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Students with emotional and behavioral disorders exhibit high levels of inappropriate behaviors. As a consequence, engagement in class as well as academic progress suffers. A review of the literature was conducted to examine the effects of teacher praise on attending behaviors and academic achievement of students with emotional disabilities. Results of ten studies meeting inclusion criteria were analyzed. Findings suggest teacher praise positively affected attending behaviors with increases in on-task behaviors and decreases in disruptive behaviors. A relationship between teacher praise and academic achievement could not be established due to confounding variables; however, a relationship between teacher praise and student age emerged. Teacher praise affected attending behaviors of younger participants more than older participants. Limitations, teaching implications and future research are discussed.
        Keywords: Teacher Praise, Teacher Attention, Emotional Disturbance, Behavioral Disability

Students with emotional and behavioral disorders (EBD) exhibit disproportionately high levels of inappropriate behavior (Landrum, Tankersley, & Kauffman, 2003). Students with EBD develop patterns of antisocial behavior, demonstrate difficulties in interpersonal relationships, have limited cooperative behavior skills, interact less frequently with their peers, use coercive tactics to control and manipulate others, and have a well-developed capacity for emotional outbursts and confrontation (Walker, Ramsey, & Gresham, 2003;

Whitaker & Votel, 1995). Research suggests that students' aggressive, disruptive, and defiant behaviors minimize instructional time, disrupt the learning of all students, threaten safety, challenge teachers, and are detrimental to students' own chances for success (Walker et al., 2003).

Students with EBD are often, therefore, placed in more restrictive settings, such as self-contained classrooms. The emotional support classroom teacher and assistants are faced with daily and prolonged contact with students who regularly exhibit behaviors that teachers find

aversive (Kerr & Zigmond, 1986; Walker & Rankin, 1983), which can lead to detrimental effects for students' academic gains and classroom morale. It is suggested that teacher escape and avoidance behaviors may lead to a curriculum of "non-instruction" in which student behavior systematically shapes teacher behaviors to engage in ineffective instruction or to attend more to students' inappropriate behaviors than to appropriate behaviors (Gunter, Denny, Jack, Shores, & Nelson, 1993).

Reprimands and Praise

Often times, the reciprocal interaction taking place between teachers and students with EBD is known as Patterson's "coercive interaction cycle" (Patterson, Reid, & Dishion, 1992), which states that once aversive behaviors are directed at a person, the receiving person responds with behaviors more aversive to the initial person. A cycle of negative behaviors then perpetuates itself resulting in an environment not conducive to academic or social growth.

During direct observations from 20 classrooms for students with EBD, more than 20% of the observed time teachers and students were involved in negative interactions; positive interactions accounted for less than 5% of the observed time (Jack et al., 1996). Van Acker, Grant, and Henry (1996) described interaction patterns between 206 students identified as at-risk for aggression and their teachers. Through teacher reports and peer nomination measures, student participants were further divided into mid-risk and high-risk groups. According to the results, praise was delivered on an infrequent basis, with students in the mid-risk group receiving praise at a mean rate of 1.4 per hour, whereas students in the high-risk group received praise at a mean rate of 1.2 per hour. Furthermore, teachers reprimanded

students in the mid-risk group twice as often as they praised them, whereas the ratio of reprimands to praise increased to almost four to one for students in the high-risk group.

Nelson and Roberts (2000) found that students with behavioral difficulties received lower rates of praise and at least six times more reprimands than their normally functioning peers. The authors' findings stand in stark contrast to the suggested ratio of praise statements to reprimands ranging from 3:1 (Shores, Gunter, & Jack, 1993; Sprick, 1981) to 4:1 (Walker, Colvin, & Ramsey, 1995). According to Heward (2003) the natural contingencies of a typical classroom discourage frequent teacher praise and strengthen reprimanding behavior. When a child is disrupting the class, the teacher will often reprimand the student resulting in immediate cessation of the disruptive behavior. The teacher's reprimanding behavior has been negatively reinforced. By contrast, when a teacher praises a student for working on-task, the student will continue to work on-task and there is no immediate consequence to reinforce the teacher's praising behavior. Although praising the on-task student may increase the frequency of that on-task behavior, no immediate consequence occurs to reinforce the teacher's praising behavior.

