%) and an accelerating trend. During re-implementation Sally's on-task behaviour instantly increased with a mean of 84.9% (range = 76%-95.2%) with a slightly accelerating trend. Similar to the previous phase, Sally's on-task behaviour remained high and stable during fading with a mean of 86% (range = 80.9%-90%) with an accelerating trend. Follow-up data revealed that Sally's on-task behaviour immediately reduced with a mean of 56%.

Alea. During baseline Alea's percentage of on-task behaviour was much lower than her same-age peers. Observation nine includes a possible outlier with the once-off presence of a learning support teacher that provided additional help to Alea. If the outlier is included or excluded, Alea's on-task behaviour was variable with no obvious trend in baseline. The overall mean with the outliner included was 37.2% (range = 25% - 57%) and was 35.2% (range = 25% - 48%) when excluding the outlier. Once the intervention was introduced, Alea's on-task behaviour showed an immediate increase from the end of the baseline (38%) to the start of the tootling intervention phase (66%). Additionally, her behaviour was somewhat variable with no trend and a mean of 67.1% (range = 55%-76%). During withdrawal Alea's mean on-task behaviour reduced to similar levels found in the baseline, with a mean of 42.7% (range = 28%-52.3%) with fairly stable data and a decelerating trend. When tootling was re-implemented, her on-task behaviour immediately increased and had an overall mean of 83.3% (range =80.9% - 85.7%) with an accelerating trend. When the interdependent group contingency was removed during the fading phase, Alea's on-task behaviour remained high with a mean of 84.4% (range = 80.9%-90.4%) and had no visible trend. Follow-up data revealed that without the intervention in place, Alea's on-task behaviour immediately reduced, with a mean of 51.4%.

Effect Size. The Tau-U effect size was calculated to determine whether the tootling intervention impacted the on-task behaviour of the target students and their peers (comparison students). The Tau-U for the comparison students was 0.67 (95% CI [-0.2573, 1]), indicating a large change in the on-task behaviour of the comparison students from the baseline to the intervention phase. Additionally, Tau-U calculations revealed a very large effect size for Rawiri (TAU= 0.81; 95% CI [0.3475,1]), Sally (TAU = 0.92; 95% [CI 0.5095,1]) and Alea (TAU = 0.96; 95%CI [0.5878,1]). The effect size calculation for all target students was 0.90 (95% CI [0.562,1]), which indicates a very large behaviour change. These findings reveal that the tootling intervention was very effective at improving comparison students' and the three target students' on-task behaviour, with a high level of non-overlap between the baseline and intervention phases.

Table 3

Mean, Ranges and Tau-U scores for the On-Task Behaviour of all Three Target Students and Normative Data but Excluding Outliers.

Phase	**Comparison Students (CS)**		**Rawiri**		**Sally**		**Alea**	
	Mean (range)	Tau-U	Mean (range)	Tau-U	Mean (range)	Tau-U	Mean (range)	Tau-U
	%		%		%		%	
Baseline	82.9 (70 - 100)		36 (14.3 – 40)		37.2 (19 – 47.6)		35.2 (25 – 48)	
Tootling	86.2 (73.7 – 92.5)	.67*	61 (33 - 80)	.81**	76.9 (61 - 90)	.92**	67.1 (55 – 76)	.96**
Withdrawal	81.4 (78.5 - 85.6)				49.3 (42.1 - 57)		42.7 (28 – 52.3)	
Re-implementation	79.5 (71 – 85.7)		82 (79 - 90)		84.9 (76 – 95.2)		83.3 (80.9 – 85.7)	
Fading	91.4 (88 – 93.2)		85.7 (85.7 – 85.7)		86 (80.9 – 90)		84.4 (80.9 – 90.4)	
Follow-up	72.9 (78.6 – 80)		43 (40 - 46)		56 (55 – 57.1)		51.4 (42.8 – 60)	

** Very large effect size
* Large effect size

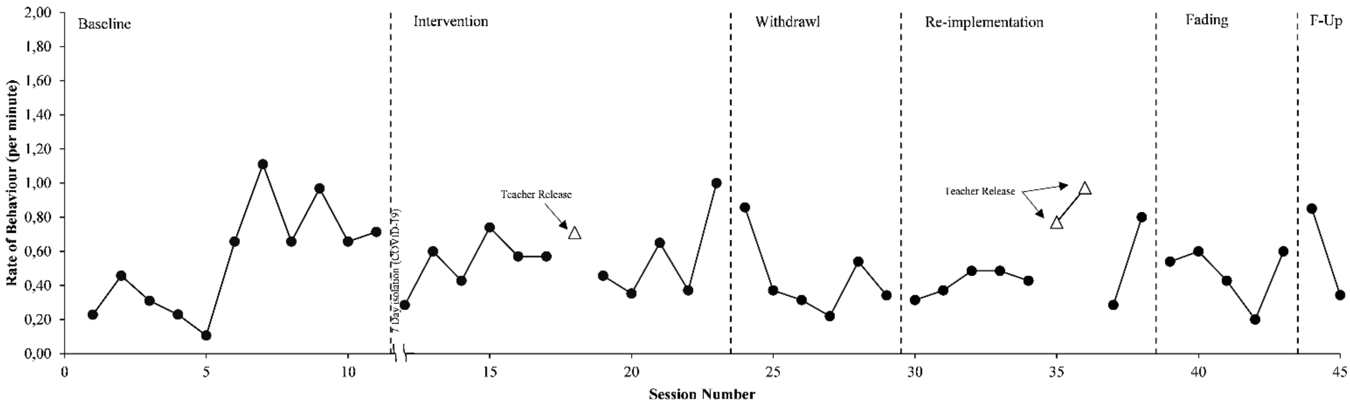
Teacher Behaviour

Teacher Praise Statements

Teacher praise statements were also defined as a secondary dependent variable measured in this study. Figure 5 represents the rate of teacher praise statements per minute. A relief teacher was present for three of the forty-five observation sessions and is represented by open triangles. Praise statements from the relief teacher were not included in mean, range or effect size calculations and are only represented for generalisation purposes.

Figure 5

Rate of Teacher Praise Statements across Phases. Teacher Release present in sessions 18, 35 and 36.



In baseline teacher praise statements showed a highly variable accelerating trend with a mean rate of 0.55 (range = 0.11-1.11) per minute. During the intervention phase praise statements decreased and had a mean rate of 0.54 per minute (range = 0.28-1.00), with a variable decelerating trend. During withdrawal praise statements remained low, with a mean rate of 0.44 per minute (range = 0.22-0.86) and a somewhat variable accelerating trend. This was maintained during the re-implementation phase, where teacher praise showed a slightly decelerating trend with a reduced mean rate of 0.45 per minute (range = 0.28-0.8). During fading teacher praise remained relatively unchanged and remained low with a decelerating trend and mean rate of 0.47 per minute (range = 0.2-0.54). During the final follow-up phase teacher praise continued to be relatively low with a mean rate of 0.6 (range =0.34-0.85) per minute.

Effect Size. Tau-U calculations reveal a small negative effect size (-.25; 95% CI [-0.5968,0.1009]), indicating that tootling had little effect on teacher praise statements with a low level of non-overlap between baseline and intervention pairs.

Teacher Stress

The class teacher was given the TSI (Fimian, 1984) during baseline and initial intervention phase. Figure 6 and Table 4 depict the average stress rating in each of the five subscales, pre-and post-intervention, and the total average stress rating. It is worth nothing that during the intervention phase the class teacher was given extra daily duties as a direct result of COVID-19 (including catering to online and in-person students), which may have had an impact on these results.

Overall results of the TSI indicate that the average teacher stress rating increased from 2.9 in baseline to 3.6 in the intervention phase. These results indicate a 0.7 increase in teacher stress ratings from the baseline to the intervention phase. Increases in occupational stress were reported in three of the five subscales: Professional Distress, Work-related Stressors and Professional Investment. The most significant stress increase was reported in the Work-related Stressors and Professional Investment subscales, with a 1.5 stress increase from baseline to the intervention phase. Professional Distress also increased from 2.6 during baseline to 3.6 in the intervention phase, with a 1.0 stress increase. The two remaining subscales reported reduced occupational stress when tootling was introduced. A decrease in stress ratings occurred in the subscale Disciple and Motivation when comparing the post-intervention rating (*M* = 2.5) to the pre-intervention rating (*M* = 3). Finally, the teacher reported a slight decrease in the Time Management subscale post-intervention (*M* = 3.6) compared to pre-intervention (*M* =3.75). These results are also depicted visually in Figure 6 and Table 4.

Figure 6

Average Teacher Stress Rating Pre-intervention and Post-intervention across Five Subscales.

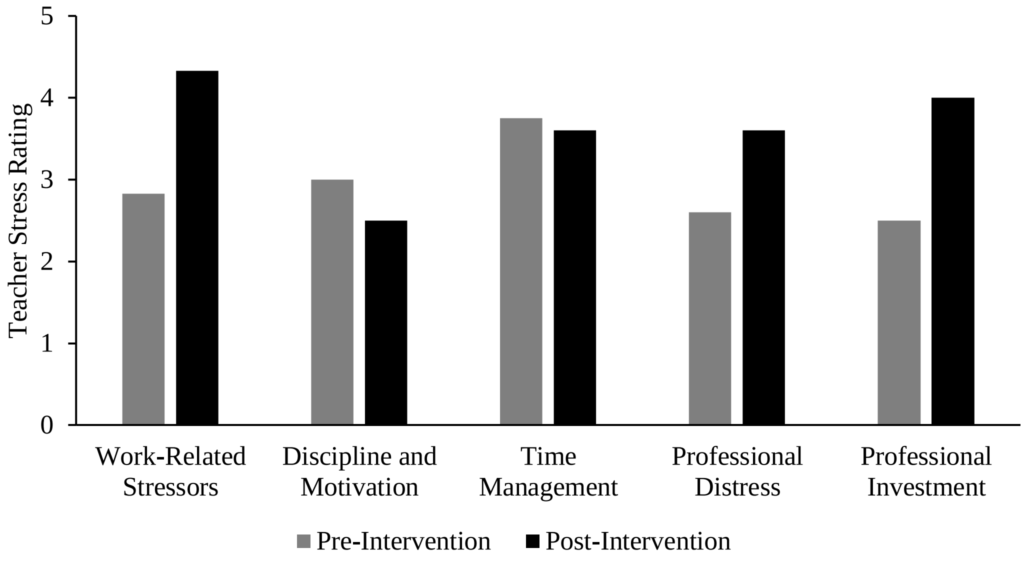


Table 4

Pre-Intervention and Post-intervention Mean Item Scores and Total Average Stress Rating, as Measured by the TSI

	Pre-Intervention:	**Post-Intervention:**
Work-Related Stressors	2.8	4.3
Discipline and Motivation	3.0	2.5
Time Management	3.6	3.4
Professional Distress	2.6	3.6
Professional Investment	2.5	4.0
Total Average Stress Rating	**2.9**	**3.6**

Social Validity

The social validity of the tootling intervention was evaluated by administering the BIRS (Von Brock & Elliott, 1987) to the class teacher and the CIRP (Elliott, 1986) to all students in the classroom, following the completion of the fading phase.

