Effects of Behavior Specific Praise Statements

Teaching three teachers to use BSPS in class

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Being a teacher is not an easy job. There is an increased emphasis on evidence-based methods. Teacher praise is an effective classroom management tool. Behavior specific praise statements is a low intensity teacher delivered strategy where teachers say or write the precise behavior exhibited and how it met an expectation or affected academic/social achievement. This study aimed to increase Behavior Specific Praise Statements among three teachers in Mathematic, English and Social subject studies on student’s social behavior as a group. An intervention consisting of an hour of counseling, post-it notes, and self-registration was given. The teachers decided their own pre-set criteria. Two teachers sat a criterion of three and one teacher sat a criterion of six. The results showed that the intervention had an effect on the teachers use of BSPS. However, one teacher did not reach the pre-set criteria. Practical implications are discussed.

A teacher’s job is not easy. A literature review from Olsson (2013) examined school leaders and teachers psychosocial work environment in Sweden. The results showed that teachers suffer from a high degree of fatigue and symptoms related to stress compared to other professions. In addition, negative effects are caused by several organizational changes, experience of increased administrative work and too little time for meetings and planning of lectures (Olsson, 2013). Furthermore, the requirement of working evidence-based has increased in schools and care operations (Karlsson, 2018). Karlsson (2018) expresses that some people might find this change new and scary. Working evidence-based is relatively unknown and uncommon within schools and organizations in Sweden. As a consequence, searching for good research-based methods and evaluating them against each other could therefore be a challenge (Karlsson, 2018).

There are several reasons why the school working environment in Sweden has changed the past three decades. Firstly, emphasis on efficiency and increased productivity has led to risks regarding stress (Johansson, 2005). Higher requirements regarding individual responsibility, flexibility, education, motivation and less regulation in the work days could make it harder for teachers to set boundaries between work, family and social time in addition to relaxation and rest. Secondly, the development of digital devices has caused working life to become more hectic. Frequently staying updated could make the teachers feel that they should do more work (Theorell, 2006). Thirdly, the schools went through several organizational and content changes during 1990s and early 2000s which in turn affected the school leaders and teachers working environment. However, despite a negative trend in their work-related health, most teachers are not stressed, worried, unmotivated or burned out. The majority of teachers are in fact motivated and highly engaged in their work (Arvidsson et al., 2012; Persson et al., 2006). Only two percent believe that their work as a teacher is not meaningful. However, almost 25 percent are pretty dissatisfied or very dissatisfied with their work situation (Persson et al., 2006).

1 Thanks to my supervisors Lena Lotta Reuterskiöld & Laura Talme. A special thanks to David, Hans Martin & my life partner Henrik.
Why work evidence-based?
Evidence-based measures have many names. Intervention, programs, treatment and method. The name depends on the discipline or operation (Hasson & Schwarz, 2017). Hasson & Schwarz (2017) use the term evidence-based methods when referring to specific methods for investigation and diagnosis, as well as preventive and treating interventions that have undergone a scientific effect evaluation. Evidence is used for describing the best available scientific knowledge regarding a method’s effect. Practical evidence is the usefulness provided with the help of an evidence-based method in a specific context (Hasson & Schwarz, 2017).

By applying evidence-based research knowledge, Practical evidence aims to find the best intervention possible to individuals. However, applications of a science-based method is not always easy. A dilemma occurs when a practioners has to choose between following the manual and making adaptions to make it suit their situation. The consequences is that the revised version may not work. Like other western countries, evidence should apply in Sweden. Hasson & Schwarz (2017) strongly believe that evidence-based knowledge should be the foundation for decisions. Also, there should be a high emphasis on evidence and implementation in areas that deals with society, included educational settings. (Broom & Adams 2012; Shäfer Elinder & Kwak, 2014). Teachers can contribute to an evidence-based practice by carefully planning before, at the beginning and throughout the schoolyear by designing systems, establishing structure and expectations, teach, reviewing expectations, provide high rates of opportunities to respond and lastly, deliver contingent specific praise (Simonsen, Fairbanks, Briesch, Myers & Sugai, 2008).

The decisions made in staff meetings are also a decision about the adherence to the method or adaptions. Adherence is how a method is applied in practice compared to the description of the method. Adaptions is changes to the method that is not planned and thought through. Evidence should be a guide, no matter how well it suits in the situation. We know adaptions occur very frequently. Despite the fact that we know adaptions is the rule rather than exception, there is limited information on how the recommended interventions can best be adapted to the different people whom one is working with. By not discussing the challenges with adaptions in organizations, the person who lastly is forced to deal with the challenges is the teacher meeting the student. Working closest to the student, the teacher has no choice (Hasson & Schwarz, 2017).

Daily, staff members realize that the guidelines for the methods they are expected to use are not possible to follow as described. A Swedish survey of Aggression and Replacement Training (ART), an intervention meant for youths with problematic behaviors, showed that 90 % of the organizations that used ART had changed the content in the program so much that they didn’t meet the minimum criteria on adherence to the method (Kaunitz & Strandberg, 2009).

People often use their own experiences as a point of reference when evaluating the effectiveness of different working methods. This is not how humans work, according to what we currently know about cognitive processes (Hasson & Schwarz, 2017). Reading more research within one’s field is a reasonable solution to on how to be updated on effective working methods. Unfortunally, it’s not that simple.

Replication crisis
A study is usually interpreted as valid if it has a statistically significant effect. This is normally defined as a p value below 0.5. On the other side, a study that doesn’t show statistical significance will be interpreted as a failure. Maxwell, Lau & Howard (2015) claim that, in
psychology, many will say that the field is going through a replication crisis because many of the well known experiments in for example social studies have failed to be replicated. Some researchers have emphasized effects size to estimate whether the size difference between the groups are significant (Maxwell, Lau & Howard, 2015). Replication is important in science because the more studies that show the same results, the more confident we can be in that particular result. Research takes time because each experiment contributes to a little piece of the whole picture. What should practitioners do in the meantime? Pashler & Wagenmakers (2012) state that the replication crisis within psychology has given practitioners less confidence about the reliability of research findings in the field. In addition, a field loses its credibility when it starts to be known for false positives (Simmons, Nelson & Simonsohn, 2011).

To some extent, peer reviews is a way to assure quality of publications. However, there is no guarantee that the research is of high quality because others within the same field acknowledge their work. There will always be people who try to cheat. You can even pay to get your own article published (Folkeopplysningen, 2014). The point is that bad research does exist. How can practitioners deal with these issues? It’s beyond the scope of this thesis to investigate this, but it’s important to be aware of and discuss these challenges.

**Behavior Analysis: it’s all about behavior**

To understand the emergence of behavior analysis as a natural science, one needs to go back to the United States of America (USA) in the beginning of the 1900s. The field of psychology was dominated by introspection as a method to study mental processes. To get access to the processes, individuals examined their own mental, emotional or feeling states (Wolf, 1978). Watson (1913) laid the groundwork for an analysis of behavior by arguing for it to be objective through the use of direct observation”. By doing so, it was possible to determine the relationship between the environmental stimuli and behavioral responses. Watson believed that the stimulus-response (S-R) model could predict and control behavior (Dixon, Vogel & Tarbox, 2012). Frederic Burrhus Skinner was also interested in finding a scientific explanation of behavior. However, in contradiction to many other psychologists at the time, Skinner found the S–R model to be incomplete. This applied especially to events that occurred without any obvious antecedent environmental cause (Cooper, Heron & Heward, 2007).

**About Behaviorism**

Behaviorism is the philosophy of behavior analysis and focuses on the conceptual and philosophical aspects that strengthen the science of behavior. However, behaviorism is only one branch of behavior analysis. **Experimental analysis** of behavior studies the basic principles of behavior in humans and nonhuman animals. **Applied behavior Analysis** (ABA) is another branch and will be more described in the next section. **Organizational Behavior Management** (OBM) is a branch of ABA and applies the principles to individuals and groups in business, industry, government, and human service (Moore, 2008; Dixon, Vogel & Tarbox, 2012). Many people that have heard of Skinner thinks of behaviorism when he is a radical behaviorist. Contrary to a popular belief, radical in radical behaviorist includes private events, e.g. emotions, feeling and thinking, as behaviors and that they are necessary in an analysis of human behavior. This misunderstanding has led to the assumption that radical behaviorism does not include emotion, feelings and thoughts, and is therefore anti-cognition. This misunderstanding has also been seen in schools. However, private events can’t be considered as causes of behavior since they can’t be manipulated (Moore, 2008).