Praise as Reinforcer

Praise as a reinforcer has intuitive appeal, however, research shows an intense depth and debate about it. Delin and Baumeister (1994) claim that praise has several effects. The first effect is a cognitive response to praise. A praising comment refers to something about the praisee and therefore, will direct attention to the praisee. The second effect is an emotional outcome resulting from praise. The obvious outcome is likely to be a feeling of positive affect, such as pleasure, pride, or joy. Praise

conveys that one has surpassed some noteworthy evaluative standard. Positive affect may also result from enjoying a pleasant interpersonal contact. The third effect is motivational. As previously mentioned, if praise brings about positive affect for the praisee, people will pursue things for which they are praised.

All forms of teacher praise, however, are not necessarily reinforcing to the behaviors of all students and in all situations (Brophy, 1981). For example, older students may respond differently (Brophy) or have different preferences for types of teacher praise than younger students (Elwell & Tiberio, 1994). In addition, students with more deviant forms of school behaviors, with long histories of negative forms of attention from adults at school, may respond adversely to occasional expressions of approval from teachers (Wehby et al., 1995).

Effective Praise

Research suggests a difference between effective praise and non-effective praise (Delin & Baumeister, 1994; Heward, 2003). The presumed effectiveness of praise is ultimately grounded in the applied behavior analysis principle of positive reinforcement which states that a consequence (in this case, praise) that immediately follows a behavior results in the strengthening of that behavior and that the person (e.g., the student) is more likely to engage in that behavior again in the future (Hester, Hendrickson, & Gable, 2009).

Dunkin and Biddle (1974) reviewed the literature and concluded that teacher praise can function more effectively as a reinforcer if it is specific to the student's behavior. Brophy (1981) also concluded that effective praise is contingent on the targeted behavior and specifies particulars of the behavior that is to be reinforced. Praise that is contingent on a targeted behavior is

known as behavior-specific praise (BSP). Willingham (2006) noted that BSP should be sincere, meaning that the child has done something praiseworthy. Furthermore, the content of BSP should express congratulations (rather than express a wish of something else the child should do). The target of BSP should not be an attribute of the child, but rather an attribute of the child's behavior. An attribute of the child is considered fixed and unchangeable and, therefore, out of his or her control. Praising a behavior or the process the child used encourages the child to consider praiseworthy behaviors as under his or her control.

Purpose

Researchers know that students diagnosed with EBD display high levels of inappropriate behaviors which are detrimental to academic progress. Through research, BSP has been identified and is considered a positive reinforcement, however, BSP remains at alarmingly low levels of usage in classrooms, especially of students with EBD. The purpose of this literature review is to analyze the effectiveness of teacher praise on students with EBD. To understand praise's effectiveness, this literature review will analyze; (a) has BSP been utilized in research on students with EBD? (b) What are the effects of teacher praise on attending behaviors of students with EBD? (c) What are the effects of teacher praise on academic achievement of students with EBD? and (d) Is there a relationship between the effectiveness of praise and student age?

Methods

Studies reported in this review were located through Education Resources Information Center (ERIC), PsychINFO, ProQuest Education Journals, and Google scholar databases for references addressing

teacher praise and students with emotional/behavioral disorders. Descriptors used to identify articles were as follows: teacher praise, teacher attention, EBD, SBD, and emotional disturbance. In addition, ancestral searches were conducted from identified studies that met inclusion criteria. Ancestral searches of two relevant reviews of literature were conducted (Martin, Robertson, Maggin, Oliver, & Wehby, 2010; Sutherland, 2000).

Inclusion criteria were studies with the independent variable being teacher praise and dependent variables being attending behavior, academic achievement, or terms similar in definition. Teacher praise can have multiple definitions, however, for this review, teacher praise is defined as: the expression of approval or admiration for someone with a verbal interaction. Teacher attention was also included as a descriptor due to the fact that some of the identified studies dated back to the 1960s and teacher praise and attention were used interchangeably. No historical range cutoff was set due to the body of research on teacher praise and students with EBD beginning in the 1960s. Additional inclusion criteria were that participants were diagnosed with an emotional/behavioral disability, or displayed extreme non-

attending and/or disruptive behaviors. It was not until more recent studies that the diagnosis of EBD was included in participant description (Dufrene, Lestremau, & Zoder-Martell, 2014; Sutherland, Wehby, & Copeland, 2000). Severe behavior disorder (SBD) was the diagnosis term in one study (Gunter & Jack, 1993). Older studies used more subjective terms such as, "dawdled", "deviant", or "great-deal of non-attending behavior" to describe participants (Becker, Madsen, Arnold, & Thomas, 1967; Broden, Bruce, Mitchell, Carter, & Hall, 1970; Hall, Lund, & Jackson, 1968). Studies with these terms were included in this literature review because other inclusion criteria were met and emotional and behavioral disorders were not as frequently diagnosed, yet the manifesting behaviors were present.