Teacher Ratings

The BIRS is a 24-item scale, with each item scored from 1 to 6. A higher score indicates a higher agreement with that statement. Item number 8 ("Tootling resulted in negative side-effects for some children") was the one exception that required reverse scoring. The overall teacher's score on the BIRS was 98 out of a possible 144. The overall mean per item was 4.0 (range= 3.00 - 6.00). Three main factors measured by the BIRS include Acceptability, Effectiveness and Time of Effectiveness. Table 5 represents the mean score for each of the three factors, out of a possible score of 6.0. The overall mean on the Acceptability factor was 4.3 (range = 3 - 6), on the Effectiveness factor was 3.6 (range = 2 - 5), and on the Time of Effectiveness factor was 4.0. Overall, results suggest a moderate level of social validity of the tootling intervention. In other words, the class teacher viewed the intervention as slightly acceptable and effective, with a somewhat rapid rate of behavioural improvement over time.

Table 5

Mean Item Scores across Acceptability, Effectiveness and Time of Effect Factors, as Measured by the BIRS

Factor	Mean teacher score
Acceptability	4.3
Effectiveness	3.6
Time of Effect	4.0
Overall Mean	**4.0**

Student Ratings

The CIRP has a scoring range from 1 to 6, with higher scores (represented by smiley faces) indicating higher agreement and lower scores (presented by sad faces) indicating lower agreement with the statements. Three items (numbers 2, 3 and 4) were the exception and required the students to reverse score these statements. This included statements such as, “Tootling was hard on me”, “Tootling caused problems with my friends”, and “There are better ways to handle problem behaviour than tootling”. Of the 23 students in the class, 21 completed the CIRP (91%). Three students’ scores were not included in the calculations, as they had circled multiple answers for each item.

In calculating the CIRP, mean item scores (out of 6) were calculated as well as the overall mean item score (See Table 6). Results revealed that overall mean item score was 4.8 (range = 4.22 - 5.22) across all individual items. The mean total score was calculated to be 35 (range = 26 - 42) out of a possible 42, indicating that students mainly found the intervention to be acceptable. Based on recommendations by Turco and Elliott (1986), a score of 24.5 or above is rated as acceptable.

After completing the CIRP, the class teacher disclosed that some children found the reverse scoring confusing and complicated. Several children had to ask for clarity and help from the class teacher.

Table 6

Mean Item Scores and Overall Item Mean for the CIRP

Mean Item-Score								Overall Item Mean	Mean Total Score
Item	1	2	3	4	5	6	7		
Mean	5.22	4.94	4.33	4.22	4.61	5.22	5.22	**4.80**	**35**

Discussion

Ways to successfully decrease problem behaviours and improve desirable student behaviours have been a topic of conversation for as long as schools have existed (Martella et al., 2011). Based on the need to further investigate this area, the purpose of this study was to systematically replicate, adapt and extend the findings of Powell (2020). In particular, this study aimed to fill a research gap by determining if tootling improved the keystone skill of instruction-following for three target students and comparison peers (i.e., normative data). Additionally, on-task behaviour, teacher praise statements and teacher stress were evaluated in an A-B-A-B-C-D reversal design with a fading and follow-up phase.

Research Questions

Question 1

The first research question investigated if a tootling intervention increased the instruction-following behaviour (IFB) of three target students who were less effective at following instructions than their peers. Visual analysis of the A-B-A-B-C-D reversal design revealed immediate increases in the IFB of all three target students when tootling was in place compared to when it was not. Additionally, large to very large Tau-U effect sizes supported these findings. Ultimately these results strongly support the hypothesis that all three target students' instruction-following behaviour improved with the implementation of a tootling intervention.

The decision to evaluate tootling's effects within an A-B-A-B-C-D reversal design provided a clear demonstration of the existence of a functional relationship between tootling and IFB. For instance, Sally and Alea's IFB increased when the intervention was in place and decreased in its absence. Clear withdrawal effects were also observed within the normative data. In other words, this study had three demonstrations that the experiment changed the behaviour of Sally, Alea and the comparison students, increasing the likelihood that the intervention is responsible for the changes in IFB (Cooper et al., 2020). Additionally, environmental conditions were held as constant as possible in this study, increasing the likelihood that the changes in IFB occurred due to the tootling intervention. For instance, observation sessions took place on the same days of the week, in the same location, at times of the day and lesson plans. While complete control over all environmental conditions in an applied setting was not possible, holding environmental conditions relatively constant reduced the influence of confounding and extraneous variables (Cooper et al., 2020). Holding these variables constant helped to further establish and strengthen experimental control and, therefore, evidence of a functional relationship between the tootling intervention and IFB (Cooper et al., 2020).

Results of the current study show that the target student' IFB closely matched their peers' during re-implementation and fading, suggesting that tootling helped improve behaviour to levels that were consistent with classroom norms. Not only does this increase the social validity of the intervention, but it also indicates that tootling can positively affect the IFB of target students with behavioural concerns and disabilities. Additionally, normative data increased and stabilised in the presence of tootling, suggesting that instruction-following behaviour can also improve at a class-wide level when tootling is in place. Although Tau-U effect size calculations for the normative data revealed a moderate change in IFB from baseline to intervention, it is possible that ceiling effects occurred, as levels of instruction-following behaviour were already high from the outset of the study (Cooper et al., 2020).

A relief teacher was present for 6.7% of all observation sessions. However, this did not appear to significantly impact the target students' or their peers' instruction following (See Figure 1). Results show that IFB remained relatively constant, regardless of which teacher delivered instructions to the students. These findings suggest that the positive changes in behaviour were not solely due to the character of the class teacher, which further supports the existence of a functional relationship between the intervention and the students' improvement in following simple instructions.

Although all three target students have improvements in their when tootling is in place, variability in the data occurred. In addition to the variability, Rawiri, Sally and Alea had clear outliers in their data during the initial baseline and intervention phases (see Figure 1), most of which had obvious environmental causes. Although variability in the data usually limits interpretation and experimental control (Cooper et al., 2020), collecting normative data allowed additional insights into this variability. For instance, normative data demonstrated that the classroom had naturally occurring variability in behaviour, providing an understanding that the target students' variability resembled the variable environment. As peer IFB improved and stabilised, so did the target students' level of behaviour and variability. Similar results were reported by McHugh et al. (2016), supporting the argument that applied settings naturally have more variability in behaviour as a product of their environment (Johnston et al., 2020), even if all environmental conditions are held as constant as possible.

Previous researchers have argued that the ideal compliance rate is between 60% and 90% and that 100% compliance is not adaptive (McMahon & Forehand, 2005). However, the current study's results reveal that the normative instruction-following data remained above 80% throughout this study. When the intervention was in place, normative data increased and continued to demonstrate a 100% rate of IFB. These findings emphasise the importance of collecting normative data to determine what is expected and normal for that context. Although this study was the first to investigate the effects of tootling on IFB, its findings are similar to those reported in previous self-management studies (Higgs, 2019; Lui et al., 2014). Higgs (2019) and Lui et al. (2014) collected normative data and reported 90%-100% compliance rates. These findings further strengthen the evidence that IFB is contextually dependent and that it is appropriate for well-run classrooms to expect students to follow instructions at a rate of 100%.

Although the primary dependent variable improved in the presence of tootling and deteriorated in its absence (an indication of internal validity), this study was the first of its kind to investigate the effects of tootling on IFB. As replications are a necessity (Makel et al., 2016), future research should be encouraged to replicate this study to establish greater external validity.

Question 2

In addition to increasing IFB, it was hypothesised that tootling would also positively affect target students' on-task behaviour. Visual analysis and very large effect sizes (across target students and comparison peers) support this hypothesis and demonstrate that on-task behaviour increased with the presence of tootling. Results reveal stronger positive effects for Sally and Alea, where their on-task behaviour increased and decreased more consistently with the presence or absence of the intervention. Demonstrating a more consistent increase and decrease in behaviour provides preliminary evidence that the observed effect was reliably associated with the intervention condition (Johnston et al., 2020). These findings are in line with previous tootling investigations (Chaffee et al., 2020; Lum et al., 2019; Lum et al., 2017; McHugh et al., 2016; Powell, 2020). Additionally, this study's reported Tau-U effect sizes are similar to sizes used in other tootling-related research that includes an effect size calculation (Dillon et al., 2019; Lum et al., 2019; Powell, 2020). As a result, this research adds to the overall tootling literature by demonstrating that tootling is an effective intervention for improving students' on-task behaviour, with and without behavioural concerns and disabilities.

Rawiri, Sally and Alea's on-task behaviour significantly increased and closely matched their peers' during re-implementation and fading, consistent with what was observed for their IFB. These findings support the claim that following simple instructions and being on-task are two closely related classroom behaviours. In other words, it is possible that IFB acted as a mechanism to increase the target students' on-task behaviour. At face validity, visual analysis confirms this hypothesis with similar increases and decreases observed for IFB and on-task behaviour throughout the phases. In other words, IFB likely acted as a "keystone" behaviour and was a necessary skill the students had to develop and enhance in order to engage in other prosocial behaviours, including being on-task (Ducharme & Shecter, 2011; Radley & Dart, 2015). These results are consistent with findings by Higgs (2019), who reported that compliance concomitantly improved on-task behaviour when a self-management intervention was in place. Additionally, Ducharme et al. (2001) reported indirect improvements in communication and on-task behaviour when compliance was targeted through an errorless compliance training intervention. Although this current study was the first of its kind to determine if an increase in IFB had a similar effect on on-task behaviour within tootling, results are promising. However, replications are recommended to validate these findings.