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2 For a detailed description of both philosophies and differences, see Moore (2008) or Chiesa (1994).
Applied behavior Analysis

Research on application of behavior analysis began its earnest in the 1950s and 1960s when Skinner addressed a broad array of human situations from a purely behavioral perspective. This was done by examining whether the principles from the experimental branch of behavior analysis could be replicated with humans (Cooper, Heron & Heward, 2007), and they could (Baer, 1960; Bijou, 1955; Ferster & DeMyer, 1961, 1962; Lindsley, 1956, 1960). This was the origin of ABA in general and particularly functional analysis of clinically relevant behavior (Cooper, Heron & Heward, 2007). The emergence of the first behavior analysis graduate training programs began in the 1960s (Baer, 1993; Michael, 1993). The need for establishing a scientific journal for ABA research was performed when the official definition of ABA was published by Journal of Applied Behavior Analysis (Baer, Wolf, & Risley, 1968). Most of the research at the time involved, but not exclusively, persons with intellectual and developmental disabilities. The success of ABA treatment for children with autism spectrum disorder was spread in the 1990s (Lovaas, 1987). This led to an increase in demand for ABA practitioners and widespread efforts to get evidence-based treatment to be covered by health insurance. This further accelerated the training of ABA practitioners, notably in the autism area. As ABA continued to develop, the need to identify professional and credential ABA practitioners became increasingly apparent (Carr & Nosik, 2016). ABA had been empirically effective in a wide variety of areas, including parent training (Franks et al., 2013), substance abuse treatment (Silverman et al., 2007), dementia management (LeBlanc, Raetz, & Feliciano, 2011), brain injury rehabilitation (Heinicke & Carr, 2014) and occupational safety intervention (Geller, 2005). However, the evidence base is naturally largest when working with treatment of individuals with intellectual disabilities and autism because it started in these groups of people. The most recognition is received from the work with these populations (Eldevik et al., 2009; Lovaas, 1987; National Autism Center, 2015). Almost 60 years with ABA has emerged to a mature profession by having a robust literature of evidence-based practices, organized university training curricula, standards of professional and ethical practice, public policies and professional credentials (Carr & Nosik, 2016). The applied behavior analytic approach is generally all about teaching individuals to behave in more effective ways and change the social consequences of existing behavior (Lerman, Iwata, & Hanley, 2013).

Behavior analytic principles

As humans, we behave with the aim to somehow influence our environment. We do this to either get something that makes us feel good or to avoid some sort of discomfort (aversive). We understand that desirable consequences are rewarding, which leads to the tendency of repeating the behavior in similar circumstances in the future. However, if our behavior doesn’t lead to a desired consequence or maybe even a negative consequence, that makes us lose something that we really want or we get exposed to some sort of discomfort, you will be less likely to repeat those behaviors in the future. Humans (and animals) act functionally by repeating behaviors that are reinforcing (Karlsson, 2018). These processes happen unintentionally most of the time. This section is written with the aim to give you as a reader an overview over some of the important principles that is used in ABA.³

Operant learning

Our behavior can be classified as either respondent or operant behavior. Respondent behavior are behaviors that we are born with, in other words reflexes, such as breathing and blinking. Operant behavior is learned behavior that is paired with our respondent behaviors. The term

³ For a deeper discussion, see Cooper, Heron, & Heward (2007).
response is often used instead of behavior to separate the difference on how behavior is defined within learning psychology and everyday language (Karlsson, 2018). We are continuously surrounded by stimuli that our behaviors act upon. Our behavior is controlled by the consequences that it follows. That makes the behaviors functional since our behavior’s changes depending on what stimuli we perceive and how we interpret those stimuli. The three-term contingency is used as a paradigm to explain what happens before a behavior occur (antecedent) and what happens after it occurred (consequences).

There are some things the reader should be aware of before the principles are presented. Control, consequences and manipulation are terms that could be interpreted in a negative manner. Control in this context do not mean forcing the individual to something the person does not want to do. Behavior analysts are obligated to follow Behavior Analyst Certification board’s (BACB, 2019) ethical guidelines when performing services. The term Applied in ABA is determined by problems that are important to the society and not by research procedures and theory (Baer, Wolf & Risley, 1968). Manipulation means introducing and withdrawing the independent variable. Consequences are simply what follows the behavior whether it is positive (adding a stimuli) or negative (withdrawing a stimuli). The stimulus effect may have two consequences: increasing or decreasing future behavior. If a stimulus is withdrawn and the behavior increases in the future, means the behavior is under negative reinforcement. If the future frequency of the behavior decreases, means the behavior is under negative punishment. However, if a stimulus is added and the future frequency of the behavior decreases, the process is termed positive punishment. The details of what happens if the behavior increases will be described below.

Positive reinforcement

Positive reinforcement is defined as an environmental change contingent on a behavior that increases the future frequency of that behavior (Cooper, Heron & Heward, 2007). Reinforcement is the term of the process and reinforcer is the stimuli that causes the behavior to occur more frequently. Note that it is important to be aware of whose behaviors is being analyzed. Let’s say that you are a teacher in class. One student in class is throwing paper bits on you. You tell him to stop several times, but he won’t listen and keeps throwing the paper bits. The student’s behavior is probably maintained by positive reinforcement because the student wants attention and gets it when he throws paper bits and you tell him to stop. Your behavior is maintained by negative reinforcement because you avoid that the student is throwing paper bits as long as you talk to him (gives attention).

Classifications of reinforcers

Reinforcers can be classified as primary (unconditioned) reinforcers. These types of reinforcers are stimuli that has obtained its effect through evolution for every individual within a species. Examples of primary reinforcers are food, warmth, and beverage. Other stimuli that are originally neutral or aversive to the individual, can get a reinforcing effect through learning. Almost every stimulus can have the function as a reinforcer. Examples of learned reinforcers are praise or money. Every person has its own learning history and therefore also its individual set of secondary reinforcers. Reinforcers can be classified by its formal characteristics and can be edible, valued goals, activities, sensory /self-stimulating or social. Reinforcers can also be classified by its function and can for example be social positive reinforcement, social negative reinforcement or automatic positive reinforcement (Cooper, Heron & Heward, 2007).

Motivating operations (MO) and discriminative stimulus (SD) can be hard to separate. Both occur before the behavior and influence the initiating of a response. The largest difference is
their difference in function related to a reinforcer or punisher. MO is a general circumstance that the individual brings to a situation that influence the value of the reinforcer (establishing or abolishing) (Karlsson, 2018; Cooper, Heron & Heward, 2007). Being hungry is an establishing operation and being full is an abolishing operation for food. At the same time SD is a specific stimulus which signals the probability that a certain behavior will lead to reinforcement or punishment. Green light (probably won’t get hit by a car) versus red light (could be hit by a car) when walking over the zebra crossing. Behaviors that have led to reinforcement in the past and don’t get reinforced anymore will in long term be reduced or disappear. This applies to both respondent and operant behaviors and is called extinction. (Cooper, Heron & Heward, 2007). Generalization is what happens when a learned response is performed in a situation were the behavior is not previously trained. ABA is based on a developing psychological approach called learning theory or learning psychology. The founding outlook within learning theory, ABA and PBS is that all behaviors and skills in an individual develop in interaction with the environment. The behavior is understood when we know what this interaction looks like (stimuli – behavior – stimulus response) and have accounted for the individual’s past.

Functional assessment

A functional behavior assessment (FBA) is used to understand the pattern, purpose or function of behavior by identifying the variables that reliably predict and maintain problem behavior (Carr, 1994; Dixon, Vogel & Tarbox, 2012). This is done by carefully analyzing antecedents, behaviors, and consequences (the ABCs) from interviews which includes interviews with parents, teachers, and the student in addition to classroom observations. Reviewing records are also done. Understanding the function of behavior is crucial to developing effective interventions. FBAs has shown to increase the effectiveness of interventions (Carr et al., 1999; Ellingson, Miltenberger, Stricker, Galensky, & Garlinghouse, 2000). Functional analysis are made by altering elements in the environment to see how the behavior changes. For example, by giving or not giving praise a functional relationship between environment (independent variable or giving praise) and behavior (dependent variable or on task behavior for students) can be discovered. Functional relationship becomes synonymous with cause-and-effect (Skinner, 1953).

Within Single subject designs

Behavior change is documented and quantified by direct and repeated measurement of behavior. It’s important to maintain direct and continuous contact with the behavior under investigation since behavior change is dynamic and an ongoing process. The data is the empirical basis for every important decision, from whether to continue with the present procedure, trying a different intervention or to reinstitute a previous condition. It’s difficult to make valid and reliable decisions from a series of numbers (raw data). It could be impossible and inefficient. In addition, only large changes would be spotted, and no change or other important features could be overlooked. By visually displaying the relationship between a series of measurement and their relevant variables help people “make sense” of the data. Behavior analysts use visual analysis to interpret the data, see methods for description (Cooper, Heron & Heward, 2008).

There are several experimental tactics that are used by behavior analyst to change behavior. Among these are reversal design, alternating treatment design, changing criterion design and multiple baseline design (Cooper, Heron & Heward, 2008). There are some features that are common to most of the single-subject research. Firstly, the dependent variable is measured repeatedly over time at regular intervals. Secondly, the study is divided into distinct phases
where the participant is tested under one condition per phase. This is often denoted by capital letters A, B, C and so on. Thirdly, the change from one condition to the next depends on the participant’s behavior. This means that the researcher waits for the behavior to be consistent from observation to observation before the conditions are changed. This steady state strategy (Sidman, 1960) means that the change across conditions will be relatively easy to detect when the dependent variable is stable. Also, the “noise” in the data is minimized when the effect of the independent variable is easier to detect. It is beyond of this scope to go in to all of the designs in detail. However, reversal design will be briefly gone through before Multiple baseline design is further explained. A detailed description of the designs can be found in Cooper, Heron & Heward (2008).