Although a decrease in disruptive behaviors is not equivalent to an increase in attending behavior, studies meeting inclusion criteria and measuring disruptive behaviors as the dependent variable were included (Becker et al., 1967; Dufrene et al., 2014; Gunter & Jack, 1993; Hall et al., 1968). As a result, ten studies (see Table 1) met inclusion criteria and were included in this literature review. Results are reported in terms used in individual studies.

Table 1

General Information from studies meeting inclusionary criteria

Reference	Subject(s)	Setting	Independent Variable(s)	Dependent Variable(s)	Results
Becker et al. (1967)	10 Elementary students (7-10 years old) "Problem behaviors"	Elementary school General education	Explicit rules Ignore negative behaviors Praise attending behaviors Behavior specific praise	"Deviant" behaviors	Average "deviant" behaviors across subjects decreased
Hall, Lund & Jackson (1968)	6 Elementary students Disruptive or "dawdled"	Two elementary schools Low SES General education	Praise/attention to attending behavior Not behavior specific praise	Attending behavior 1 Subject (disruptive behavior)	Average attending behaviors increased Disruptive behavior of subject decreased
Broden et al. (1970)	2 Second grade students Disruptive/non-attending behaviors	Elementary school Low SES General education	Praise/attention to attending behavior Ignore non-attending behavior. Not behavior specific praise	Attending behavior	Attending behaviors increased
Kirby & Shields (1972)	1 Male (13 years old) "Great deal" of non-attending behaviors	Elementary school General education	Praise/feedback at increased intervals. Not behavior specific praise	Attending behavior Math accuracy	Attending behaviors increased Math accuracy increased
Luiselli & Downing (1980)	1 Male (10 years old) Specific Learning Disability Non-attending behavior	Elementary school Resource room	Praise/feedback at increased intervals Behavior specific praise	Attending behavior through math completion rate	Attending behaviors increased
Gable & Shores (1980)	1 Male/1 female (10-11 years old) Learning/behavior disabled	Private special education school	Praise after academic accuracy Behavior specific praise	Oral reading rate Correct/error rate	Reading rate increased Accuracy increase Errors decreased

McLaughlin (1982)	10 Elementary students (8 – 12 years old) Behaviorally Handicapped	Elementary school Self-contained classroom	Praise/attention Not Behavior specific praise	Math Accuracy Praise frequency	Math accuracy increased Praise rates increased
Gunter & Jack (1993)	2 Male students (12 and 6 years old) SBD	Middle and elementary schools. Self-contained for students with SBD	Praise for attending behaviors Ignore disruptive behaviors Not behavior specific praise	Disruptive behaviors	Disruptive behaviors decreased
Sutherland, Wehby & Copeland (2000)	7 Male/2 female students (10-11 years old) EBD	Public middle school 5th Grade self-contained for students with EBD	Behavior specific praise	On-task behaviors	On-task behaviors increased
Dufrene et al. (2014)	9 Students (9-11 years old), 7 Students (7-9 years old) Variety of disabilities	Alternative School	Behavior Specific Praise	Disruptive behaviors	Disruptive behaviors decreased

Note. SBD = Severe behavior disorder; EBD = Emotional behavior disorder; SES = Social Economic Status

Results

Participants

Participants ranged in ages from 6 years old to 13 years old. Six studies provided gender information (Broden et al., 1970; Gable & Shores, 1980; Gunter & Jack, 1993; Kirby & Shields, 1972; Luiselli & Downing, 1980; Sutherland et al., 2000). Male participants constituted 82% of participants in those six studies. Four studies were conducted in general education settings (Becker et al., 1967; Broden et al., 1970; Hall, Lund, & Jackson, 1968; Kirby & Shields, 1972). One study was conducted in a resource room (Luiselli & Downing, 1980). Two studies were conducted in self-contained classrooms for students with SBD/EBD (Gunter & Jack, 1993; Sutherland et al., 2000). Two studies were conducted in alternative school settings (Dufrene et al., 2014; Gable & Shores, 1980).