Question 3

The third research question addressed in this study considered the effect of removing the interdependent group contingency concerning appropriate student behaviour. Results during the fading phase revealed that IFB and on-task behaviour remained high for all target students and their peers, despite removing the reward contingency. Similar results were found by Chaffee et al. (2020), who reported durable behavioural changes when external reinforcement was removed from the tootling procedures (Chaffee et al., 2020). These results support the argument that tootling promotes a more positive classroom environment, resulting in the process of entrapment. Entrapment is a shift from relying on external or programmed rewards (such as additional playground time, a game or free play) to more natural sources of reinforcement, including teacher and peer social praise (Chaffee et al., 2020). Essentially, tootling promotes an entrapment process by making peer behaviour more noticeable through positive peer reporting (Chaffee et al., 2020). Additionally, teacher praise may become more salient through the tootle feedback process, whereby the teacher reads a selection of tootles, provides praise, and allows the students to put a sticker on the progress chart. Based on these results, one can argue that keeping the external reward component may not be necessary for continued behavioural improvements in the context of a tootling intervention as peer and teacher social praise take control.

Although removing the interdependent group contingency continued to see positive effects, the literature suggests that removing tootling's reward contingency should only occur once it has been in place for some time. The tentative findings of Goss (2019) suggested that excluding the reward contingency from the outset minimally impacted negative classroom behaviour. Based on these results, one can argue that including a reward contingency is essential at the start of tootling, but it may not be necessary later as more natural sources of reinforcement take over. As teachers find it challenging to sustain interventions over time (Han & Weiss, 2005), removing the reward contingency could help maintain tootling procedures in the long term and further enhance its social validity. In other words, if the fading conditions are maintained indefinitely in the classroom, teachers will most likely continue to see positive behavioural effects over time with less of a demand to provide programmed rewards.

During follow-up, the visual analysis revealed an immediate and substantial decrease in instruction-following and on-task behaviour when tootling procedures were no longer present. Lum et al. (2017) reported similar results during follow-up when the teacher discontinued the tootling intervention. When teachers continue tootling procedures, positive behavioural effects remain over time (Lambert et al., 2015; Powell, 2020). The fading results of the current study and previous research findings suggest that tootling is an environmental adaptation that should be integrated into everyday classroom activities to maintain behavioural improvements. Although the intervention was gradually withdrawn, allowing more natural sources of reinforcement to take control, the complete removal of all procedures resulted in similar levels of behaviour observed in baseline and withdrawal. Based on these findings, tootling should be seen as an environmental adaptation that acts as a continuous primary-tier support within a PB4LSW framework to support the inclusion of at-risk students. In other words, if tootling improves the behaviour of students with additional needs (and successfully acts as a secondary-tier support), its procedures should be continued at a primary-tier level to maintain these positive effects. Ultimately, this provides evidence that tootling can function as both primary and secondary-tier support within PB4LSW schools.

Question 4

The fourth research question sought to determine if tootling affected teacher praise statements. Results revealed that teacher praise did not increase when tootling was in place, despite significant improvements in the target students' and their peers' appropriate classroom behaviours. In other words, teachers were not responsive to the students improved classroom behaviours. A small and negative Tau-U effect size supported this finding.

These results are similar to the findings of Powell (2020), who reported no improvement in teacher praise statements during the tootling phase. Additionally, teacher praise remained close to zero when measured as a function of the GBG (Lannie & McCurdy, 2007). These combined findings support the claim that appropriate student behaviours receive less teacher attention than inappropriate behaviours (Lannie & McCurdy, 2007; Sterling-Turner et al., 2001). For example, instruction-following and on-task behaviour improved, but teacher praise did not, despite the increased opportunity for the class teacher to praise appropriate classroom behaviours.

A behavioural explanation for these results relates to reinforcement theory, where the reinforcement of a behaviour increases the likelihood of it occurring again in the future (Skinner, 1968). For instance, when students are disruptive teachers often respond to this behaviour and the behaviour temporarily stops, negatively reinforcing the teacher's behaviour. However, when students behave appropriately and the teacher praises this behaviour, nothing changes in the environment. As a result, the teacher receives no reinforcement for their praise. As reinforced behaviours are more likely to occur again in the future than those that are not (Skinner, 1968), teacher praise remains unchanged due to its lack of reinforcement.

Although the current study's findings are consistent with reports by Powell (2020) and Lannie and McCurdy (2007), they contradict what was found by Elswick and Casey (2011) and Rubow et al. (2018). Elswick and Casey (2011) and Rubow et al. (2018) demonstrated increases in teacher praise when the GBG was in place. However, Elswick and Casey (2011) used an AB design, limiting the demonstration of experimental control and, therefore, evidence of a functional relationship between the GBG and an increase in teacher praise. Although results differed from the current study, Rubow et al. (2018) defined teacher praise in a similar way by including praise for behaviour and correct academic responses. Although it is currently unclear why the teacher praise results of the current study differed from Rubow et al. (2018), research has indicated that teachers naturally praise academic responses at a higher rate than behaviour-specific responses (Harrop & Swinson, 2000). Additionally, teachers who utilise behaviour-specific praise tend to have "less off-task behaviour in their classrooms" (Floress et al., 2018, p. 411). Although it cannot be confirmed, GBG may have facilitated more behaviour-specific praise than tootling, increasing teacher praise statements. For instance, Rubow et al. (2018) presented students with predetermined rules that were developed and publicly posted on the chalkboard. These rules were specific to behavioural expectations and not related to correct academic responses. Children could only reach the goal if they followed these behaviour-specific rules, which the researchers monitored (Rubow et al., 2018). By outlining specific behaviours for the students to follow and only rewarding them if they exhibited these behaviours, the researchers may have inadvertently increased behaviour-specific awareness in the class teacher, leading to an increase in praise statements. However, in tootling, the students implement its procedures and privately record the appropriate peer behaviours they observe. Thus, the teacher is not required to observe or notice the student's appropriate behaviours as they occur. Ultimately, the GBG may help make appropriate behaviour more evident to the class teacher than tootling. As both studies did not only measure behaviour-specific praise, there is no way to know why praise increased in the GBG but did not increase in tootling. Future studies could investigate this line of research further.

Question 5

The fifth research question addressed the idea that teacher occupation stress improved as a function of the tootling intervention, as measured by the five subscales in the TSI (Fimian, 1984). It was hypothesised that increasing appropriate classroom behaviours (including instruction-following and on-task behaviours) would indirectly reduce teacher occupational stress. Previous research reported a reduction in teacher stress when student behaviour improved (Embse et al., 2019; Miller, 2017). However, the current study revealed that overall teacher stress ratings increased in the intervention phase compared to the baseline (See Figure 6 and Table 4).

To fully understand the meaning of these scores, it is necessary to break them down and consider contextual factors specific to this study. During the intervention phase, teacher stress increased in three of the five subscales (Work-Related Stressors, Professional Distress and Professional Investment). These three subscales typically identify stressors relating to the larger school environment (Fimian & Fastenau, 1990). Examples of items on these subscales include teachers feeling that they lack control over decisions, a lack of opportunities for advancement, a large caseload, too much administrative paperwork, a lack of recognition, etc. Increased stress on these subscales could be directly related to changes that occurred at the same time the intervention was introduced. For example, when tootling was first introduced, the class teacher was given extra daily duties as a result of COVID-19, including catering to both online and in-person students. Considering these factors, an increase in teacher stress on these three subscales may have been a direct result of the impact of COVID-19 rather than the intervention itself.

Despite increases in teacher stress reported in three subscales, teacher stress did decrease in the two remaining subscales (Discipline and Motivation and Time Management). The subscale Discipline and Motivation identifies how stressed a teacher is because of student behaviour (Fimian & Fastenau, 1990). At baseline, this subscale was the second highest source of stress, indicating that student discipline and motivation were a significant concern for this teacher. During the intervention phase, stress on this subscale decreased, suggesting that teacher stress reduced when student behaviour improved. In other words, it is possible that better classroom management helped to alleviate the stress associated with student discipline. These findings are consistent with results reported by Embse et al. (2019), who argued that a secondary outcome of managing challenging behaviours is reducing teacher stress.

As noted above, the current study also found a slight decrease in teacher stress on the Time Management subscale, which had the highest average stress rating in the baseline. This subscale measured how stressed a teacher is by time-related issues, including whether they can balance all their professional and personal needs (Fimian & Fastenau, 1990). A reduction on this stress subscale could indicate that tootling reduced teacher demand in the classroom and created an environment that facilitated better time management, ultimately alleviating some occupational stress. These findings align with previous research, highlighting how peer-mediated interventions reduce teacher demand (Kaya et al., 2015; Kohler & Strain, 1990). Although it appears that tootling may have had an indirect effect on teacher stress when measured by the Time Management and Discipline and Motivation subscales, these reductions are slight, and conclusions are therefore tentative.

Question 6

The final research question investigated the social validity of the tootling intervention. Scores on the modified BIRS reveal that the teacher found tootling to be a moderately acceptable intervention for improving classroom behaviour. Similar results were reported in previous tootling research that included a teacher-rated social validity measure (Lum et al., 2019; Lum et al., 2017; Powell, 2020). The current study revealed that the Effectiveness factor had the lowest overall mean score, which is consistent with previous research (Dillon et al., 2019; Lum et al., 2017; Powell, 2020). A low Effectiveness score was found, despite substantial improvements in the target students and their peers' IFB and observed increases in the target students' on-task behaviour. Consistently lower Effectiveness scores across the tootling literature support the argument that teachers often do not notice appropriate behaviours (Powell, 2020; Sterling-Turner et al., 2001), even when they improve. The teacher praise results further support this statement, where teacher praise did not increase, even though behaviour in the classroom substantially improved during the tootling phases. These findings suggest that directly targeting praise through collaborative strategies such as performance feedback (Myers et al., 2011) may be necessary to increase a teacher's awareness and praise of appropriate behaviours. In addition, this also highlights the importance of a collaborative alliance with the class teacher and providing explicit feedback on how student behaviour has improved by increasing teacher praise statements, thus positively reinforcing praise behaviours and increasing the frequency of a behaviour occurring again in the future (Cooper et al., 2020; Skinner, 1968)

Despite the fact that teacher praise did not improve in this study, tootling does have a teacher praise component incorporated into its design, which could prompt teachers to notice and report appropriate student behaviours. Consistent with the argument made by Powell (2020), tootling may reduce the need for teachers to rely solely on praising behaviour naturally, as praise will still occur in the context of tootling. This does not mean that teachers should rely only on tootling as a method of praise; however, it may reduce some of the teacher praise demand in daily classroom activities.