**Reversal design**
The reversal design, or ABA design, is the most basic single-subject research design. Baseline (A) is first established for the dependent variable. This is the level of responding before the intervention is introduced and serves as a control condition. The intervention (B) is introduced when steady state responding is reached. The behavior may vary when adjusting to the treatment. Again, the researcher awaits a steady state to make clarity in how and how much the behavior has changed. Finally, the intervention is withdrawn and one waits for the dependent variable to reach a steady state. The design can be extended with several baselines and treatment conditions (ABABABA). The reversal greatly increases the internal validity of the study (Cooper, Heron & Heward, 2008).

**Multiple baseline design**
Two potential problems may arise when removing the treatment in the reversal design. Firstly, it may be unethical to remove the treatment if its working. An example is self-injury in a developmentally disabled child. Secondly, some interventions can’t be withdrawn. An example of these are learning interventions. You can’t unlearn something. This is where the Multiple baseline design comes in. The design consists of several AB designs and can be introduced across participants, behaviors or settings. The key to this design is that the treatment is introduced at a different time for each participant. The change in the behavior might be a coincidence when introduced to only one participant. However, if the treatment is introduced for multiple participants at different times then it is extremely unlikely to be a coincidence (Cooper, Heron & Heward, 2008).

**ABA in education**
Public education has been a punitive institution seen from a historical view. Examples are suspensions, expulsions and verbal reprimands. The consequences that the teachers give are done with the aim of decreasing the rate of undesirable behavior. Fielding, et al. (2013) raises the question on why school policy makers emphasizes zero tolerance instead of using planning, prevention and positive behavior support. Axelrod, Moyer, & Berry (1990) point out that one of the reasons might be how positive reinforcement works. Punishment gives a more immediate effect compared to reinforcement. It’s also problematic when some teachers are interested in learning more about behavior management but say that they do not believe in using reinforcement. The reason why some teachers have a negative relationship to this could be because they believe that positive reinforcement is equal to giving stickers and candy when the student is behaving good. When trying this method, they found it ineffective and conclude that positive reinforcement does not work. But as you know at this point: something can both look and sound as a reinforcer, but its not a reinforcer if it doesn’t increase the frequency of the behavior it follows (Ward, 1995). Teachers expect their students to behave good in school. Sadly, some teachers do not engage in any behavior other than saying phrases like “expect” or
“should” instead of following up on desired behaviors (Maag, 2001).

There are some myths regarding ABA in the field of education. Some people believe that ABA means working with children with autism. However, some behavior analytic professionals are worried that ABA is losing its identity due to the fact that the majority of research are conducted in autism spectrum disorder. Behavior analysis is broader than that because ABA has been used in clinical settings, geriatric nursing centers, prisons, and in numerous other settings that have no relation to autism spectrum disorders. ABA has also been seen as an autism specific intervention that is implemented in a practitioner to participant environment. This is not the only way to work with ABA. The interventions can be conducted in any environment. Research has also shown that the best environment for conducting behavioral research is the natural environment such as the classroom. Unfortunally, educators seldom use the techniques in their classrooms (Axelrod, Moyer, & Berry, 1990; Rosenfield, 1985).

ABA is also often seen as procedures that are appropriate only for animals and institutionalized persons. The most cited reason for teacher’s resistance to ABA interventions is the explanation of why people behave the way they do (Skinner & Hales, 1992). Some people struggle with the fact that the behavior analytic principles are applicable to both humans and animals an interpret this as human being animals. Teachers also tend to explain the students’ behaviors with factors within the individual (Medway, 1979). An example is using diagnosis to explain behavior. An important aspect of ABA is to help teachers use practices that enable and empower them to affect relevant behavior change (Fantuzzo & Atkins, 1992). When suggesting behavioral approaches, behavior analysts should consider the efficacy of the intervention by considering the following question: “Can and will school personnel actually use the intervention?” (Fantuzzo & Atkins, 1992, p. 37).

**Limitations of ABA & FBA**

It’s not easy to implement reinforcement procedures. Not only need educators accurately identify the reinforcing functions of problem behavior. The procedures are time and labor consuming and require consistent analysis of data. The good news is that the procedures will work if they are implemented appropriately and effectively. Fielding, et al. (2013) state that there has been resistance against behavior analysis and behavior modification procedures in the past. This is partly due to how the public media have given a negative connotation to the punishing aspect. This has led people to oppose its practices without fully understanding its processes. However, punishing strategies in the form of reprimands, red marks on papers, parking tickets, spankings, and social jibes are used by teachers, friends, and society in general (Horner, 2002). Conducting FBA also has an important limitation when the model exclusively focuses on observable behaviors and not on private events. Some have argued that biological factors (Carr, 1994) and genetic conditions (Reese, Richman, Zarcone, & Zarcone, 2003) should be considered when examining behavior. Examining the interactions between diagnostics characteristics and environmental events might only lead to a more individualized functional assessment (Reese et al., 2003).

The take home message is that behavior analysis can’t solve all the world problems, but it’s a great tool on the way to understand and change our behavior. A broad spectrum of workarounds has been used to create environments and treatments which promotes learning and development of adaptive skills (Karlsson, 2018). The biggest challenge with evidence-based methods is to make it user friendly and not too simple at the same time. It’s important to remember that being systematic and working ethically are not conflicting. On the contrary, it could be unethical not putting something in a system (Karlsson, 2018). Unfortunally, not everyone is receptive to
evidence when arguing for effective methods (Cicoria, 2019). Nevertheless, behavior analysis has been demonstrated as a highly successful treatment approach in a variety of areas. In more than 70 countries, including Sweden and Norway, the BACB has credentialed more than 50,000 behavior analysts and behavior technicians in the last two decades. There are also no indications of a slowdown in growth trends. In addition, half of U.S. states have passed laws to regulate practicing behavior analysts during the last decade (Carr & Nosik, 2017). The following sections will look closer on ABA in education settings: Positive Behavior Support and Behavior Specific Praise Statements.

**Positive behavior support**

Positive Behavior Support (PBS) is an applied approach based on research and values with the aim to change behavior on an individual, group-and organizational level (Karlsson, 2018). PBS and Positive Behavior Interventions and Support (PBIS) are normally used but the former are normally used when we are talking about interventions towards individuals, the latter on an organizational level. PBS is a framework for organizing when preventing or treating individuals or groups in an organization. PBS has two major areas that it has influenced internationally. Firstly, people are working with individuals with or without intellectual or physical disabilities with severe problem behaviors. This could be a child or an adult in a family, preschool, school, organizations or in HVB-homes. People also work preventively on an organizational level, especially in school with the aim to create safety, study peace and an including environment. This approach has the name School Wide Positive Behavior Support (SWPBS) (Karlsson, 2018).

The core of PBS are different methods and techniques that are built upon science and methodological development within ABA. There is a red thread in PBS between its theoretical background, different strategies for assessments, analyses of problem behavior and the different workarounds that are put in. The arrangements are generally promoting socially desired behaviors and preventing problem behaviors by adapting the environment and treatment, functional skills training on an individual and/or group level in addition to encouragement and feedback based on positive reinforcement.

**PBS on three tiers**

PBS is an approach that consists of core elements that can be achieved through a variety of strategies. The core elements are a three-tiered continuum that range from preventing problem behaviors to reducing the impact or intensity of problem behaviors that have occurred (Sugai & Horner, 2006). Teams cooperate with administrators and behavior specialists on an organizational level to provide training in addition to policy and organizational support to initial implementation, active application and sustained use of the core elements (Sugai & Horner, 2002).

The first core element is primary prevention. The workarounds is aimed at students across all school settings and involves school, family and others related to the education environment (Sugai & Horner, 2006). Interventions include frequently positive reinforce desired behaviors, teaching social skills relevant to the context and to make an environment that discourages inappropriate behavior (Colvin, Kame’enui, & Sugai, 1993; Lewis & Sugai, 1999). Secondary prevention are strategies given to a small proportion of students who need more support than primary prevention in order to achieve social success at school. The strategies are function based (Crone & Horner, 2003; Walker et al., 1996) and linked to the primary-level interventions. Secondary interventions often require more follow-up with adult attention and monitoring and is therefore more intensive. Lastly, Tertiary prevention is necessary in those
cases were students are unresponsive to primary and secondary interventions (Crone, Horner, & Hawken, 2004; Fairbanks, Sugai, Guardino, & Lathrop, 2007). These strategies are highly individualized and intensive function-based behavior plans made by special educators, school psychologists, counselors and behavior interventionists with specialized competence.

**Evidence for PBS**

One of the most stringent ways for qualifying a practice or procedure as “evidence-based” is through a minimum of two peer-reviewed randomized control trial research studies that document experimental control. In order to meet this criterion, the practice or procedure must be operationally defined, have formal measures of fidelity and formal outcome measures. The elements must be used within a randomized control trial group research design. SWPBS have shown high fidelity (Cohen, Kincaid & Childs, 2007; Horner, Todd, Lewis-Palmer, Irvin, Sugai & Boland, 2004) and empirical evidence support in USA (Irvin, Horner, Ingram, Todd, Sugai, Sampson & Boland, 2006; Irvin, Tobin, Sprague, Sugai, & Vincent, 2004; Safran, 2006). A randomized controlled trial has shown an effect in the primary and secondary prevention tier of PBS (Horner, Sugai, Smolkowski, Todd, Nakasato, & Esperanza, 2009; Bradshaw, Mitchell, & Leaf, 2010).