Independent Variable

Behavior specific praise was implemented by teachers and experimenters in five reviewed studies (Becker et al., 1967; Dufrene et al., 2014; Luiselli & Downing, 1980; Gable & Shores, 1980; Sutherland et al., 2000). Examples of behavior specific praise included, "I like the way you are working quietly" (Becker et al., 1967, p. 292), "Great job working on your math worksheet" (Dufrene et al., 2014, p. 571), and "Lisa, that is a wonderful example of how to enter a group" (Sutherland et al., 2000, p. 4).

One reviewed study implemented general praise statements by the experimenter as the independent variable (Kirby & Shields, 1972). The study was measuring academic achievement and, therefore, teacher praise was contingent on academic accuracy. Examples of general praise statements included, "Good work", or "Excellent job" (Kirby & Shields, 1972, p. 81).

Three reviewed studies lacked details about teacher praise and its consistent implementation (Broden et al., 1970; Gunter & Jack, 1993; Hall et al., 1968). One of these studies described the independent variable as, "The teacher attended to the child, moved to his desk, made some verbal comment, gave him a pat on the shoulder, or the like" (Hall et al,. 1968, p. 2). Another study defined the independent variable as, "The teacher was then asked to begin attending to and praising" (Broden et al., 1970, p. 200).

Six reviewed studies had multiple independent variables (Becker et al., 1967; Broden et al., 1970; Gunter & Jack, 1993; Hall et al., 1968; Kirby & Shields, 1972; Luiselli & Downing, 1980). In addition to teacher praise, corrective feedback was provided in two studies (Kirby & Shields, 1972; Luiselli & Downing, 1980). In two studies, praising attending behaviors while in conjunction ignoring disruptive behaviors occurred (Broden et al., 1970; Gunter & Jack, 1993). One study implemented teacher praise and proximity (Hall et al., 1968), while one study applied teacher praise for attending behaviors, ignoring disruptive behaviors and re-teaching of explicit classroom rules (Becker et al., 1967).

Dependent Variables

Attending behaviors

Four studies measured attending behavior using momentary time-sampling procedures (Broden et al., 1970; Hall et al., 1968; Kirby & Shields, 1972; Sutherland et al., 2000). Examples of operationalizing attending behaviors were, "Orientation by the target student(s) toward the appropriate object or person" (Sutherland et al., 2000, p. 4) and "Looking at or writing on the assigned page, looking at the teacher or experimenter when appropriate" (Kirby & Shields, 1980, p.81). Across these four studies, attending behaviors increased with implementation of

independent variables. The greatest increase in percentage of attending behavior occurred in Broden et al. (1970), where two second grade boys were given praise and attention for attending behaviors. At baseline conditions, the boys were attending at 31% and 33%. Both boys attending behaviors increased to 71% and 74% during the final intervention phase. Results were similar in other studies measuring an increase in attending behavior as a percentage. Hall and colleagues' (1968) results showed a mean increase of 36.1% in attending behavior across six participants. Kirby and Shields (1972) had an increase of 46% for one participant. Across nine participants in a self-contained classroom for students with EBD, Sutherland et al. (2000) measured an average increase of 36.9% in attending behaviors after the increase of behavior specific praise statements.

One study in this review measured attending behavior through math problem completion rate during a 35 minute work period (Luiselli & Downing, 1980). During baseline, the participant had a multiplication problem mean completion rate of 13 problems correct. During treatment, when praise and feedback was given after the completion of a designated number of problems, the participant's mean completion rate rose to 56 problems. After reversal, then reinstatement, the participant's average number of problems completed correctly increased to 60.

Disruptive behaviors

Four studies in this review measured effects of teacher praise on disruptive behaviors as the dependent variable. Disruptive behaviors included noncompliance, yelling, out-of-seat, and off-task (Dufrene et al., 2014) and making noise, getting out of seat, or talking to other students (Hall et al., 1968). Each study

reported a negative relationship between independent variable and disruptive behaviors. One study saw a complete elimination of disruptive behaviors in a six year old participant diagnosed with severe behavior disorder (Gunter & Jack, 1993). In the study, a fixed interval schedule of three minutes was used to deliver praise statements for attending behaviors. During baseline conditions, the participant was displaying .32 disruptive behaviors per minute. The participant had complete extinction of disruptive behaviors during the last four days of intervention. The second participant in this study did not show as significant of results, nevertheless, a 40% reduction in disruptive behaviors was recorded.