Overall results of the CIRP found that all of the students rated the intervention as an acceptable intervention. These results are consistent with previous tootling investigations that included a student acceptability rating scale (Lipscomb et al., 2018; Lum et al., 2019; Powell, 2020). However, discussions with the class teacher revealed that the reverse scoring was confusing. Although this did not appear to have a significant effect on the CIRP results in this study, it did increase teacher demand and effort. A solution to this reverse scoring issue could be to use the modified CIRP outlined by Lum et al. (2019), which rewords the questions to remove the need for reverse scoring. Eliminating the need for reverse scoring could reduce student confusion and teacher input when completing this social validity measure.

According to previous research, the number of directed instructions issued to students can decrease when instruction-following behaviour improves in the classroom, which could be an indication of social validity (Higgs, 2019). Higgs (2019) argued that self-management interventions can improve students' instruction-following skills, leaving more time for the teacher to attend to all students rather than calling out specific students for their negative behaviours. Based on this same hypothesis, tootling could also reduce the number of directed instructions delivered to students by improving instruction-following behaviour (Higgs, 2019). However, the results of this study indicate that little-to no change occurred in the number of directed instructions issued to Sally and Alea when tootling was in place versus its absence. There was a slight reduction in the number of directed instructions delivered to Rawiri from the baseline to the intervention phase. Despite a decrease in the number of directed instructions delivered to Rawiri's, the 100% overlap and variability of the data indicate that no meaningful changes occurred across phases for all of the target students. Although there was no meaningful change in the number of directed instructions issued to the target students, instruction-following behaviour as a whole did improve for target students and their peers. Based on these results, it can be assumed that the teacher may have issued just as many directed instructions but tootling improved the student's ability to follow these instructions effectively.

Measures of Integrity

Procedural integrity was high, with a score of 100% during teacher and student training and across all treatment phases, which is consistent with previous tootling research (Chaffee et al., 2020; Cihak et al., 2009; Dillon et al., 2019; Kirkpatrick et al., 2019; Lambert et al., 2015; Lum et al., 2019; Lum et al., 2017; McHugh et al., 2016; Miller, 2017; Powell, 2020). The high procedural integrity reported across the tootling literature suggests that tootling is a relatively simple procedure for teachers to understand, learn to implement and explain to students.

Teacher-reported-treatment integrity remained high across both treatment phases, with a mean of 98%. Observer-rated treatment integrity also remained high, with a mean of 95%, despite the teacher occasionally missing some steps in the tootling procedures. Despite occasionally missing a step, classroom behaviour continued to improve, supporting the claim that little harm occurs if some steps are missed (McHugh et al., 2016; Powell, 2020). Additionally, a high treatment-integrity score reveals that the tootling steps were easy enough for the teacher to remember and implement. These results further strengthen the argument that tootling is an ‘easy-to-use’ classroom intervention.

Theoretical and Practical Importance

The findings of this study reveal that instruction-following behaviour is a skill that can be improved when tootling is implemented in general (inclusive) classrooms. Tootling successfully increased the IFB of all three target students and their peers. In terms of theoretical importance, these results extend the tootling literature by demonstrating that instruction-following is a classroom behaviour that tootling can improve. In addition, the above findings also add to the existing compliance evidence by revealing that tootling increased the IFB of multiple students concurrently, including students who struggle with following instructions and those who do not. Before this study, compliance or instruction-following interventions were often designed for individual or small groups of students and were not implemented at a class-wide level. The practical importance of these findings is that tootling may be a preferred option for teachers to implement in applied settings when targeting IFB. Teachers may prefer tootling because it can be used as a group intervention, it is cost and time-effective, it requires very little teacher input and can address the instruction-following behaviour of multiple students simultaneously, including those at risk and those who are not. Additionally, addressing instruction-following through tootling has several implications for the students themselves. For example, developing and enhancing the ability to follow instructions as a skill may increase a student’s on-task behaviour thus improving their academic and social functioning and reducing their risk of developing oppositional, defiant or conduct disorders (Owen et al., 2012). In other words, tootling can improve a number of highly desirable classroom behaviours that can help students achieve academically and socially.

Furthermore, tootling improved the instruction-following and on-task behaviour of target students with and without disabilities. At the start of the study, Rawiri and Sally were described as having behavioural concerns, while Alea already had a diagnosis of ASD. Before this study, only one tootling investigation examined its effects on individual students, and none had disabilities (McHugh et al., 2016). Additionally, only one tootling study included students with disabilities but had a class-wide focus and did not evaluate behaviour on an individual level (Cihak et al., 2009). Demonstrating that tootling had a similar effect on all target students in the current investigation extends the tootling literature and provides evidence that the intervention can positively affect students with and without disabilities, including ASD. Practically, these findings support the use of tootling for improving student behaviour in general and is an effective strategy to promote inclusion in classroom contexts.

Finally, these results support the hypothesis that tootling can function as a primary and secondary tier PB4LSW support. For instance, tootling improved the behaviour of three target students with lower rates of appropriate behaviour than their peers during the baseline. These students' appropriate behaviours further improved and closely matched their peers during re-implementation and fading. Based on these findings, one can argue that tootling successfully functioned as a secondary tier support, equipping the target students with the skills necessary to move to a primary tier level. However, when tootling was absent from the classroom, IFB and on-task behaviour were lower than in its presence. These findings suggest that tootling works best as an environmental adaptation, where its procedures should be implemented indefinitely as a primary tier support to maintain its positive effects for target students and all other peers.

Strengths

The main strength of this research was the demonstration of strong experimental control which convincingly showed that changes in instruction-following behaviour were due to the tootling intervention, indicating that this research had strong internal validity. In addition to providing evidence of a functional relationship, the current research revealed that an improvement in IFB (or compliance) led to improvements in other academic behaviours including on-task student behaviour. In other words, targeting a “keystone” behaviour (like IFB) had effects on other prosocial behaviours that were not directly targeted (Ducharme & Shecter, 2011; Radley & Dart, 2015). These results are consistent with the findings by Ducharme et al. (2001) and Higgs (2019)

Another key strength of this research was the inclusion of normative data gathered from two randomly selected peers during each observation session. Normative data allowed an understanding of the adaptive rates of behaviour for this specific classroom. Additionally, normative data revealed that this classroom had naturally high variability during the initial baseline and intervention phases, better contextualising the variability of the target students’ behaviour. Importantly, normative data also allowed a comparison between the target students’ behaviour and their peers, which was beneficial for several reasons. For instance, this comparison provided evidence of the need to implement an intervention. Additionally, I observed if the target students’ behaviour improved to match what was adaptive for their environment. Finally, gathering normative data also provided an understanding of the effects of tootling on the rest of the class, providing evidence of any beneficial class-wide behaviour changes as a result of the intervention.

A third strength of the current research was the decision to use a single-case research method. Using a single-case research method can provide strong experimental evidence and allows researchers to closely monitor the behaviour of individual participants and make decisions based on data gathered from each observation session (Cooper et al., 2020). Based on this information, researchers are better equipped to know when to move phases or when it is appropriate to introduce or withdraw the intervention (Cooper et al., 2020). Additionally, the current study's decision to use an A-B-A-B-C-D design was a strength. As both target students and their peers had high variability in their IFB during the baseline and intervention phases, using a reversal design provided more compelling evidence that a functional relationship existed between the intervention and the primary dependent variable.

Limitations and Future Research

Despite the mostly favourable results reported in the current study, several limitations should also be discussed. The first limitation relates to the uncontrollable environmental changes due to the coronavirus (COVID-19). For example, the introduction of the first intervention phase coincided with a positive COVID-19 case, sending the entire class into a seven-day isolation period. When the isolation period was complete, classroom conditions had slightly altered, including a reduced class size (under half the class) and additional teacher responsibilities (such as catering to online and in-person students). These changes threatened the study's internal validity, as not all environmental conditions could be held constant from the baseline to the intervention phase. In addition, these factors weakened the demonstration of experimental control and were possible confounding variables (Cooper et al., 2020). In other words, the change in environmental conditions could have acted as extraneous variables, which could have been responsible for the observed changes in behaviour (Cooper et al., 2020). For example, the co-occurrence of a smaller class size alongside the introduction of the intervention may have led to an improvement in classroom behaviours as more teacher attention was available because there were fewer students. It is worth noting that the class size continued to increase throughout the intervention phase and that most students were present from observation session 18 onwards. The gradual increase in class size did not appear to affect the target students' or their peers' behaviour. Additionally, results observed in the reversal design helped to demonstrate an experimental effect, despite the changes in environmental conditions. While nothing could be done about these changes, future research could aim to have more stable environmental conditions and determine if similar results occur once the impact of COVID-19 has reduced.

Instruction-following behaviour was the primary dependent variable and the basis for phase change decisions. During baseline, Rawiri and Alea both had an increasing (or therapeutic) trend before introducing the intervention. Although this is not ideal in terms of demonstrating experimental control, the decision to change phases was based on ethical and practical reasons. Such reasons included the significant difference between the target student's IFB and that of their peers, indicating the need for an intervention to be introduced (Cooper et al., 2020). Additionally, the class teacher voiced her frustration with the target students' lack of ability in following simple instructions during the baseline phase. In applied settings where behaviour is a significant problem, it can be unethical to withhold an intervention that could improve student behaviour (Cooper et al., 2020). Under these conditions, concessions are sometimes necessary, even if experimental control is reduced (McHugh et al., 2016). Despite evidence of an increasing or therapeutic trend for Rawiri and Alea in the baseline, the rapid increase and stabilisation of instruction-following behaviour during the tootling phase suggests that the intervention was primarily responsible for improved behaviour. McHugh et al. (2016) reported similar results, with a decreasing and therapeutic trend observed during the withdrawal phase in Classroom B, followed by an immediate decrease and the stabilisation of disruptive student behaviour. Regardless of these results, future research should aim to achieve counter-therapeutic trends and the stabilisation of data in baseline to reach more definitive conclusions.

As the primary dependent variable was IFB, phase changes occurred based on the trend, level, and variability of this behaviour. Consequently, phase changes occurred even if there was evidence of an increasing trend in the baseline and withdrawal phases for the secondary dependent variables, including on-task behaviour and teacher praise statements. Again, this was not ideal in terms of demonstrating experimental control. However, the observed increase in on-task behaviour when the intervention was in place suggests that the intervention had a positive effect on this behaviour.