There exists a great deal of materials and research on specific secondary interventions (e.g. Hawken, MacLeod, & Rawlings, 2007; Filter, McKenna, Benedict, Horner, Todd & Watson, 2007; Chafouleas, Riley-Tillman, Sassu, LaFrance & Patwa, 2007). Examples of secondary prevention interventions are the Check In-Check Out (CICO) strategies by trying to improve the student’s classroom behavior through motivation. This is done by Check-In: the teacher goes through behavior goals with the students, monitoring and evaluation were the teacher observes the student and lastly, Check-Out: the teacher reviews the progress with the student (Klingbeil, Dart, & Schramm, 2018). Another example of secondary prevention intervention is social skills training (Gresham, Sugai & Horner, 2001; Lane, Wehby, Menzies, Doukas, Munton & Gregg, 2003; Moote, Smyth & Wodarski, 1999). The most robust databases within SWPBS are the tertiary prevention intervention. The majority of the research has selected single case- designs to examine the effects of specific interventions. Also, increasingly studies are linking behavioral and academic interventions to reduction in problem behavior. To date, studies have not examined the interaction effects associated with the implementation of elements at all three tiers in the SWPBS prevention framework (Benazzi, Horner, & Good, 2006; Fairbanks, Sugai, Guardino & Lathrop, 2007; Scott, McIntyre, Liaupsin, Nelson, Conroy & Payne, 2005; Newcomer & Lewis, 2004).

Little research on PBS has been conducted in Sweden (Karlsson, 2018). However, a research project in Uppsala University is implementing Including behavior support in School (Inkluderande Beteendestöd i Skolan, BIS) in 12 primary schools. The aim of the project is to create good relations, safety in school and inclusion in school in addition to help the teachers making data-driven decisions and putting interventions in a system (Uppsala Universitet, 2019). Further, the Norwegian version of the School-Wide Positive Behavioral Intervention and Support (SW-PBIS) (Positiv af terd, støttende læringsmiljø og samhandling – PALS) is well documented through manuals, literature and in other additional material related to training and implementation (Ogden, Sørlie, Arnesen & Meek-Hansen, 2012). Talme, Roll- Petterson, Karlsson & Rosen (2018) conducted a study where they compared SWPBS in a school with a socially exposed area and a control school. The study looked at the teacher’s perception of school climate, stress, trust in their own ability to teach and job satisfaction. The result showed

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4 See www.ungsinn.no for detailed information.
that the experiment school self-reported higher in school climate and own ability to teach compared with the control group.

**Working proactive and reactive**
Reactive strategies means planning and preparing for dealing with emergencies in a way that minimizes the harm for everyone involved and minimizing the risk for the situation to escalate by working ethically and legally. The risks by using proactive and preventively workarounds is restrictions of the living space and development opportunities to the individual. This is only a temporary solution and it’s very important that these workarounds is combined with long term workarounds (Karlsson, 2018). An organization can work *proactively* by for example adapting different environmental factors in the environment, create good relations, give increased access to reinforcers and minimize the occurrence of unnecessary demands (Karlsson, 2018). Proactive workarounds tries to prepare the individual for future life events. This can be done by for example giving the individual access to an environment that is distinct and predictable and creating possibilities for training on adaptive skills. In addition, the persons environment learns to use positive reinforcement to increase the persons motivation to execute adaptive and expected behaviors (Karlsson, 2018). This is the primary core element in the PBS continuum. The teacher is an important person in the student’s environment by creating clarity and predictability, working with learning and skill training and encouragement and feedback.

**Praise**
Studying *praise* in classroom settings began when White (1975) noted a negative correlation between teachers’ rate of praise and grade level. Brophy (1981) outlined an analysis of praise and recommend it as a reinforcement method that teachers can use with the advantage of not being associated with concrete reinforcers. Praise is preferred over the term *feedback* since it can be interpreted more aversive compared to affirming a correct answer (Brophy, 1981). One part of a teacher’s job is to reduce challenging behaviors and promote presocial behaviors and praise is cited to be one of the most effective strategies to fulfil that job (Cavanaugh, 2013; Chalk & Bizo, 2004; Sutherland, Webby, & Copeland, 2000). Teachers who praise their students more often showed higher sense of efficacy for classroom behavior management and lower rates of emotional exhaustion (Reinke, Herman, & Stormont, 2013). However, teachers do not use praise strategically by trying to reinforce desired student behavior (Royer, Lane, Dunlap & Ennis, 2018). Brophy (1981) based his recommendations from O’Leary and O’Leary (1977) when he recommends that praise should be specific, sincere, varied and credible. These recommendations also stand today (Ennis, Royer, Lane, Menzies, Oakes & Schellmans, 2018). Unfortunately, praise has been found to be neither contingent, used as positive reinforcement or linked to student behavior (Beaman & Wheldall, 2000). Teachers often use *general praise* when they praise (Ennis et al., 2018). General praise rarely leads to self–confidence, assignment understanding or improved on task behavior (Hattie & Timperley, 2007).

**Behavior Specific Praise Statements**
Praise can be more practical when it’s specific and intentionally used as positive reinforcement (Brophy, 1981; Thompson, Marchant, Anderson, Prater, & Gibb, 2012). *Behavior Specific Praise Statements* (BSPS) is feedback on a students academic or social behavior and helps the student to realize what he or she is specifically good at. BSPS can also be used to reinforce schoolwide expectations and make socially acceptable behavior more likely to occur in the future (Brophy, 1981; Cooper, Heron & Heward, 2007; Lane, Menzies, et al., 2015; Sutherland et al., 2000). BSPS is one strategy that can be used daily to reduce and prevent problem behaviors (Royer et al. 2018). BSPS is used when a teacher is specifying what behavior, in written or oral and how it affected an academic or social achievement (Kennedy & Jolivette,
2008). The behavior specified must be within the student’s locus of control (work effort) rather than uncontrollable factors like intelligence or ability (Royer et al. 2018). An example on BSPS is “you had great examples on the listening exercise”. Praising effort instead of ability may help the student to be motivated by opportunities and potentially lead to hard work effort (Weaver & Watson, 2004). The praised behavior is likely to reoccur if BSPS is sincere and the student finds attention reinforcing (Lane et al., 2015). Within tiered systems of supports (like PBS), teachers can use BSPS to recognize school-wide expectations in all key settings, reinforce desired behaviors and remind of current expectations to those who needs it (Royer et al. 2018).

**Evidence for BSPS**
Teacher praise has been under empirical investigation since the 1970s. Royer et al. (2018) conducted a systematic review of teacher-delivered BSPS on K-12 student performance. The results showed that using BSP increased student time, decreased inappropriate behaviors, and reduced student tardiness. The authors conclude that BSP might be classified as an evidenced practice (Royer et al. 2018). However, another review concluded that there is currently insufficient evidence to identify teacher praise as an evidence-based practice for the same population (More, Maggin, Thompson, Gordon, Daniels & Lang, 2018). Floress, Beschta, Meyer & Reinke (2017) examined different characteristics of praise and the training methods that have shown treatment acceptability and demonstrated an impact. The studies found have used a combination of two or more methods that most commonly included didactic, feedback, or goal setting component. Only 50% of the studies examined had a treatment acceptability and most of the ratings were positive. More research is needed on infrequently studied praise characteristics such as gestures, physical and private. Research is also needed regarding type of method such as self-monitoring and incentives (Floress, Beschta, Meyer & Reinke, 2017).

Most of the studies that trained teachers to use praise have positive results (Floress, Beschta, Meyer & Reinke, 2017). However, large gaps exists in the literature. To clarify the benefits of teacher praise is particularly important because positive and proactive strategies is the foundation in large-scale initiatives like PBS. A review from Jenkins, Floress, & Reinke (2015) reveal the need for large-scale studies with proper operational definitions to identify rates of different types of praise across grades and instructional activities. These measures also needs to be linked to student behavioral outcomes (Jenkins, Floress, & Reinke, 2015). This was inspired by Duchaine, Jolivette & Fredricks’ (2011) study. They propose that further studies should investigate the effects of fewer intervention hours. To the author’s knowledge, no other studies has focused only on changing the teacher’s behavior.

**Aim and research question**
The aim of the present study was to increase the use of BSPS among three school teachers. Furthermore, to increase the practical use and understanding of behavior analysis principles. The hypothesis was that the intervention would increase the teachers use of BSPS. The research question was: *does the use of behavior specific praise statements (BSPS) increase BSPS among three school teachers?*

**Method**

**Setting**
This study was conducted in a PBS special needs school with treatment for students between 12 to 17 years old in grade 6 to 9. Two types of professionals worked at the school. The therapists provided treatment in terms of cognitive behavioral therapy, learning psychology and applied behavior analysis (ABA) to students with different types of challenges like
neuropsychiatric disabilities, anxiety and relational difficulties. The teachers were mainly responsible for planning and performing lectures, but therapists and teachers collaborated in helping the students. The teachers normally taught four students in the classroom at a time. This could change due to individual treatment plan. Data collection was conducted in a standard classroom. The present author planned the study, introduced the intervention to each teacher and was the observer.

