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Using an Effort Praise Intervention to Increase Achievement and Persistence in Reading

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USING AN EFFORT PRAISE INTERVENTION TO INCREASE ACHIEVEMENT AND PERSISTENCE IN READING

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Effort praise, a type of general praise, leads to positive effects, such as higher achievement and persistence, when compared to ability praise and especially after failure outcomes. Effort praise focuses on reinforcing children for how hard they work on a task, as opposed to their outcome or ability level. The current study examined the effects of effort praise among at-risk first graders involved in a reading intervention. It was expected that the effort praise group would experience greater achievement and persistence compared to a control group who received non-attributional praise during the same reading intervention, but these hypotheses were not statistically supported. Possible reasons why effort praise was not found to produce greater results in this study are discussed.

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Praise is oftentimes used in classrooms to reinforce, guide, or motivate children's behavior. The rate, nature of, and preference for the praise can impact the effectiveness of such feedback. Understanding how children respond to positive feedback is necessary for developing interventions and effective classroom procedures. Likewise, understanding how children perceive the causes of their successes and failures provides valuable information regarding their self-evaluation for future outcomes and consequently their motivation to work in the future. If, in fact, effort-oriented praise positively affects children's perceptions of success and failure in an adaptive manner, as the literature suggests, then this would be powerful information for teachers and parents to know when trying to foster motivation and higher achievement among students.

The current study provides information regarding children's responses to effort praise in terms of both their achievement and persistence at reading. Past research in the area of praise has found that early interventions are critical due to the fact that one's interpretations of feedback are cumulative (Gottfried, Fleming, & Gottfried, 2001). In order to prevent a maladaptive attributional perspective of oneself, a child needs to be prompted to develop high effort attributions about him/herself (Gottfried et al.). Hence, interventions should be addressed early in a child's school career and aim at retraining how one attributes his/her behavior towards the incorporation of a malleable self-theory of intelligence and high effort attributions as he/she matures. Such procedures could encourage continued effort attributions as opposed to the usual progression towards ability attributions (which has negative implications) as children get older. A need exists

to promote adaptive effort-based self-attributions by praising children for success in such a way that does not undermine persistence at future tasks, for future experiences will not always lead to success (Henderlong & Lepper, 2002). The most consistent intervention for overall positive effects in both success and failure situations is to praise children according to the process they use to solve problems and the effort expended during that process.

An examination of previous research follows and explores the general concepts of praise, attribution theory, and attributional praise, along with their relevance to the current study. More specifically, the fundamentals and consequences of praise are described which denote how praise can be delivered most effectively. In particular, differential effects have been found for the context in which praise is conveyed and the nature of the praise. An explanation of attribution theory as applied to an academic domain is presented because of the inherent implications of interpreting the attributional components reflected in praise. How children can be trained to change their attributional focus is known as reattribution training, which can be accomplished indirectly by attributional praise induction. When praise addresses a component of the process or person in explaining the cause of the outcome, it is known as attributional praise or feedback, and its two main types are called effort and ability praise. A further examination into the differential effects of these two attributional praise styles and why effort praise is valued over ability praise, especially for younger children, is also addressed. Finally, a summary of the findings is presented in addition to a description of the current study and its hypotheses.

LITERATURE REVIEW

Praise

The term "praise" can be used to define a wide variety of verbal comments, including compliments, reinforcement, feedback, or evaluation of another's traits, products, or effort. Praise can range from specific to general expressions of positive evaluation, commendation, or approval for another (Burnett, 2002; Delin & Baumeister, 1994; Koestner, Zuckerman, & Koestner, 1987). Praise is meant to result in positive affect in the receiver (or *praisee*) and generally impacts future performance and self-attributions by guiding a person to attribute their performance according to the information conveyed by the praise statement.

Praise in schools is generally directed towards behavior and lacks specificity and frequency. Research on the frequency of praise in elementary and secondary classrooms has found that it occurs, on average, about 6% of the time and is presented less frequently than criticism (Brophy, 1981; Burnett, 2002). Teachers use praise to encourage students or to direct student behavior on an individual or group level (Brophy). One additional purpose of praise is to serve as a standard for expected or valued behavior. Reinforcing current performance teaches the praisee what the praiser expects of the student in order to continue receiving reinforcement or to continue being correct and avoid criticism (Brophy; Delin & Baumeister, 1994; Henderlong & Lepper, 2002). Future research needs to examine the effects on student performance and behavior if praise is delivered more specifically and more frequently in a classroom setting.