Although classroom behaviour improved, and there were increased opportunities for the teacher to reinforce these behaviours, teacher praise did not improve with the presence of the tootling intervention. Even though teachers often have access to the praise literature demonstrating how effective a tool praise can be, teacher praise is still relatively low in most classrooms (Floress et al., 2018). Tootling incorporates a teacher praise element into its design but relies more heavily on student input. As a result, the teacher is not responsible for observing and noticing appropriate behaviours within a tootling intervention, which may explain why teacher praise did not increase in the current study or previous tootling research (Powell, 2020). Based on these results, future research could explore integrating a teacher praise element into the tootling intervention design to help facilitate an increase in praise statements, which could further improve student behaviours. For example, students could be encouraged to report on the prosocial behaviour of their peers and their teacher, including teacher praise statements. Future research could also look at programming teacher praise into the tootling intervention by having a goal the teacher must reach in praise statements to access a reward. This goal could then be incrementally increased, and the researcher, teacher aide or students could issue the reward (Powell, 2020).

Similar to previous tootling research, the results of this study had limited generalisability as it was collected from one group of students in one classroom and at one school. While interobserver agreement scores indicated that the data had good reliability, the external validity of these results to different contexts (outside of the classroom), schools and students, is limited. Additionally, this study's data did not specifically programme for any generalisability, which is an area that future research could explore to determine if tootling can be applied to contexts outside of the classroom. For example, future researchers could look at adapting tootling to playground environments, as these contexts often have high occurrences of inappropriate behaviours (Mulryan-Kyne, 2014).

Although the tootling research reports positive results in a number of different classroom settings (Cashwell et al., 2001; Chaffee et al., 2020; Cihak et al., 2009; Dillon et al., 2019; Kirkpatrick et al., 2019; Lambert et al., 2015; Lipscomb et al., 2018; Lum et al., 2019; Lum et al., 2017; McHugh et al., 2016; Miller, 2017; Powell, 2020), there is a need for additional systematic replications and extensions in a New Zealand context to address the intervention's external validity. There are considerable differences between the school environments, systems and cultures found in New Zealand versus the USA (where the majority of tooling research has been conducted). Future research on tootling in a New Zealand context could be beneficial in demonstrating how tootling procedures can be generalised to be conducted in different countries, settings and cultures, ultimately strengthening the external validity of the tootling literature (Cooper et al., 2020). Additionally, it may be beneficial to determine if tootling is effective in schools that are not aligned with the PB4LSW framework, as it is unclear what impact this framework had on student and teacher behaviour before the start of research. However, consistent with the argument by Powell (2020), looking at the rate of teacher praise, it is assumed that there would be little difference prior to implementing tootling.

The final limitation of the current study relates to its treatment integrity. Although overall treatment integrity remained high, there was one instance where teacher-reported integrity fell to 66%. Observer-rated integrity also notes several missed steps by the class teacher. Despite these missed steps, the data reveals that this did not significantly impact the target students or their peers' behaviour and is consistent with previous investigations when treatment integrity fell below 100% (McHugh et al., 2016; Powell, 2020). Additionally, observers could not directly observe and assess all aspects of treatment integrity, including the components of tootling that took place near the end of the day (e.g., reading tootles aloud, counting tootles, and updating the progress chart). Due to all of the above factors, treatment integrity may have been lower than reported.

Conclusions

Tootling is a class-wide evidence-based intervention that is easy to use, low on resources and has shown promising results for improving adaptive classroom behaviours. Overall results of this study are mainly positive, with observable increases in the instruction-following and on-task behaviour for two out of the three target students and their peers (i.e., normative data). These findings suggest that keystone behaviours (like instruction-following) can be effectively targeted through a tootling intervention, which can function as both a primary and secondary PB4LSW intervention for students who are at-risk and entire class cohorts. By categorising tootling as a keystone approach, this intervention could help students develop core skills vital for their social, academic and behavioural success (Ducharme & Shecter, 2011). Despite these positive findings, the mixed results concerning teacher praise statements and teacher stress emphasise the need for additional research on this topic.

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Appendix A - Consent Form - Parents

Ψ School of Psychology

THE UNIVERSITY OF WAIKATO
Te Whare Wānanga o Waikato

Please retain a copy of this form for your personal records.

Research Project: An Investigation into the Effects of Tootling for Instruction-Following and On-Task Student Behaviour in a New Zealand Primary School

Name of participant: ________________________________

I have received a copy of the Information Sheet describing the research project and have been given sufficient time to read it. Any questions that I have, relating to the research, have been answered to my satisfaction. I understand that I can ask further questions about the research at any time during my participation, and that I can withdraw my child's participation at any time (up to two weeks) after completion of data collection.
I understand that I can ask to have the observations stopped at any time.

When I sign this consent form, I will retain ownership of the collected data, but I give consent for the researcher to use the data for the purposes of the research outlined in the Information Sheet.

I understand that my child's identity will remain confidential in the presentation of the research findings

Appendix B - Consent Form - Teacher

School of Psychology

THE UNIVERSITY OF WAIKATO
Te Whare Wānanga o Waikato

Please retain a copy of this form for your personal records.

Research Project: An Investigation into the Effects of Tootling for Instruction-Following and On-Task Student Behaviour in a New Zealand Primary School

Name of participant:

I have received a copy of the Information Sheet describing the research project and have been given sufficient time to read it. Any questions that I have, relating to the research, have been answered to my satisfaction. I understand that I can ask further questions about the research at any time during my participation, and that I can withdraw my participation at any time (up to two weeks) after completion of data collection.

I understand that I can ask to have the observations stopped at any time.

When I sign this consent form, I will retain ownership of the collected data, but I give consent for theresearcher to use the data for the purposes of the research outlined in the Information Sheet.

I understand that my identity will remain confidential in the presentation of the research findings.

Please complete the following checklist. Tick [✓] the appropriate box for each point.	**YES**	**NO**
I have the right to decline to participate in any part of the research activity.		
I know who to contact if I have any questions about the study in general.		
I understand that the information supplied by me could be used in future academic publications.		
I consent to being interviewed at the beginning of the research regarding what I value within my classroom and for my students.		
I consent to completing a questionnaire prior to the start of the intervention and after its completing on the subject of my occupational stress levels.		
I consent to completing a questionnaire near the end of the study, as a post-intervention measureon my thoughts about the intervention.		
I consent to having up to two trained observers in my classroom during times agreed upon by myself and the lead researcher.		
I wish to receive a copy of the findings		

Participant Name:

Signature:

Date:

Contact Details:

Researcher Name:

Signature

Date:

Contact Details:

Appendix C - Withholding Consent Form – Parents/Guardians

Ψ School of Psychology

THE UNIVERSITY OF WAIKATO
Te Whare Wānanga o Waikato

Please retain a copy of this form for your personal records.

Research Project:

An Investigation into the Effects of Tootling for Instruction-Following and On-Task Student Behaviour in a New Zealand Primary School

I have read and understood the Information Sheet regarding the above research project and do **NOT** give consent for my child to participate in the research on classroom behaviour.

Participant's Name: ____________________

Signature: ____________________

Date: ____________________

Contact Details: ____________________

Appendix D - Information Sheet- Parents/Guardians

Ψ School of Psychology

THE UNIVERSITY OF WAIKATO
Te Whare Wānanga o Waikato

Dear Parents/Guardians,

Your child's class has been nominated to take part in a research project conducted by Candace Jena Enright, under the supervision of Associate Professor Angelika Anderson from the Faculty of Social Science at the University of Waikato. This project is part of the requirement for the completion of my Master of Applied Psychology (in Behaviour Analysis) and Postgraduate Diploma in Clinical Psychology at the University of Waikato and is sponsored by the university. Please read this information sheet in full before deciding whether or not to let your child participate in this research. If you would like further information about this project, you are encouraged to contact the researchers via the phone numbers or email addresses.

The topic of the research
This research project has been designed to improve students' on-task and instruction-following behaviour within primary mainstream schools. This project aims to do this by implementing a "tootling" intervention package. Tootling is a peer-mediated intervention during which students' records of appropriate peer behaviour are collected, counted, and read aloud to the class by the teacher. Tootling is basically the opposite of "tattling." Students are asked to report peers' positive behaviours to the teacher, instead of negative behaviours. In Tootling, when a student sees a peer acting appropriately or following rules, they will write down what they observed on a note card and put it into a box. If the class reaches a certain number of tootles, they will be rewarded. Previous research has found improvements in whole-class and individual behaviour as a result of tootling implementation. Improved behaviour in the classroom leads to a better learning environment for the students along with a more pleasant teaching environment for the educators.

Student involvement
Students will learn about the tootling procedure from their trained teacher, and it will be incorporated alongside their normal classroom activities. During two intervention phases, students will be asked to record incidents of their peers' appropriate (good) behaviour (tootling), throughout class-time. All students will work together to achieve a shared tootle-goal.

Throughout the study, I will engage in frequent, non-obtrusive observations of teacher behaviour, the whole class behaviour, and your child's behaviour. Any students, teachers or schools involved in the study will remain confidential and no personal information will be shared or reported on. I will also observe the teacher's behaviour in relation to the amount of praise given by them to the students. Teacher stress will also be measured to determine if the intervention is a useful way to decrease teacher's occupational stress.

Towards the end of the study, the students will be invited to complete a voluntary 5-minute, 7-item, anonymous questionnaire, which asks about their thoughts on the tootling intervention.

Benefits and risks
Your child's on-task and instruction-following behavior may improve as a result of this intervention, and this may improve their academic performance within a school environment. All children in this classroom will be equally involved in Tootling, meaning that your child will not receive any additional intervention outside of the procedures described, or be singled out in any way. This separate data collection will not affect your child. In the event of unintended results (i.e., your child's behavior may worsen), modifications of the intervention will take place and they will be provided with additional services.

Results

It is expected that, as a result of the tootling intervention, **the student's ability to follow teacher directed instructions and on-task behaviour will improve,** and teachers will issue more praise statements to the students. Results will be presented within my master's thesis. It is also possible that results will be published in a journal article and/or presented at a conference. A summary of the results can be forwarded to the participating school, teachers, and parents of participating students, on request, as can a copy of any published journal articles. Please contact the researchers or your child's school if you would like to see a copy of the results.

Confidentiality

Although the name of the participating students and teachers will be known to me, participation in this project will remain confidential and no identifying information will be disclosed to anyone outside of the study. Codes and pseudonyms will be assigned to participating schools and teachers to ensure no data can be traced back to any participants. Neither the school nor participants will be identifiable in the presentation of any results.