Another substantial result was recorded in the study by Hall et al., (1968). The first-grade participant had a mean rate of 7% disruptive behaviors during baseline. During reinforcement 1 (attention to attending behavior and ignore disruptive behavior), reversal, and reinforcement 2, the participant's disruptive behavior decreased to a final mean rate of 0.25%, demonstrating a 96% total decrease in disruptive behaviors.

Negative trends are similar when looking at group average decreases in disruptive behaviors. One class of nine self-contained students at an alternative school saw a decrease of 26% in disruptive behaviors per minute, while a second class of seven students saw a 73% drop in disruptive behaviors per minute (Dufrene et al., 2014).

Academic achievement

Three studies measured effects of praise through correct multiplication problem completion (Kirby & Shields, 1972; Luiselli & Downing, 1980; McLaughlin, 1982). Interventions consisted of praising and providing feedback after completing a set number of problems throughout each

session. Increasing trends were graphed in two studies. One participant had a 206% increase in math academic accuracy (Kirby & Shields), while the other increased by over 450% (Luiselli & Downing). The study by McLaughlin measured percent correct as a class with an ABAB reversal design with a strong functional relation between phases and through maintenance.

Gable and Shores (1980) studied the effects of teacher praise on oral reading of two participants (10 year old boy and 11 year old girl) in a special education school for students with learning/behavior disabilities. During treatment, a reinforcement schedule of verbal praise was applied contingent upon correct responses only. After treatment 1, reversal, and treatment 2, student 1 had an increase of 40% in correct words per minute while mean error rate decreased 61%. Student 2 had similar results with an increase of 30% in correct words per minute and a mean error rate decrease of 83%. It was noted in this study that both participants were approaching proficiency levels in oral reading before the intervention.

Age and Praise

A relationship between teacher praise and age of participants was evident as the effects of teacher praise on attending behavior and academic accuracy were analyzed. Four studies in this review measured effects of teacher praise with participants varying in age (Becker et al., 1967; Dufrene et al., 2014; Gable & Shore, 1980; Gunter & Jack, 1993). Gable and Shores measured effects of teacher praise on oral reading with a 10 year old girl and an 11 year old boy. Academic accuracy increased for both students, however, the younger student had a greater increase in correct words per minute by a 10% margin. Gunter and Jack also compared two participants of varying ages. The first

participant was a 12 year old boy diagnosed with a severe behavior disorder, and the second was a 6 year old boy diagnosed with a severe behavior disorder. While being praised at three minute intervals for attending behavior, the 12 year old's disruptive behavior dropped 40% and the 6 year old's disruptive behavior dropped 100% giving a deferential of 60%. Although Becker et al. (1967) had ten participants, only data for six participants were measureable in regards to effects of teacher praise across age range. Results are mixed in that all participants (ages 7-10 years old) had relatively similar decreases (50%) in disruptive behaviors.

The most recent study (Dufrene et al., 2014) measured effects of behavior specific praise on disruptive behaviors with two classrooms as participants. One class consisted of nine students aged 9-13 years old, while another class consisted of seven students aged 7-9 years old. Results showed both classes recorded a drop in disruptive behaviors. The class of older students dropped 26% in disruptive behaviors. The class of younger students dropped 73% in disruptive behaviors. It should be noted that the teacher of the younger class increased her praise statements nearly twice as much as the teacher of the older class.

Discussion

The purpose of this literature review was to analyze the effects of teacher praise on students with EBD; specifically (a) has BSP been utilized in research with students with EBD? (b) What are the effects of teacher praise on attending behaviors of students with EBD? (c) What are the effects of teacher praise on academic achievement of students with EBD? and (d) Is there a relation between the effectiveness of praise and student age?

Utilizing Behavior Specific Praise

The literature on the effectiveness of BSP is continually building, and its implementation in research with students with EBD is evident by the utilization of BSP in four of the latest five studies included in this review. The increase in usage of BSP coincides with Dunkin and Biddle's (1974) review of literature on praise, which identified the importance of BSP. In addition, the most recent studies (Dufrene et al., 2014; Sutherland et al., 2000) reference previous literature (e.g., Brophy, 1981) on the effectiveness of BSP and highlight its importance in classrooms of students with EBD.