Participants
The participants were three teachers teaching the social study subjects (T1), English (T2) and mathematics (T3). T1 was teaching general education while T2 and T3 taught special education. Only T3 had taken courses in behavior management in their graduate education. T2 had taken introductory courses in ABA. See table 1 for teacher demographics. Informal observations in class were made during week 44 & 45 the year prior to the current study to see how the teachers reacted to different types of student behavior. Some teachers stated that it was hard to motivate the students and that they were off task in lectures. The hypothesis for the current study was based on these observations. The teachers were selected based on the subject they teach because it gave more opportunities to register BSPS in form of teaching hours. The participants were asked to participate based on observations during their lectures and what lectures they had. In addition, they were selected based on what’s feasible on the given time for the project. All the participants were asked in person if they were interested in participating in a study with the aim to “use behavior analytical methods to help you as a teacher to improve the students’ classroom environment and give support to them more effectively”. The teacher was given the information about the study in writing and orally with the opportunity to ask questions. They were informed that participation is voluntary and could withdraw their consent at any time without affecting the relationship to the author or other persons at their workplace. They were told that they gave their formal consent by signing the written informed consent, see appendix 1.

Table 1

**Teacher Demographics**

<table>
<thead>
<tr>
<th>Participant</th>
<th>Highest Degree</th>
<th>Counseling sessions in ABA (hours, last 30 days)</th>
<th>Years of teaching experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>Masters</td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td>T2</td>
<td>Bachelors</td>
<td>3</td>
<td>34</td>
</tr>
<tr>
<td>T3</td>
<td>Masters</td>
<td>0</td>
<td>18</td>
</tr>
</tbody>
</table>

Teacher demographics for three teachers in social study subjects (T1), English (T2) and mathematics (T3).

Apparatus & Materials
Materials used for data collection were pen and recording sheet, see appendix 2. A digital counter was not used because it could be disturbing and it would go against the rule of no cellphones in class. The schools’ digital clock was used to keep track of time during registration. Excel was used to graph the data after data collection. Post-it notes was used to give feedback to the teachers during intervention. Microsoft PowerPoint were used during one-hour coaching session.
Data Collection
The dependent variable was count of BSPS. BSPS was retrieved and modified from Myers & Sugais’ (2011) article and was defined as verbal statements made by the teacher in the classroom and were:

1. A description of a desired social behavior.
2. Specific to the group or class.
3. A positive praise statement (positive meaning: the teacher expressing that the behavior is desirable).

An example of BSPS is “thank you for coming to class on time”. An example of a statement that doesn’t qualify as BSPS is “good work”. BSPS was measured using event recording by writing the time the behavior occurred and reported as numbers per session. One session was defined as was a 15-minute observation that occurred at the beginning of the same lectures during the week, provided the participants (teachers) were present in class. 15 minutes were chosen due to feasibility. The observer sat in class the whole lecture during the intervention phase. Each participant where observed 3 sessions each week.

Design
A multiple baseline across teacher design was used to examine the effect of BSPS.

Teacher coaching intervention
The independent variable was a teacher coaching intervention which was implemented after baseline showed a stable trend according to Cooper, Heron & Hewards (2008) guidelines for analyzing data. A multiple baseline design consists of tiers, each tier representing a participant. Baseline were collected in week 6. Intervention was introduced to T1 the same week. When the data collected in intervention was stable in tier one (week six), intervention was introduced in tier two. Same procedure was used for tier three (week eight). The intervention consisted of three phases:

Phase one: Coaching
A one-hour coaching session where given to each teacher when their baseline data were stable. The steps and criteria were based on Duchaine, Jolivette & Fredricks (2011) study. Four steps were followed in chronological order. Firstly, the teachers were asked how their day had been so far with the aim to get them to relax and give an impression of an informal setting. The teachers were also given a survey. The survey contained questions about their background as a teacher, their knowledge about ABA, how often they used the principles and their general attitudes towards ABA. The questions was retrieved from Reeves (2017) see appendix 3. Secondly, a PowerPoint was presented that contained “What is Behavior Analysis?”", “What is behavior specific praise statements?” and “How to maintain BSPS”. Thirdly, relevant statements were worked out together with the teacher. The intervention was based on Ennis, Royer, Lane, Menzies, Oakes & Schellmans (2018) article and was given to each teacher in print at the end of the intervention hour. The teacher were asked how many BSPS they thought was realistic to give to the class during 15 minutes. They sat their own criteria. T1 and T2 sat a criterion on three statements per 15 minutes. T3 sat a criterion of six. Lastly, the teacher practiced saying BSPS to the observer.

Phase two: Prompting and feedback
Before each lecture started, the teacher received a prompt (reminder) in the form of a post-it note from the observer. The note said “Remember to use positive feedback on the student’s social behavior as a group. For example: (...)”. In addition, the note had a smiley and a relevant example. A relevant example was based on what was observed in the previous lecture. The teacher also received a post-it note after class that said: “Good job! You used positive feedback on the student’s social behavior as a group. Try saying: (...”). The note also had a smiley and a relevant example. The criteria was not put on the post-it note. The note was given to the teacher after class had ended.

**Phase three: Maintenance**

Since self-monitoring is easy to conduct and effective in measuring and increasing teachers BSPS occurrence (Simonsen, MacSuga, Fallon, & Sugai, 2013; Van Houten & Hall, 2001), they were asked to self-monitor the number of BSPS when the teachers’ criteria was met, and when the data showed stability. The teachers registered during week 14. The teachers were instructed to count the numbers of BSPS during their lectures. They were instructed to use a sheet or post-it note and draw a line every time they used a BSPS. They were given a sheet from the observer where they wrote the numbers of BSPS and what lecture it was and any comments they had. The sheet also had the definition of BSPS and instructions. The teachers was encouraged to read the sheet before every lecture, see appendix 4. Follow up data were collected the week after phase three (week 15).

**Intervention 2.0.**

The intervention did not work as intended for T1, see results and discussion for details. The observer asked T1 what could help to make it easier to remember using BSPS. T1 asked for examples of BSPS and examples of situations T1 could use them. The examples were sent by email and T1 confirmed he got them the next day. A revised version of the intervention was given to T2. Two elements were added. The first element was a YouTube video called “A snapshot of the PBiS 4:1 Ratio in a Middle School Classroom” (SanBdoCitySchools, 2016). The two first minutes of the video was shown before practicing BSPS. The second element was a list of examples of BSPS from the video, see appendix 5. Observing hours for T3 were also changed from three to four to increase registration hours.

**Social validity**

Wolf (1978) argue that social validity contains three judgments in relation to our work as behavior analysts. The first is to find out if the society finds the use of BSPS acceptable. Secondly, to judge if the teachers find the use of BSPS acceptable. Thirdly, whether the teachers are satisfied with the results, including the unpredicted ones. A survey asking questions about the social validity of the intervention was given before and after implementation of intervention see appendix 6. **Integrity check** was performed by the observer who answered a survey related to observations and delivery of post-it notes, see appendix 7. The questions were answered after every lecture during intervention by the observer.

**Ethical considerations**

Van Houten & Halls (2001) gives advice in terms of recording etiquette. They were followed by letting T1 introduce the observer to class whom gave the students written and oral information about the study, see appendix 8. The students also had an opportunity to ask questions. One student was absent when the information was given. The written information was put on the students’ desk and the observer verbally informed the student before data
collection. New students was informed consecutively. The teachers were responsible for the students which were under 15 years old. The written information was also given to the students’ parents and others who were interested in the information. Van Houten & Halls (2001) also recommends having an informal entrance and departure. This was not problematic since the present author worked at the school prior to intervention. Debriefing was given after the end of the study.

**Inter-rater reliability**

*Inter observer agreement* (IOA) is a way to measure inter-rater reliability. Two observers recorded one session in baseline one in the intervention phase with the teacher teaching mathematics. Total number of sessions measured with IOA was 1. The second observer was a certified behavior analyst and supervisor for the present author. IOA was calculated by dividing the number of agreements on the sum of agreements and disagreements, then multiplied that score with 100 to get the answer in percent \( (A/ (A+D) \) *100 (Van Houten & Halls, 2001). Van Houten & Halls (2001) recording etiquette was also followed by instructing the second observer not to talk to the first observer directly before, during or after class. This could be interpreted as one where talking about the participants or students. If one of the observers were talked to, they mentioned that they were busy and cannot talk while they were working. Further questions were ignored. Lastly, the observers’ interest were disguised by varying the object of their glances (Van Houten & Halls, 2001). The observers met prior to registration to instruct how to score the data. The observers also met after registration to compare data.

**Results**

The data were analyzed with *visual inspection*. The participants’ data were plotted and looked at to make judgments about whether and to what extent the intervention had an effect on the teacher’s behavior after Cooper, Heron & Hewards (2008) recommendations. Several factors were considered when analyzing the single-subject design. Firstly, the variation in the *level* of behavior was compared from condition to condition. An effect is indicated if the behavior is much higher in the intervention condition compared to the baseline condition. Secondly, the *trend* refers to the gradual changes in the behavior. If the intervention makes the behavior increase, it suggests that it had an effect. The last factor is the *latency* which says something about the time it takes for the behavior to change after the intervention was introduced. Generally, if the behavior change shortly after the intervention was introduced, the changes are that the intervention was responsible.