Storage of data

On completion of my thesis all data will be given to my supervisor, Associate Professor Angelika Anderson, to be stored on a password-protected university drive for five years. Only Associate Professor Anderson and I will have access to the data at any time. After five years the data will be destroyed by deleting the electronic files.

Right to withdraw

Participation in this project is voluntary and the school, students, parents, or teachers are under no obligation to give consent to participate. All participants have the right to withdraw from the project at any time, for any reason, and with no consequence.

What happens now?

If you consent to your child being a participant within this study as well as them completing the voluntary 5-minute, 7-item, anonymous questionnaire, **please complete and sign the attached consent form** and return it to your child's teacher by the start of **NEXT WEEK**. If you have any questions regarding the project, please contact me on the details at the top of this form.

Yours Sincerely,

Candace Jena Enright

This research project has been approved by the Human Research Ethics Committee of the Faculty of Arts and Social Sciences. Any questions about the ethical conduct of this research may be sent to the Secretary of the Committee, email fass-ethics@waikato.ac.nz, postal address, Faculty of Arts and Social Sciences, Te Kura Kete Aronui, University of Waikato, Te Whare Wananga o Waikato, Private Bag 3105, Hamilton 3240

Appendix E - Information Sheet- School/Teacher

Ψ School of Psychology

THE UNIVERSITY OF WAIKATO
Te Whare Wānanga o Waikato

To whom it may concern,

You are invited to participate in a research project conducted by Candace Jena Enright under the supervision of Associate Professor Angelika Anderson from the Faculty of Social Science at the University of Waikato. This project is part of the requirement for the completion of my Master of Applied Psychology (in Behaviour Analysis). Please read this information sheet in full before deciding if you will participate. If you would like further information about the project, please contact myself or Associate Professor Anderson via the contact details above.

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The topic of the research

This research project has been designed to improve problem behaviours within the classroom of primary school-aged children in mainstream schools, by implementing a "tootling" intervention package. Tootling is a peer-mediated intervention during which students' records of appropriate peer behaviour are collected, counted, and read aloud to the class by the teacher. Previous research has found improvements in whole-class and individual behaviour as a result of tootling implementation. Improved behaviour in the classroom leads to a better learning environment for the students along with a more pleasant teaching environment for the educators.

What's involved

We are looking to recruit between one mainstream class of students and their teacher. I will specifically be looking at if tooling interventions can be used to increase rates instruction following and on-task student behaviour. Because of this, the research will be focusing on those students who are identified as having low rates of on-task and instruction-following behaviour. If you consent to participate, an information sheet and an email will be sent home to the parents of all the students in your class. Parents of children who are identified as having lower on-task and instruction-following behaviour will be given the opportunity to sign informed consent forms if they want their child to be involved in the study. Other students' parents will be given the opportunity to opt out for their child, by returning the withholding consent form. If the parents of the remaining students choose not to respond, their child will be included in the study. Any students without consent will be excluded from data collection.

Your involvement

At various stages throughout the research, we will have discussions with you to gather information which will contribute towards decision-making regarding aspects of the intervention. One of these discussions will include when it is appropriate for us to make regular, unobtrusive classroom observations, lasting no more than one hour each.

During the baseline data collection stage, you will be asked to continue your classroom teaching as normal. Then, prior to the first intervention phase, you will be trained on how to implement tootling within your classroom. During this phase, you will guide the students to ensure they understand and participate in tootling. The third phase will be a return to baseline, and you will be asked to remove all tootling equipment from your classroom and return to previous classroom management techniques. The final phase will be re-implementation of the tootling intervention.

At the start of the study, you will also be given a short questionnaire about how stressful you find your job, and this will be given to you again at the end of the first intervention phase. You will also be invited to complete a 10-minute questionnaire assessing your views about the intervention after the fading phase is completed.

On completion of the initial four phases, observations will stop, and you will be invited to continue to tootling procedures without the use of the reward system. I will then return to collect follow-up data between 2-6 weeks later (depending on any school holidays).

It is expected that the initial stage of the study, including initial discussions and all four phases of data collection, will take up to one term to complete, with follow-up data taking no more than 2 weeks to collect.

Student involvement

Students will learn about the tootling procedure from you, after you have received training, and it will be incorporated alongside their normal classroom activities. During the two intervention phases, students will be asked to record incidents of their peers' appropriate behaviour (tootling), throughout class-time. All students will work together to achieve a shared tootle-goal and receive the pre-determined reward.

Throughout the study, I will engage in frequent, non-obtrusive observations of teacher nominated students who struggle to follow teacher directed instructions and remain on-task. Any students, teachers or schools involved in the study will remain confidential and no personal information will be shared or reported on.

I will also observe the teacher's behaviour in relation to the amount of praise given by them to the students. Teacher stress will also be measured to determine if the intervention helps decrease teacher's occupational stress.

Results

It is expected that, as a result of the tootling intervention, student behaviour in the classroom will improve. In particular, it is expected that teacher nominated students will improve in their ability to follow instructions and stay on-task. Additionally, it is expected that as a class these two behaviours will improve and teacher praise will also increase. Results will be presented within my master's thesis. It is also possible that results will be published in a journal article and/or presented at a conference. A summary of the results can be forwarded to the participating school, teachers, and parents of participating students, on request, as can a copy of any published journal articles.

Confidentiality

Although your name will be known to me, participation in this project will remain confidential and no identifying information will be disclosed to anyone outside of the study. Codes and pseudonyms will be assigned to participating students, teachers and school to ensure no data can be traced back to any participants. Neither the school nor participants will be identifiable in the presentation of any results.

Storage of data

On completion of my thesis all data will be given to my supervisor, Associate Professor Angelika Anderson, to be stored on a password-protected university drive for five years. Only Associate Professor Anderson and I will have access to the data at any time. After five years the data will be destroyed by deleting the electronic files.

Right to withdraw

Participation in this project is voluntary and the school, students, parents, or teachers are under no obligation to give consent to participate.

All participants have the right to withdraw from the project at any time, for any reason, and with no consequence. This includes the destruction of data, upon request, up to 2 weeks after participation in the project is complete.

What happens now?

If you are happy to participate in this project, please complete the consent form for teachers and return to myself. If you have any questions regarding the project, please contact me on the details at the top of this form.

Yours Sincerely,

Candace Jena Enright

This research project has been approved by the Human Research Ethics Committee of the Faculty of Arts and Social Sciences. Any questions about the ethical conduct of this research may be sent to the Secretary of the Committee, email fass-ethics@waikato.ac.nz, postal address, Faculty of Arts and Social Sciences, Te Kura Kete Aronui, University of Waikato, Te Whare Wananga o Waikato, Private Bag 3105, Hamilton 3240

Appendix E - Teacher Script

Please read the following script to the students, which will explain how tootling will work in your classroom.

We're going to introduce the tootling challenge into our classroom to help us be kind to each other and record when our classmates do good things. You will all be given **3 notecards each day** and when you see another student in the class doing something good, you tick what they did from this list of good behaviours. You then place your card in this container (show container in the position it will be during the procedure). There is also this progress chart so we can see how we are doing every day.

Now, here's the challenge - everyone in the class must **work together as a team** to try to reach a secret tootle target that only I know. So, it's important that you are all well-behaved in class. If the class reaches the target, you will all get a fun reward. This target is based on **<u>how many students receive a tootle written about them</u>**. So, for example if the secret target is two, then as a class you have to write about the good behaviour of **two different classmates that day to get the reward**. It is, therefore, important for you all to notice and write about as many different classmates' good behaviour as possible. If you all reach this goal, then one of you can put a sticker on our progress chart to show we have achieved that goal for the day. When you as a class get **three days in a row of reaching the secret tootle goal**, you will all receive the fun reward. Just after the second break, I will then read some of your tootles aloud and let you know the sort of awesome behaviour you've noticed about each other.

<u>REWARDS:</u>

So, let's talk about the rewards! I have some ideas for rewards which I think you might enjoy, but first I'd like to hear if you have any ideas. Remember, they need to be appropriate for the whole class. *(Let the children give you their suggestions. If any of these matches with your own ideas or are good ideas that you haven't already thought of, agree to these rewards. There can be a different reward each time or you can keep to the same reward. If you don't like any of the children's suggestions, make your own to see if they can agree on any of yours. It is important that you* ***<u>AND</u>*** *the children are happy with the rewards).*

<u>EXAMPLES:</u>

Now we will talk about the sorts of things you can and can't write down about other students (give 3-4 examples and non-examples, you can either give your own or choose from this list. However, you **MUST give the first example to the class from this list**)

<u>Correct examples you can discuss:</u>

1. **<u>**(*student name*) did what Miss Craig instructed them to do **</u>**
2. (*student name*) helped me

3. (*student name*) worked quietly
4. *(student name)* raised their hand before answering a question

Things that would **NOT** count as a tootle would be

1. If a student walked to the door
2. If a student was wearing nice shoes
3. If the student's hair looked cool today

Any questions?

Finally, I'd like you all **to practice writing** one tootle on a piece of paper and posting it in the tootle container.

Hand out ***one*** *tootle to each student. Let them write the tootles and answer any questions. After they have all put their examples in the container, read a few tootles out loud. If you come across any wrong tootles, then provide corrective feedback.*

A correct tootle= Has the name of the observed student and the prosocial behaviour performed by that student

Appendix F- Teacher Stress Inventory Measure

The following are a number of teacher concerns. Please identify those factors which cause you stress in your present position. Read each statement carefully and decide if you ever feel this way about your job. Then, indicate how strong the feeling is when you experience it by circling the appropriate rating on the 5-point scale. If you have not experienced this feeling, or if the item is inappropriate for your position, circle number 1 (no strength; not noticeable). The rating scale is shown at the top of each page.