The increased use of BSP in the literature is encouraging, nevertheless, a controlled study on BSP vs non-BSP as independent variables has not been conducted with students having EBD. Sutherland and colleagues (2000) measured an increase of on-task behaviors with increased use of BSP. Non-BSP, however, was not controlled and also increased during observation sessions which makes attributing the increase in on-task behavior solely to BSP problematic. Sutherland and colleagues underscore the necessity of future research isolating BSP vs non-BSP as independent variables to establish more reliable relationships.

Praise and Attending Behaviors

When analyzing effects of teacher praise on behavior of students with EBD, results indicate a positive relation with on-task behavior and a negative relation with disruptive behaviors. Results were not as significant in studies that measured behavior changes in groups (Becker et al., 1967; Dufrene et al., 2014). Muted results, however, would be expected when aggregating multiple individual behaviors into a group mean, as explained by the measure of central tendency. Even with central tendency occurring in these two

studies, disruptive behaviors did decrease during treatment.

Based on research about praise as a reinforcer (Willingham, 2006), one can infer that teacher praise was a positive reinforcement amongst recipients. Drawing attention to attending behaviors reinforced those behaviors and effort put in by participants to be on-task was rewarded. The same principle is applicable to studies that resulted in decreases in disruptive behaviors. Even though disruptive behaviors were measured, praise was given when the participants were on-task, which strengthened on-task behaviors. It is misleading to say teacher praise decreased disruptive behaviors in these studies, however, increases in attending behaviors could have created a differential reinforcement of incompatible behaviors to disruption which brought about the measured decreases.

The relation between teacher praise and behavior within reviewed studies must be assessed with caution, however, as threats to validity are present. Four studies measuring change in behavior had multiple treatment interference (Becker et al., 1967; Broden et al., 1970; Gunter & Jack, 1993; Hall et al., 1968). In addition to providing teacher praise, the teacher was designated to ignore disruptive behaviors (Becker et al., 1967; Broden et al., 1970; Gunter & Jack, 1993), which is suggested to be an effective strategy in eliminating disruptive behaviors by itself (Kern, Benson, & Clemons, 2009), use proximity (Hall et al., 1968), and reinforce classroom rules (Becker et al., 1967).

It becomes more difficult to directly relate the effects of teacher praise on student behaviors in these studies, however, results are consistent with studies included in this review that had more reliable methodological designs with teacher praise

solely as the independent variable (Dufrene et al., 2014; Sutherland et al., 2000). Considering converging evidence, results from this review point to a functional relation between teacher praise and students' attending behaviors which is encouraging in that a relatively simple intervention can produce gains in behavioral performance for students with EBD.

Praise and Academic Achievement

A positive relation is indicated in the four studies measuring effects of teacher praise on academic achievement (Gable & Shores, 1980; Kirby & Shields, 1972; Luiselli & Downing, 1980; McLaughlin, 1982). Large increases in academic performance after implementation of independent variables in these studies then large decreases during reversal suggest that participants had control over their academic output. One does not gain then lose academic proficiency in such variability. It is evident with participants that it was a matter of "I won't" perform the academic task rather than "I can't". It appears teacher praise provided motivation to increase math fact completion rate and correct words per minute in reading. The awareness of one's success or accomplishments has been identified as a powerful reinforcer (Vargas, 2013). Timely teacher praise may have allowed the participants to become aware of their successes during the activity, positively reinforcing their efforts on the task at hand.

Internal and external validity threats in two of these studies, though, challenges the analysis of the relation between teacher praise and academic achievement (Kirby & Shields, 1972; Luiselli & Downing, 1980). Both studies had multiple treatment threats with the implementation of teacher praise and corrective feedback as independent variables. The literature on effectiveness of corrective feedback is extensive (Lysakowski & Walberg, 1982), therefore, the coupling of an effective practice with teacher praise eliminates the possibility of drawing any reliable inferences about teacher praise alone. Both studies also had internal validity threats of maturation. An ascending slope is calculable from baseline, through treatment, reversal, and treatment 2. During the experiment in Kirby and Shields the participant was given a math worksheet with 20 problems. Even with problems randomized, the automaticity that comes with performing the same task over and over could lead to maturation. In addition, math problems were single-digit multiplication which, with a limited number of problems, would have to be recycled throughout worksheets. Repetitive practice would also lead to multiplication fact acquisition and increase the correct answers per minute rate.

Praise and Age

Consistent with previous research (Brophy, 1981; Wehby et al., 1995), a difference in the effectiveness of teacher praise was apparent among younger students and older students. Results from individual studies with participants varying in age suggest that praise had greater effect on younger participants.