Three teachers participated in this study. The number of BSPS are indicated in figure 2. The hypothesis was partly confirmed. T1 did not reach the predetermined criteria of 3 BSPS during intervention with a mean of 0, range 0 to 2. T1 had 1 BSPS during follow up. T2 met the criteria of 3 one time during intervention with a mean of 1.3 and range 0 to 3. T2 had 3 BSPS during follow up. T3 met the predetermined criteria of 6 BSPS 1 time with a mean of 4 and range 2 to 6. Follow up data were not collected for T3. A total of 19 lectures was not observed. The number of correct responses on the questions about behavior analysis terminology was as following: T1 = 7, T2 = 8, and T3 = 7 out of 10.

**IOA**

IOA was measured in session 5, week 10 in T3s lecture with an agreement of 100 % \( (0/ (1+0)) \). IOA was not collected during the intervention phase.
**Integrity scheme & social validity**

All steps in the treatment integrity scheme were followed and all teachers filled out the social validity questionnaire pre intervention. T1 was the only teacher who filled out the questionnaire post intervention. T1 filled out strongly agree on all questions in both occasions. T2 checked “strongly agree” on all questions in the first occasion. T3 filled in “agree” in the first two questions, in addition to question five. The three remaining questions were checked with “slightly agree”.

**Self-report data**

Self-report data were collected during week 14. T1 did not collect any self-report data. T2 filled out number of BSPS in one occasion with the count of one. Lastly, T3 had two register occasions with nine and five BSPS.

**Questionnaire data**

The teachers had agreements regarding some of the statements in the questionnaire. Firstly, the results from the questionnaire data showed that all teachers agreed or strongly agreed that “it is important to collect data on inappropriate behaviors”. Secondly, the teachers disagreed or strongly disagreed that “Giving the students rewards for completing assignments is bad because it decreases their intrinsic motivation to do their work”. Thirdly, all teachers disagreed or strongly disagreed that “removing a privilege is a good way to get off-task students to do their work”.

The teachers also reported differently in other statements. This applies to the statements “it is important to know the underlying cause of a students’ misbehavior to effectively intervene” (T1 = agree, T2 = disagree, T3 = strongly agree) and “it is best to ignore a student that seems to misbehave because of the attention the student receives” (T1 = agree, T2 = neither agree or disagree, T3 = strongly agree.)

Regarding using techniques for managing the classroom, all teachers reported praising good behavior and that this was very or extremely useful. They also never send disruptive students out of the classroom and believed this to be “not at all useful”.

Lastly, the teachers set up individualized reward programs to encourage good behavior in students who repeatedly misbehaved and reported this to have been very or extremely useful. T1 reported never to the question “provide classwide rewards when the class as a whole demonstrates good behavior. T2 and T3 reported several times a month. T1 found this method to be moderately useful while T2 and T3 found it to be extremely useful.
Figure 2. Teachers’ rate of behavior specific praise statements for each observation session (15 minutes in the beginning of each lecture). Reached criteria is indicated with arrows.
Discussion

The aim of the study was to investigate if BSPS would increase three teachers use of BSPS. The results showed that the intervention increased the use of BSPS in T2 and T3. T1 had not a lasting effect. The study had varied results, just like previous studies that have been conducted (Floress, Beschta, Meyer & Reinke, 2017). The hypothesis is therefore partly confirmed. In addition to the varying results, the challenges that occurred in this study is common in previous research and the results is therefore generalizable. This study also indicate that fewer intervention hours might have an effect.

The results from the questionnaire showed that all the teachers have used behavior management tools in the classroom (e.g. praise). They made it clear that they cooperated with the therapists when behavioral plans were made for the students. The questions about behavior analytic principles also indicate that the teachers knew at lest some of the basic principles. This conclusion was strengthened by the fact that all the teachers explained what they were thinking while answering the questions. Most of the reasonings were accurate.

Three findings was particularly interesting. Firstly, T1 would still recommend the intervention to other teachers even after the intervention were introduced and the effects did not last. Secondly, T3 believed giving praise to the students as a group would not work and had the best results in the study. The results of the study did not affect T3s opinions about giving praise to the students as a group. Thirdly, the teacher with least years of experience (T3) had the best results.

None of the teachers provided target behavior during baseline. All teachers used some sort of general positive feedback. Examples were “great” and “good”. Since teachers in general are bad at giving positive feedback in general, it was important to convey this during the intervention hour. T2 and T3 gave BSPS individually in a few occasions. The positive feedback was directed to the student for academic behavior. The teacher’s behavior depended on the type of lecture. The general positive feedback often occurred when the teachers went through something on the board. When the students worked in their books, some of the teachers sat by their desk and looked on their computer, checked their phone or looked at the assignment they had given to the students.

It was difficult to pinpoint what made the intervention not work on T1. When showing a trend of zero BSPS, T1 was asked what could be done to remember to use BSPS more easily. An email was sent to T1 with examples of BSPS and in what situations they could be used after T1s request. T1 confirmed receiving the email. BSPS was not practiced during the intervention hour for all participants. There were reasons to believe that this caused the ineffectiveness of the intervention for T1. This led to the modified version of the intervention. However, the pattern became clearer in the intervention phase in T2. T2 had one session (16) were there non-occurrences of BSPS. What seemed to be decisive was preparation before the lectures. T1 was mostly on time or late to the lectures. Normally, T2 came to class five minutes before lecture started. T2 was late to the session with non-occurrence of BSPS. T3 occurrences of BSPS was also affected by being late. For example, BSPS decreased from six in session one to two in session two. T3 came earlier to class in session one and three.

Strengths and weaknesses

Even if a change occurred in T2 and T3, the results does not look very important at first sight. The benefit of graphing the results like in figure 2 is that it becomes clear whether the
intervention had an effect or not. However, the teachers’ behavior were only registered 15 minutes of the lecture. T2 and T3 said BSPS on the student’s social behavior as a group during the whole lecture during intervention, which was not case in baseline for T2 and T3. T2 reached the criteria of 3 BSPS during the whole lecture except for session 16. Another positive effect also occurred. Even if the intervention focused on social group behavior, T2 and T3 generalized their BSPS to individual academic behavior. This could mean that the definition was too narrow. BSPS on academic directed to the group or individual could have been included. However, this study was conducted based on the recommendations of Ennis et al. (2018) when they argued that focusing on too many elements might lead to zero BSPS. Many studies have recorded other elements in addition to BSPS. An example is opportunities to give BSPS. The argument for not doing it in this study is that the accuracy of behavior recording might be affected. There is always a risk that the time the behavior is recorded is not representative. Even if one could assume that the behavior occurred during the whole lecture, registering whole lectures would be too time consuming and also affect the accuracy of the data. This study was also conducted based on the recommendations of Van Houten & Halls (2001) when shorter interval was used.

IOA was collected later than desirable because the second observer was sick, had meetings or was not at school. IOA was not calculated in the intervention phase due to the same reasons. The second observer made a valid point when saying it’s a dilemma choosing between several important tasks rather than some more or less important tasks. The good news is that the definition of BSPS seemed to be operationalized in a good way.

The multiple baseline is a strong experimental design and has several strengths. Firstly, it’s the most used single subject design. Secondly, it’s simple and flexible by being easily adapted to applied settings. Thirdly, the behavior does not need to be reversed. Fourthly, carryover effect is not an issue. Lastly, due to ethical reasons, intervention doesn't need to be withdrawn (Cooper, Heron & Heward, 2007).

A major benefit was that the present author has worked at the school until the study began. Knowing the students and teachers made it easier to register behavior and implement the intervention. The teachers and students were used to having the observer in class. By being clear at the beginning in the study that the observer was there to register the teachers, and not the students, behavior registration led to no complications in class. By recording in the beginning in the lecture, it would be easier to prompt the teacher before the lecture during the intervention phase and have time to write feedback afterwards. The integrity scheme was used as a checklist to make sure that the praise that were given was in fact specific and implemented to all teachers in the same way. It served as a prompt for the observer. This increased the inner validity of the study. Also, the same clock was used to register the observations and increased the reliability of the study. T1 and T2 believed that the intervention had social validity prior to intervention, T3 believed that some of the students might react negatively to the intervention by doing the opposite of the BSPS said. This made T3 more skeptic to the intervention. However, T3 followed through the intervention and ended up getting the best results in the study. T3s BSPS focused on listening and paying attention to the board. The students ended up talking less in each other’s mouths and one student’s response on T3s BSPS was “we are awesome”. T3s good results are surprising since T3 looked tired and the eyes were closed several times when the intervention hour was introduced. This could be interpreted as disinterest and the observer checked in with T3 before the first intervention session since there had been a week since the intervention hour. The social validity form was sent to T2 and T3 after the data collection was over. The observer did not receive a response from the teachers and went to
school to remind them. Both teachers said they would give the questionnaire the same day despite what seemed to be a hectic day. The observer has not received the questionnaire. However, T3 said that he still did not believe in giving “social feedback on a group level”. This is before T3 has seen the results of the study. T2s opinions is unknown. The fact that all teacher’s behavior did not change until the intervention is introduced indicates a high experimental control.