Examples:

I feel insufficiently prepared for my job. 1 2 3 4 5

If you feel very strongly that you are insufficiently prepared for your job you would circle number 5

I feel that if I step back in either effort or commitment, I may be seen as less competent 1 2 3 4 5

If you never feel this way, and the feeling does not have noticeable strength, you would circle number 1

	1	2	3	4	5
HOW STRONG?	No strength, not noticeable	Mild strength, barely noticeable	Medium strength, moderately noticeable	Great strength, very noticeable	Major strength, extremely noticeable

WORK-RELATED STRESSORS:

1. There is little time to prepare for my lessons/responsibilities.	1	2	3	4	5
2. There is too much work to do	1	2	3	4	5
3. The pace of the school day is too fast	1	2	3	4	5

4. My caseload/class is too big	1	2	3	4	5
5. My personal priorities are being short-changed due to demands	1	2	3	4	5
6. There is too much administrative paperwork in my job	1	2	3	4	5

Add items 9 through 14; divide by 6; place your score here:

DISCIPLINE AND MOTIVATION:

I feel frustrated…

7. … because of discipline problems in my class	1	2	3	4	5
8. … having to monitor pupil behaviour	1	2	3	4	5
9. … because some students would be better if they tried	1	2	3	4	5
10. … attempting to teach students who are poorly motivated	1	2	3	4	5
11. … because of inadequately/poorly defined discipline problems	1	2	3	4	5
12. … when my authority is rejected by pupils/administration	1	2	3	4	5

Add items 20 through 25; divide by 6; place your score here:

TIME MANAGEMENT:

1. I easily over commit myself	1	2	3	4	5
2. I become impatient if others do things to slowly.	1	2	3	4	5
3. I have to try doing more than one thing at a time.	1	2	3	4	5

4. I have little time to relax/enjoy the time of day.	1	2	3	4	5
5. I think about unrelated matters during conversations.	1	2	3	4	5
6. I feel uncomfortable wasting time.	1	2	3	4	5
7. There isn't enough time to get things done	1	2	3	4	5
8. I rush my speech	1	2	3	4	5

Add items 1 through 8; divide by 8; place your score here:

PROFESSIONAL DISTRESS:

15. I lack promotion and/or advancement opportunities.	1	2	3	4	5
16. I am not progressing my job as rapidly as I would like	1	2	3	4	5
17. I need more status and respect on my job.	1	2	3	4	5
18. I receive an inadequate salary for the work I do.	1	2	3	4	5
19. I lack recognition for the extra work and/or good teaching I do.	1	2	3	4	5

Add items 15 through 19; divide by 5; place your score here:

PROFESSIONAL INVESTMENT

26. My personal opinions are not sufficiently aired.	1	2	3	4	5
27. I lack control over decisions made about classroom/school matters	1	2	3	4	5
28. I am not emotionally/intellectually stimulated on the job.	1	2	3	4	5

29. I lack opportunities for professional improvement.	1	2	3	4	5

Add items 26 through 29; divide by 4; place your score here:

<u>TOTAL SCORE</u>

Add all calculated scores; enter the value here:

Then, divide by 5; enter the Total Score here:

Appendix G – Data Collection Form - Instruction-Following Behaviour (with Normative Data)

Date: ______________________________ Name of Observer: ____________________

Activity ______________________________

Start time: ______________________________ End Time: ______________________________

Definition of Instruction-Following Behaviour (IFB)

- Initiating the required response **within 10 seconds** following the teacher's request to do so.

Teachers Requests

- **Undirected requests (UD)** – requests that are addressed to the whole class and are not specific to the individual (e.g., everyone sit down).
- **Directed requests** (D.)– requests that are directed to the student, as indicated by the teacher directing eye contact to the individual when making the instruction, or the teacher touching the student when making the instruction, or when the teacher includes the student's name in the instruction (e.g., John sit down)
- **Routine** – instructions or requests that are not said aloud, but the children are expected to do (such as timetable on the board or taking things out for start of lessons etc.)

	Target Student 1		**Comparison Student 1**		**Target Student 2**		**Comparison Student 2**		**Target Student 3**	
	Type of Instruction	Followed Instruction?	Directed (D) Undirected (UD)	Followed Instruction?	Type of Instruction	Followed Instruction?	Type of Instruction	Followed Instruction?	Type of Instruction	Followed Instruction?
1.	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No
2.	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No
3.	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No
4.	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No
5.	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No
6.	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No
7.	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No
8.	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No
9.	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No
10.	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No	□ D. □ Routine □ UD	□ Yes □ No
	TOTAL Compliance:		**TOTAL Compliance:**		**TOTAL Compliance:**		**TOTAL Compliance:**		**TOTAL Compliance:**	

Normative compliance=

Appendix H – Data Collection Form - Instruction-Following Behaviour (without Normative Data)

Date: ______________________________ Name of Observer: ____________________

Activity ______________________________

Start time: ______________________________ End Time: ______________________________

Instruction-following behaviour (IFB)

- **IFB** – initiating the required response **within 10 seconds** following the teacher's request to do so.

Teachers Requests

- **Undirected requests (UD)** – requests that are addressed to the whole class and are not specific to the individual (e.g., everyone sit down).
- **Directed requests** (D.)– requests that are directed to the student, as indicated by the teacher directing eye contact to the individual when making the instruction, or the teacher touching the student when making the instruction, or when the teacher includes the student's name in the instruction (e.g., John sit down)
- **Routine** – instructions or requests that are not said aloud, but the children are expected to do (such as timetable on the board or taking things out for start of lessons etc.)

	Target Student 1		**Target Student 2**		**Target Student 3**	
	Type of Instruction	Compliant Behaviour	Type of Instruction	Compliant behaviour	Type of Instruction	Compliant behaviour
11.	☐ D. ☐ Routine ☐ UD	☐ Yes ☐ No	☐ D. ☐ Routine ☐ UD	☐ Yes ☐ No	☐ D. ☐ Routine ☐ UD	☐ Yes ☐ ☐ No
12.	☐ D. ☐ Routine ☐ UD	☐ Yes ☐ No	☐ D. ☐ Routine ☐ UD	☐ Yes ☐ No	☐ D. ☐ Routine ☐ UD	☐ Yes ☐ No
13.	☐ D. ☐ Routine ☐ UD	☐ Yes ☐ No	☐ D. ☐ Routine ☐ UD	☐ Yes ☐ No	☐ D. ☐ Routine ☐ UD	☐ Yes ☐ No
14.	☐ D. ☐ Routine ☐ UD	☐ Yes ☐ No	☐ D. ☐ Routine ☐ UD	☐ Yes ☐ No	☐ D. ☐ Routine ☐ UD	☐ Yes ☐ No
15.	☐ D. ☐ Routine ☐ UD	☐ Yes ☐ No	☐ D. ☐ Routine ☐ UD	☐ Yes ☐ No	☐ D. ☐ Routine ☐ UD	☐ Yes ☐ No
16.	☐ D. ☐ Routine ☐ UD	☐ Yes ☐ No	☐ D. ☐ Routine ☐ UD	☐ Yes ☐ No	☐ D. ☐ Routine ☐ UD	☐ Yes ☐ No
17.	☐ D. ☐ Routine ☐ UD	☐ Yes ☐ No	☐ D. ☐ Routine ☐ UD	☐ Yes ☐ No	☐ D. ☐ Routine ☐ UD	☐ Yes ☐ No
18.	☐ D. ☐ Routine ☐ UD	☐ Yes ☐ No	☐ D. ☐ Routine ☐ UD	☐ Yes ☐ No	☐ D. ☐ Routine ☐ UD	☐ Yes ☐ No
19.	☐ D. ☐ Routine ☐ UD	☐ Yes ☐ No	☐ D. ☐ Routine ☐ UD	☐ Yes ☐ No	☐ D. ☐ Routine ☐ UD	☐ Yes ☐ No
20.	☐ D. ☐ Routine ☐ UD	☐ Yes ☐ No	☐ D. ☐ Routine ☐ UD	☐ Yes ☐ No	☐ D. ☐ Routine ☐ UD	☐ Yes ☐ No
	TOTAL Compliance:		**TOTAL Compliance:**		**TOTAL Compliance:**	

Normative compliance=

Appendix I – Data Collection Form - On-Task Behaviour

(To be used during baselines, interventions and follow up observations)

Date: ______________________ Name of Observer: ______________

Activity ______________________

Start time: ______________________ End Time: ______________

Definition of On-Task Behaviour:

- Any behaviour related to the teacher-assigned task.

Examples:

- This included students paying attention or attending to (eyes orientated towards) the teacher or the assigned task, using appropriate materials related to the task, sitting appropriately, or engaging in task-related vocalisations with their peers or the teacher. This also includes if a student is walking to receive task-related materials.

Nonexamples:

- Playing with items not related to the task, talking to peers when he or she is expected to be attending to the teacher or task, and putting his or her head on the desk or gazing in the direction other than the assigned task, teacher, or whiteboard.

Length of each interval: 20 seconds (90 intervals)

Interval	1	2	3	4	5
Student Number	**TS1**	**CS1**	**TS2**	**CS2**	**TS3**
On Task ✓ /X					
Interval	6	7	8	9	10
Student Number	**TS1**	**CS1**	**TS2**	**CS2**	**TS3**
On Task ✓ /X					
Interval	11	12	13	14	15
Student Number	**TS1**	**CS1**	**TS2**	**CS2**	**TS3**
On Task ✓ /X					
Interval	16	17	18	19	20
Student Number	**TS1**	**CS1**	**TS2**	**CS2**	**TS3**
On Task ✓ /X					
Interval	21	22	23	24	25
Student Number	**TS1**	**CS1**	**TS2**	**CS2**	**TS3**
On Task ✓ /X					
Interval	26	27	28	29	30
Student Number	**TS1**	**CS1**	**TS2**	**CS2**	**TS3**
On Task ✓ /X					
Interval	31	32	33	34	35
Student Number	**TS1**	**CS1**	**TS2**	**CS2**	**TS3**
On Task ✓ /X					
Interval	36	37	38	39	40
Student Number	**TS1**	**CS1**	**TS2**	**CS2**	**TS3**
On Task ✓ /X					