Even though praise is a positive reinforcement, the greater effect of teacher praise on younger students may be explained by the fact that the classroom is a dynamic environment with countless contingencies taking place. Older students will have more complex social dynamics than younger students. Attention that verbal praise provides, therefore, may be received more as a positive punishment than a positive reinforcement, especially if that student is shy and finds public attention aversive. Older students may also wish to avoid being singled out or seen as "over-achieving" amongst their peers. It is not necessarily the function of praise, then, that

is more effective with younger students, rather, it might be the medium in delivering praise that is causing discrepancies in its effectiveness amongst age groups.

Generalization of the relation between teacher praise and age of participants, however, of these results should be taken with caution. Included studies did not isolate age of participants as independent variables, therefore, relations between praise and participant ages are inferred.

Implications

The difficulties of working with students with emotional disabilities are well documented. Behaviors that are aggressive and aversive can create negative interaction cycles between students and their teachers. Results of this review indicate that teacher praise can be an effective strategy to increase attending behaviors of students with EBD. Furthermore, if academic proficiency is present yet the student is not performing up to his or her ability, timely and consistent teacher praise coupled with corrective feedback may motivate the student to complete the academic task. Additionally, how, when, and where teacher praise is delivered should be taken into consideration. Teachers would benefit from knowing their students and being conscious of how praise is being received. For example, knowing whether a student would enjoy the public attention gained from verbal praise or whether she would rather be praised discreetly can go a long ways in the effectiveness of that praise.

Future Research

Findings of this review strengthen the body of literature on the benefits of teacher praise on students with EBD. Questions, however, have emerged that the scientific community and practitioners would benefit from if answered in future research. If praise is a positive reinforcement, yet the method in delivering praise is the cause of a discrepancy in effectiveness across age groups, then future research should control for participant age and identify different strategies to deliver teacher praise.

The 21st century is continually providing technological answers and the delivery of teacher praise may be one of its beneficiaries. Individual or group texts may be a more discreet and effective way of praising older students. Internet applications that monitor and chart behavioral data are exponentially advancing in capabilities and usability. Students are now able to actively monitor their behavioral progress with increases of laptops and smart boards across classrooms. Continual self-behavior monitoring and the possibilities to increase the immediacy of teacher praise may have far ranging implications. Furthermore, as wearable technologies advance, teachers could wear a watch that vibrates every 3 minutes to remind them to praise. A recurrent reminder may greatly impact the upside down ratio of praise to reprimands that is prevalent amongst students with EBD and potentially break the negative interaction cycles between these students and their teachers. The reinforcing function of praise has not changed, however, technological possibilities in the efficacy of its delivery has.

Future research should also explore the effectiveness of praise amongst students who refuse to perform an academic task as opposed to students who cannot. Is praising a student during an academic task more effective with students who obtain a certain level of academic accuracy? If so, will a schedule of reinforcement of praise continually boost efficiency in academic task completion or will desensitization impact

praise's value? Although praise may appear as a simple reinforcement contingency, its effectiveness in the classroom is complex and, therefore, future research on praise should utilize the most rigorous scientific methodological procedures.

Limitations of Studies Reviewed

Several limitations of this review should be noted. First, inferences and generalizations of results should be taken with caution as internal and external validity threats of included studies made data analysis challenging. Second, due to the historical reach of included studies, operational definitions of independent and dependent variables are ambiguous. As a result, studies may have been missed during search procedures. Lastly, aggregating individual data into groups limits inferences on effects of praise on individuals (Becker et al., 1967; Dufrene et al, 2014; McLaughlin, 1982).

Summary

Even though students with emotional and behavioral disorders exhibit high levels of inappropriate behaviors, ten studies reviewed suggest teacher praise can increase on-task behaviors and decrease disruptive behaviors. Confounding variables eliminate the possibility to analyze effects of teacher praise on academic achievement, however, coupled with corrective feedback, it appears task completion momentum can be established for students who have proficiency yet lack motivation. Results from this review also suggest a relation between teacher praise effectiveness and participant age. Yet, future research is needed with age of participants as controlled variables to more accurately analyze this relation.

Research on teacher praise is not complete. Technological advances are bringing innovative ways to deliver and monitor it, which may further elevate its effectiveness. As classrooms are adapting to the 21st century, so should teacher praise.

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