The downside with the multiple baseline design is the difficulty to conduct comparative, component, or parametric analyses. Another challenge is time and logistics. Lastly, the order of intervention effects is hard to determine (Cooper, Heron & Heward, 2007). The intervention consisted of an intervention hour, giving post-it notes to the teacher and a week were the teachers self-reported their use of BSPS in class. Its not possible to determine what was most effective. An alternative could have been to only introduce one element of the intervention. However, it could be a cocktail effect where all the elements need to be present in order for the intervention to work. It is also a risk that the observer in the classroom or the post-it notes in itself was the positive reinforcer and not the actual BSPS written on the post-it note. The first reason might have been the case for T3. T3 reported that the post-it note was not read in session 9 and T3 had similar count of BSPS during the self-report week. It was also possible to cheat with the registration since the observer was not present. The purpose with the self-report was to increase the chance of them thinking about and using BSPS. T1 and T2 told that the lack of BSPS the self-report week was partly because there was only one student and forgetting to register BSPS. T2 also showed a post-it note that indicated that T2 tried to remember using BSPS.

The results could have been affected by several types of reactivity. One is that the observer might have affected the teacher’s behavior just by being in the classroom. An interesting observation is that T3 increased general praise during baseline. Another type of reactivity is that the teachers might want to give good results and helping the current author with the master project. There is also a risk that the teachers might guess what the intervention is about or talking about the intervention with other participants even if they were told not to do so. Since the target behavior did not change before the intervention was introduced, this seems to not be the case. Further, the observer might also have an unintended reactivity when introducing the intervention. Another happening that did not seem to affect the study was that T1 forgot the post-it note on the desk and T2 read it before being introduced to the intervention. Lastly, language communication could have affected the intervention. Even if the observer asked the teachers if some of the materials could be in English, and they agreed, questions about the meaning of words were asked. It could have led to the teachers not fully understand the questions. The observer is also Norwegian. The languages is quite similar and the observer communicates well in Swedish. However, unclarities or misunderstandings cannot be excluded.

Practical implications
From a research perspective, it would be ideal if the observer did not both introduced the intervention and registered BSPS. However, this is how the practical world might look like for behavior analysts in the future. Its more realistic and better for the organization if the staff members can conduct functional analyses and behavior management interventions without an outside observer. This also requires that the staff members are properly trained in behavior analytic principles.

T1 and T2 told the observer that they forgot to self-report their use of BSPS. T2 had written a pos-it note as a reminder, but still managed to forget to register BSPS. Both T1 and T2 seemed
uncomfortable to report the results to the observer. This could have affected the results for T1 and T2 in follow up and led to the behavior being negative reinforced. The observer tried to be as little aversive as possible by focusing on the positive aspects (e.g. they tried). Self-report data in itself are often not reliable. The purpose was to help the teacher staying aware of using BSPS.

A great deal of observation opportunities were stalled due to excursions, only one student in class, activity days, national tests in several subjects and teacher being absent from school. In practice, the multiple baseline looks more like a multiple probe design were data is collected intermittently during baseline. Student’s behavior was not registered because it would take too much time to receive consent from the ethical committee, etikprövningsmyndigheten, and the present author wanted to focus on the teachers and hopefully helping them to see the value of ABA and evidence-based methods. The school also went through organizational changes when the study was conducted. This could have added stress factors to the teachers working environment as shown in Olssons (2013) review. Also, it’s not so easy for the teachers and other staff members to follow the recommendations of Simonsen, Fairbanks, Briesch, Myers & Sugai (2008) of planning throughout the school year when plans often change.

Even if the elements of the intervention are introduced equally to all participants, individual differences such as teaching styles and prior education and experiences might affect the inner validity of the study. This is something that Duchaine, Jolivette & Fredricks (2011) encourage to control for. However, this is hard to practically implement and teachers also believe that there are benefits of having different teaching styles. An example is that students prefer different teachers. Another recommendation from Duchaine, Jolivette & Fredricks (2011) that have been taken to consideration is fewer observation hours. This study indicate that one might get the same results as Duchaine, Jolivette & Fredricks (2011) with fewer observation hours.

People have the tendency to be mentalistic when they are explaining events by for example explaining behavior with diagnosis. The problem with these sorts of explanations is that we can’t do anything about them. Behaviors can be changed. People in general wants the intervention to work every time. The parents want their youth to get better and the teacher wants their student to have good results at school. Researchers wants to be published. Even I wanted this study to work for the teachers and me. That’s not how it works in the practical world. There is a huge problem that only significant results get published. This might have led to the confusion that practioners have when trying to follow evidence-based methods as Hasson & Schwarz (2017) pointed out. Practioners also need to learn what others have done when things don’t go as planned. A p value below .5 can’t help you there. Practitioners should be more interested in research methodology in order to be able to critically evaluate and discuss the practical use of research results. Furthermore, researcher should strive to write to the public in order to spread their knowledge of their results.

The school itself had the prerequisites for conducting a study like this. The schools works from a behavior analytic perspective. The school is also a PBS school and has worked primary on tier three but is working on implementing evidence-based methods on tier two and one. A good tier one example they do is giving students clarity by writing an overview over classes, breaks and other information related to that day on the board and in the dining room. The school also uses Check-In/Check-Out, providing ART lectures and has expected behaviors printed on the walls. However, as any other organizations, improvements can be made. One expected behavior is no cell phones in class. It was common that the students used their phone. There were also occasions where the teachers also were on the phone. Employees at a workplace, especially
leaders and teachers are role models. It may not be a priority to be consistent with no cellphone use (or walk out of the classroom when using it) when staff is sick, there is an overload of paperwork and other practical things need to be sorted out. The point is to give a heads up to that we need to behave as we expect from others (students). Karlsson (2018) has a point by saying that structures in the organization needs to be in place in order to give effective interventions to the individual. This is why behavior management is preferred before doing an FBA as described by Carr (1994) and Dixon, Vogel & Tarbox (2012). Having expected behaviors in class means nothing if no one reinforce them.

The school and the people who works there should have credit for trying to work evidence-based. According to the questionnaire, the teachers seem to know most of the basic behavior analytic principles. From an ethical perspective, it can be hard to work with serious problem behaviour and secure anonymity while trying to create evidence-based research. Karlsson (2018) has a great point when he said that PBS is not a quick fix and that this might be the reason why people are tempted to use methods that are easier to use and faster to implement. This does not mean that one should stop trying to work evidence-based. Skinner (Skinner & Marwell, 1972, p. 22) is spot on when he said that “A failure is not always a mistake; it may simply be the best one can do under the circumstances. The real mistake is to stop trying”.

Further studies
More studies on PBS and BSPS is needed in Sweden. Further, more studies on BSPS using single subject design in all types of schools can give a clearer picture of what factors that are essential for increasing BSPS among teachers. It would also be interesting to investigate the effects of BSPS given when the students are on task, especially in special needs schools.

Conclusions
The intervention increased T2 and T3s use of BSPS. However, the intervention had not a lasting effect on T1.
References


27


Kennedy, C., & Jolivette, K. (2008). The effects of positive verbal reinforcement on the time spent outside the classroom for students with emotional and behavioral disorders in a residential setting. Behavioral Disorders, 33, 211–221.


SanBdoCitySchools (2016). A snapshot of the PBiS 4:1 Ratio in a Middle School Classroom (video file). Retrieved from https://www.youtube.com/watch?v=0dcQuyK5Pqg


Vil du delta i mitt forskningsprojekt?

Bakgrund och syfte
Jag ska skriva min masteruppsats i allmän psykologi på Stockholms Universitet i vår och ska utföra en studie i skolmiljö. Syftet är att använda metoder som hjälper dig som lärare att ge eleverna ett ännu bättre klassrumsmiljö och ge stöd till eleverna på ett mer effektivt sätt. I detta brev får du information om projektets mål och vad deltagandet innebär.

Förfrågan om deltagande
Du har blivit valt ut till studien eftersom du är en nykkelperson i elevernas vardag gjenom att ha flera lektioner med eleverna i klassrummet under en vecka.

Hur går studien till?

Finns det några fördelar?

Hantering av data och sekretess
Informationen som registreras om dig ska endast användas som beskrivs för syftet med studien. Inga känsliga uppgifter kommer samlas in. Du har rätt att veta vilken information som registreras om dig och rätten att korrigera eventuella fel i deninformation som registreras. All information behandlas konfidentiellt och din information kommer att behandlas med ett fiktivt namn. Det är dock få deltagare i studiet och jag kan inte garantera att du inte kommer kunna identifieras i publikationerna (masterprojektet). Ditt riktiga namn blir inte användt i studiet eller slutrapporten.

Hur får jag information om studiens resultat?

Frivillighet
Det är frivilligt att delta i projektet. Om du vill delta, undertecknar du samtyckesformuläret på andra sidan. Du kan när som helst och utan att ge någon anledning, avbryta studien. Du kan också beära att insamlad information blir raderad untan att detta påverkar ditt förhållande till mig eller arbetsgivare.