Interval	41	42	43	44	45
Student Number	**TS1**	**CS1**	**TS2**	**CS2**	**TS3**
On Task ✓ /X					
Interval	46	47	48	49	50
Student Number	**TS1**	**CS1**	**TS2**	**CS2**	**TS3**
On Task ✓ /X					
Interval	51	52	53	54	55
Student Number	**TS1**	**CS1**	**TS2**	**CS2**	**TS3**
On Task ✓ /X					
Interval	56	57	58	59	60
Student Number	**TS1**	**CS1**	**TS2**	**CS2**	**TS3**
On Task ✓ /X					
Interval	61	62	63	64	65
Student Number	**TS1**	**CS1**	**TS2**	**CS2**	**TS3**
On Task ✓ /X					
Interval	66	67	68	69	70
Student Number	**TS1**	**CS1**	**TS2**	**CS2**	**TS3**
On Task ✓ /X					
Interval	71	72	73	74	75
Student Number	**TS1**	**CS1**	**TS2**	**CS2**	**TS3**
On Task ✓ /X					
Interval	76	77	78	79	80
Student Number	**TS1**	**CS1**	**TS2**	**CS2**	**TS3**
On Task ✓ /X					
Interval	81	82	83	84	85
Student Number	**TS1**	**CS1**	**TS2**	**CS2**	**TS3**
On Task ✓ /X					
Interval	86	87	88	89	90
Student Number	**TS1**	**CS1**	**TS2**	**CS2**	**TS3**
On Task ✓ /X					
Interval	91	92	93	94	95
Student Number	**TS1**	**CS1**	**TS2**	**CS2**	**TS3**
On Task ✓ /X					
Interval	96	97	98	99	100
Student Number	**TS1**	**CS1**	**TS2**	**CS2**	**TS3**
On Task ✓ /X					
Interval	101	102	103	104	105
Student Number	**TS1**	**CS1**	**TS2**	**CS2**	**TS3**
On Task✓ /X					

Field Notes:

Total Intervals= **/105**

TS1 On-task=

CS1 On-task=

TS2 On-task=

CS2 On-task=

TS3 On-task=

Normative data (CS1 + CS2/2) - On-task =

Appendix J- Data Collection Form – Teacher Praise Behaviour

Date: ____________________ Name of Observer: ____________________

Activity ____________________

Start time: ____________________ End Time: ____________________

Definition:

Praise: a positive verbal statement or gesture indicating approval of appropriate behaviour and correct academic responses.

Examples: "Well done" or "Ka Pai (well done)", "you're sitting beautifully", or "I love the way you stopped, looked and listened", "good boy/girl", "good job".

Non-examples: Giving out tokens or stickers with no explanation

Teacher Praise frequency (Tally Marks)

Field Notes:

Total teacher praise=

Rate per minute=

Appendix K – Procedural Integrity – Teacher Training

Date:__________________ Teacher:_________________________

Tick appropriately once item has been discussed with teacher. ✓

1. ***Introduce tootling***
   Provide script for teachers ___
   Explain what a "tootle" is ___
2. *Explain each step of the procedure (from the script)*
   Step 1 - Introduce tootling ___
   Step 2 – Discuss examples ___
   Step 3 - Give a written example ___
   Step 4 - Explain procedure ___
   Step 5 - Explain where tootle go and when ___
   Step 6 - Explain the teamwork, tootle target, and class reward ___
   Step 7 - Discuss rewards ___
   Step 8 - Any questions? ___
3. ***Rehearse script***
   Allow teacher to practice script as many times as needed ___
   Provide correctional feedback if/where needed ___
4. ***Any questions?***
   Answer any questions teacher has ___

Number of items completed /13 Treatment integrity percentage: _______

Date: __________________

Observer: ________________________________

Appendix L – Procedural Integrity- Student Training

Date:__________________ Teacher:_________________________

Did the teacher…

1. Discuss examples and non-examples ___
2. Give at least one written example ___
3. Explain the procedure ___
4. Explain where to put tootles and when ___
5. Discuss teamwork, tootle target, and class reward ___
6. Discuss potential rewards ___
7. Ask for and answer questions ___
8. Allow everyone to practice tootling and provide appropriate feedback ___

Number of items completed: /8 Treatment integrity percentage: ________________________

Date: ________________

Observer: _____________________________

Appendix M – Treatment Integrity Daily Checklist Intervention Phase– Teacher

Teacher Name: ______________________________

Please tick appropriately when each item has been completed daily

DATE:										
Prior to Tootling each day (<u>start of the first teaching block):</u>	✓ /X	✓ /X	✓ /X	✓ /X	✓ /X	✓ /X	✓ /X	✓ /X	✓ /X	✓ /X
1. Pick a secret tootle goal from the bag										
2. X3 Tootle cards placed on each student's desk at the **start of the first teaching block**										
3. Tootle container accessible and visible										
4. Progress chart visible										
5. Tootling procedure reviewed (if necessary)										
Once Tootling is finished (<u>end of the second teaching block):</u>	✓ /X	✓ /X	✓ /X	✓ /X	✓ /X	✓ /X	✓ /X	✓ /X	✓ /X	✓ /X
6. Read several tootles and provide praise/corrective feedback										
7. Count tootles (up to number of students required for that day)										

8. Update progress chart if the goal was met (put sticker on chart if goal was met)										
9. Write the secret tootle goal for that day here:										

Appendix N – Treatment Integrity Daily Checklist Intervention Phase – Researcher

DATE:										
Prior to start of the tootling period:	✓/X	✓/X	✓/X	✓/X	✓/X	✓/X	✓/X	✓/X	✓/X	✓/X
1. X3 Tootle cards placed on each student's desk at the start of the first teaching block										
2. Tootle container visible										
3. Progress chart visible										
4. Secret tootle target selected and written down										
Once tootling period has finished:	✓/X	✓/X	✓/X	✓/X	✓/X	✓/X	✓/X	✓/X	✓/X	✓/X
5. Secret tootle target revealed										
6. Selection of tootles read aloud										
7. Number of different students who received a										

tootle counted by teacher									
8. If the secret tootle goal was met that day, sticker put on tootle chart									
9. Reward issued when 3 stickers in a row occurs									

Number of Items completed by the teacher: / 9

Treatment integrity percentage:

Appendix O – Tootle Recording Note Cards

Who: ________________________________

- ☐ Did what Miss Craig asked them to do 
- ☐ Worked quietly 

- ☐ Helped me 
- ☐ Helped others 
- ☐ Listened quietly to Miss Craig 
- ☐ Raised their hand before speaking 
- ☐ Said/did something kind 

1

Appendix P – Tootle Progress Chart

Our Tootle Progress Chart

1	2	3	1	2	3	1	2	3
1	2	3	1	2	3	1	2	3
1	2	3	1	2	3	1	2	3
1	2	3	1	2	3	1	2	3
1	2	3	1	2	3	1	2	3
1	2	3	1	2	3	1	2	3
1	2	3	1	2	3	1	2	3
1	2	3	1	2	3	1	2	3
1	2	3	1	2	3	1	2	3
1	2	3	1	2	3	1	2	3

Every day that you as a class reaches the SECRET tootle goal a sticker is put on the chart.

When you get three stickers in a row, you all get your class reward!

Appendix Q – Modified BIRS

Having finished implementing the tootling intervention, please evaluate the intervention by circling the number which best describes your agreement or disagreement with each statement. You must answer each question.

		Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
1.	Tootling was an acceptable intervention for children's problem behaviour.	1	2	3	4	5	6
2.	Most teachers would find tootling appropriate for a variety of behaviour problems.	1	2	3	4	5	6
3.	Tootling proved effective in changing children’s problem behaviour.	1	2	3	4	5	6
4.	I would suggest the use of tootling to other teachers.	1	2	3	4	5	6
5.	Behaviour in the classroom was severe enough to warrant the use of tootling.	1	2	3	4	5	6
6.	Most teachers would find tootling suitable for improving general classroom behaviour.	1	2	3	4	5	6
7.	I would be willing to use tootling in the classroom again.	1	2	3	4	5	6
8.	Tootling resulted in negative side-effects for some children.	1	2	3	4	5	6
9.	Tootling was appropriate for a variety of children.	1	2	3	4	5	6
10.	Tootling was consistent with other strategies I have used in the classroom setting.	1	2	3	4	5	6
11.	Tootling was a fair way to handle children’s problem behaviour.	1	2	3	4	5	6
12.	Tootling was reasonable for the behaviour problems experienced in my classroom.	1	2	3	4	5	6
13.	I liked the procedures used in tootling.	1	2	3	4	5	6
14.	Tootling was a good way to handle classroom behaviour.	1	2	3	4	5	6
15.	Overall, tootling was beneficial for the children in my classroom.	1	2	3	4	5	6
16.	Tootling quickly improved the children's behaviour.	1	2	3	4	5	6
17.	Tootling will produce a lasting improvement in the children’s behaviour.	1	2	3	4	5	6
18.	Tootling improved the children’s behaviour to the point that it was not noticeably deviate from other children’s behaviour.	1	2	3	4	5	6
19.	Soon after using tootling, I noticed a positive change in problem behaviour.	1	2	3	4	5	6
20.	The children’s behaviour will likely remain at an improved level even after tootling is discontinued.	1	2	3	4	5	6
21.	Using tootling not only improved the children's behaviour in the classroom, but also in other settings (e.g., other classrooms, home).	1	2	3	4	5	6
22.	When comparing the children in my classroom with well-behaved peers before and after use of tootling, the children’s and the peers' behaviour was more alike after using tootling.	1	2	3	4	5	6
23.	Tootling produced enough improvement in the children’s behaviour that behaviour is no longer a problem in the classroom.	1	2	3	4	5	6
24.	Other behaviours related to the problem behaviour also improved as a result of tootling.	1	2	3	4	5	6

Von Brock, M. B., & Elliott, S. N. (1987). Influence of treatment effectiveness information on the acceptability of classroom interventions. *Journal of School Psychology*, *25*(2), 131-144. doi:10.1016/0022-4405(87)90022-7

Appendix R – Modified CIRP

I'd love to know what you thought about tootling! Please circle the smiley face which shows how much you agree or disagree with each sentence below. A red face tells me you **do not** agree with the sentence. A green face tells me you **do** agree with the sentence and the other faces are all somewhere in-between.

		I do not agree … I agree
1	Tootling is fair	
2	Tootling was too hard on me	
3	Tootling caused problems with my friends	
4	There are better ways to handle problem behaviour than tootling	
5	Tootling would help other children too	
6	I liked tootling	
7	I think tootling would help me do better in school	

Turco, T. L., & Elliott, S. N. (1986). Students' acceptability ratings of interventions for classroom misbehaviors: A study of well-behaving and misbehaving youth. *Journal of Psychoeducational Assessment, 4*(4), 281-289. doi:10.1177/073428298600400404

Appendix S – IOA Confidentiality Form

Research project: An Investigation into the Effects of a Tootling Intervention for Compliant and On-Task Student Behaviour in a New Zealand Primary

I ___________________________________ understand that this research is part of the master's thesis of Candace Jena Enright. All information in relation to participants and non-participants in the school will remain confidential at all times during and after data collection. I will not discuss any details of this research or the participants with anyone other than the researchers.

Signed ____

Name ____