Ansvariga
Om du senare vill avbryta eller ha frågor om projektet kan du kontakta mig på mail: XXX eller tlf: XXX
Samtyckesformulär
Gjennom att underteckna samtycker du till at du har informerats, fått tillfälle att ställa frågor, fått dem besvarade och samtyckt till deltagande i studien. Vi behandlar uppgiftera om dig utifrån ditt samtycke.

SAMTYCKE TILL DELTAGANDE I PROJEKTET

JAG VIL DELTA I PROJEKTET

-----------------------------------------------------------------------------------------------------------------

-----------------------------------------------------------------------------------------------------------------

Ort & datum                          Deltagarens signatur

-----------------------------------------------------------------------------------------------------------------

Deltagarens namn med stora bokstäver
Write the time the target behavior occurred.

Target behavior: Verbal statements made by the teacher in the classroom and is:

1. A description of a *desired* (social) behavior.
2. *Specific* to the group or class.
3. A *positive* praise statement (positive meaning: the teacher expressing that the behavior is desirable).
   
   Example: “Va bra att ni kom i tid till lektionen!”

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<thead>
<tr>
<th>Lecture (1, 2 or 3)</th>
<th>Time 9</th>
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Appendix 3

Questionnaire

The purpose of this questionnaire is to obtain information about your perceptions, use and knowledge of Applied Behavior Analysis. Please circle (questions 1 – 4 and 9- 18), write the answer (first and fifth question) or mark with an “X” (questions 5 – 8) which best describes your agreement or disagreement with each statement.

1. How many years have you been teaching?
   Answer:

2. What are the highest academic degree you have obtained?
   a. Bachelor’s
   b. Master’s
   c. Doctorate
   d. Other

3. What population do you primarily teach?
   a. General Education
   b. Special Education

4. In your undergraduate or graduate education, did you take a course that focused primarily on behavior management?
   a. Yes
   b. No

5. Have you had any counseling sessions in applied behavior analysis in your current workplace? If so, how many hours have you had the past thirty days?
   Answer:
6. **Please rate how much you agree with each statement below:**

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
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<tbody>
<tr>
<td>It is important to collect data on inappropriate behaviors</td>
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<td>It is important to know the underlying cause of a student’s misbehavior to effectively intervene.</td>
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<td>It is best to ignore a student that seems to misbehave because of the attention the student receives.</td>
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<td>Giving students rewards for completing assignments is bad because it decreases their intrinsic motivation to do their work.</td>
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<td>Removing a privilege is a good way to get off-task students to do their work.</td>
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<td>It is inappropriate to provide rewards for good behavior because students should know that they are expected to follow the rules.</td>
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<td>It is too time consuming to develop and dispense rewards for my students’ good behavior.</td>
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7. *Rate how often* you use the following techniques:

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<th>Never</th>
<th>Daily</th>
<th>Several times a week</th>
<th>Several times a month</th>
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<tr>
<td>Praise good behavior</td>
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<td>Send disruptive students out of the classroom (e.g., to the office, in the hallway)</td>
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<td>Provide class-wide rewards when the class as a whole demonstrates good behavior (e.g., extra recess time, pizza party)</td>
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<td>Set up individualized reward programs to encourage good behavior in students who repeatedly misbehave</td>
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8. Rate how **useful** you find each technique for managing your classroom.

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<tr>
<th>Technique</th>
<th>Not at all useful</th>
<th>Slightly useful</th>
<th>Moderately useful</th>
<th>Very useful</th>
<th>Extremely useful</th>
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<tr>
<td>Praise good behavior</td>
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<td>Send disruptive students out of the classroom</td>
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<td>(e.g., to the office, in the hallway)</td>
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<td>Provide class-wide rewards when the class as a</td>
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<td>whole demonstrates good behavior</td>
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<td>encourage good behavior in students who</td>
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<td>repeatedly misbehave</td>
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9. Behavior modification can only be applied by experts, and not by individuals in everyday life.
   a. True
   b. False

10. Placing a child in a dull, boring place for a brief period of time is an example of:
    a. Physical punishment
    b. Reprimand
    c. Time out
    d. Response Cost

11. You give students stickers for good behavior. Once they have a certain amount of stickers, they can trade them in for prizes or privileges. What is this system called?
    a. Token economy
    b. Shaping
    c. Extinction
    d. Punishment

12. Which of the following factors has the greatest influence on the overall success of your “trade stickers in for prizes/privileges” system?
    a. The quality and availability of the prizes and privileges
    b. The number of people that can give stickers
    c. The number of people that can receive stickers
    d. The quality and availability of the stickers

13. Whenever the Mountaineers score a touchdown, Yosef does cartwheels and the crowd cheers. Which description accurately describes the A-B-C contingency of Yosef’s behavior?
    a. A = touchdown, B = cheers from the crowd, C = cartwheels
    b. A = cartwheels, B = touchdown, C = cheers from the crowd
    c. A = cheers from the crowd, B = touchdown, C = cartwheels
    d. A = touchdown, B = cartwheels, C = cheers from the crowd

14. In behavior modification, the stimulus that is present when a behavior occurs is referred to as a(n):
    a. Antecedent
    b. Consequence
    c. Cause

15. The main purpose of functional assessment is to:
    a. Identify the antecedents and consequences of a behavior
    b. Decide how to punish the behavior
    c. Identify which students are misbehaving
    d. All of these

16. A teacher is working with a child who frequently engages in fighting with other children on the playground. The teacher observes and records the events that immediately precede and
follow the child’s behavior of fighting. Which method of conducting a functional assessment is the teacher using?
   a. A functional analysis
   b. Direct observation
   c. Indirect methods
   d. Experimental manipulation

17. Nicole is caught lying to her parents and loses her driving privileges. As a result, Nicole no longer lies to her parents. This is an example of:
   a. Positive punishment
   b. Negative reinforcement
   c. Negative punishment
   d. Extinction

18. Timmy swears whenever his mom makes broccoli for dinner. Timmy’s mom always sends him to his room without dinner when he swears. As a result, Timmy is more likely to swear when his mom makes broccoli. This is an example of:
   a. Positive reinforcement
   b. Punishment
   c. Negative Reinforcement
   d. Extinction
Till XXX, XXX och XXX.


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Target behavior: Verbal statements made by the teacher in the classroom and is:

- A description of a *desired* (social) behavior.
- *Specific* to the group or class.
- A *positive* praise statement (positive meaning: the teacher expressing that the behavior is desirable).

Example: “Va bra att ni kom i tid till lektionen!”

Lycka till!
Appendix 5

Exempel på användning av BSPS

” Tack för att ni kommer inn tyst och lungt”
” Tack för att ni jobbar med uppgifterna”
” Tack för att ni har tagit fram böckerna”
” Tack för att ni har ögonon på mig”
” Va bra att ni väntar på eran tur innan ni pratar”
 ”Jag uppskattar att ni är här”
” Tack för att ni ställer frågor”

Om du vill titta på exemplerna igen så kan du gå inn på www.youtube.com och söka på ” A Snapshot of the PBiS 4:1Ratio In a Middle School Classroom”.

Lycka till 😊
Appendix 6

*These questions will ask you about your confidence to the behavior specific praise statements intervention. Please mark with an “X” which best describes your agreement or disagreement with each statement.*

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<th></th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Slightly disagree</th>
<th>Slightly agree</th>
<th>Agree</th>
<th>Strongly agree</th>
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<td>Most teachers would find this intervention appropriate for students with similar needs.</td>
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<td>I would suggest the use of this intervention to other teachers.</td>
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<td>I would be willing to use this intervention in the classroom setting.</td>
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<td>This intervention would <em>not</em> result in negative side effects for the students.</td>
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<td>This intervention is reasonable for the needs of the student.</td>
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<td>I like the procedures used in this intervention.</td>
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### Treatment integrity

**Behavior Specific Praise Statements**

0 = not in place, 1 = partially in place, 2 = completely in place

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<td>1. Did the observer give at least one example (written on post-it notes) to encourage using BSPS <strong>before class</strong>?</td>
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<td>2. Did the observer prepare to help the teacher deliver BSPS <strong>before</strong> the lecture started (i.e., gave a post-it note)?</td>
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<tr>
<td>3. Was the teacher observed for the target behavior (or a portion/approximation thereof, first 15 minutes of the lecture)?</td>
<td>0 1 2</td>
<td>0 1 2</td>
<td>0 1 2</td>
<td>0 1 2</td>
<td>0 1 2</td>
</tr>
</tbody>
</table>
4. Did the observer provide feedback *after class* that acknowledged at least one specific target behavior (i.e., gave a post-it note)?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
</table>

5. Did the teacher self-monitor the use of BSPS?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
</table>
Information om studie på XXX skola

Hej!

Denna information är till dig som är elev på XXX skola eller är ansvarig för en elev som går i skolan. Mitt namn är XXX och jag jobbar som resurs i skolan. Jag ska skriva min masteruppsats i allmän psykologi på Stockholms Universitet. Under vårterminen kommer jag att handleda några lärare och vara i klassrummet för att se vad lärarna gör i sin undervisning. Mitt fokus är lärarna och eleverna kommer inte nämnas i studien.

Har du några frågor om projektet kan du gärna kontakta mig på mail: XXX eller tlf: XXX

Hälsningar XXX