Praise should be distinguished from reinforcement. A reinforcer is a consequence that leads to an increase in the behavior targeted by praise. Although commonly assumed to be reinforcing, in general, praise is a relatively ineffective reinforcer (Delin & Baumeister, 1994). Until about age 8, children are dependent on adult approval and do not think critically about praise statements as possibly carrying an ulterior message. Praise can, under some conditions, still be an effective reinforcer for younger children (Brophy, 1981; Henderlong & Lepper, 2002). It has been found that in order for praise to be effective as a reinforcer, it must be: contingent upon success and the task, specific, sincere/genuine, individualized, spontaneous, varied, non-controlling, and should emphasize effort; in other words, praise must be used only to reinforce correct answers and not incorrect, be directed to the task and not the person, specifically describe what it is about the behavior that merits praise reinforcement, personalized with the child's name, individualized to the child's developmental stage and preferences towards receiving praise, and stress the process of arriving at a correct answer, not the answer itself (Anderson, Evertson, & Brophy, 1979; Brophy; Burnett, 2001; Delin & Baumeister; Henderlong & Lepper).

Children rate the sincerity of assigned praise based on the above conditions and also on whether or not it is presented (by the *praiser*) in a variety of ways. If they always receive the same comment or the same as other children, the praise is not individualized or tied to the task and thus not accepted as sincere (Anderson et al., 1979; Brophy, 1981; Burnett, 2001). If praise comments contradict prior beliefs held about the self, then it is often not accepted; general or global evaluative praise statements have a higher risk of

being interpreted as contradictory, indicating the need for praise to be specific (Henderlong & Lepper, 2002). Praise can also seem more sincere if it is from a credible source, is accurate, and matches the nonverbal behaviors of the praiser accompanying the praise delivery. However, young children are more likely to view all praise as sincere, so if a first grader is praised, it is unlikely that he/she would question the sincerity of the comment (Brophy; Henderlong & Lepper). If praise is perceived as insincere, (e.g., not contingent on success or the task), then it may actually increase feelings of pressure and discouragement within the child. Similarly, if an obviously easy task is praised, then children may attribute lower ability to themselves, which could lead to decreased motivation (Henderlong & Lepper). Clearly precautions should be made to ensure that praise does not result in decreased intrinsic motivation, for then all other positive effects of praise, namely achievement and persistence, are concurrently diminished (Butler, 1987; Delin & Baumeister, 1994; Henderlong & Lepper).

It is important to match praise delivery with how students desire to receive it in order to maximize its effectiveness. Students prefer praise to be delivered sincerely, spontaneously, in private, for trying hard in academics, received in a higher proportion than criticism, and without explicit expectations for future behavior (Burnett, 2001, 2002; Schunk, 1983). Children prefer praise to have implicit standards from which to estimate their own performance rather than explicit, controlling expectations. Furthermore, children have individualized preferences for the type and frequency of praise, based on their age, past experience with praise, and self-perceptions. To increase the likelihood of praise being effective, children's responses to praise should be monitored to decipher

their preferences and then they should be praised accordingly (Brophy, 1981). Attempts to adhere to the above-mentioned fundamentals of effective praise were made for the current study.

Effects of Praise

Praise generally leads to positive consequences unless it is not delivered in accordance with the operant procedures previously described. Praise has emotional, cognitive, and motivational consequences, in addition to having a strong impact on such student outcomes as achievement and persistence. As suggested previously, praise generally induces positive affect, but when unwanted, insincere, or absent, praise may lead to negative affect including feelings of embarrassment, guilt, or shame (Delin & Baumeister, 1994; Nicholls, 1984). Higher interest in and enjoyment of the activity (i.e., intrinsic motivation) are common consequences of praise, especially when competition and evaluation potential are minimized (Butler, 1987; Delin & Baumeister).

Praise affects one's cognitive state and arouses self-awareness. The nature of the praise impacts how it is analyzed with regards to the self (Delin & Baumeister, 1994; Miller & Hom, 1997). This is a crucial point because interpretation of praise generally educes one's selection of goals and self-theory of intelligence, which have been found to have lasting effects on one's behavior (Wilson, Damiani, & Shelton, 2002). Increased competence is a cognitive effect of praise that has been found in several studies and among most ages, ability levels, and levels of task difficulty. Increased perceived competence, especially after mastery of a skill is experienced, lends itself to an increase

in intrinsic motivation (Henderlong & Lepper, 2002; Koestner, Zuckerman, & Koestner, 1989; Nicholls, 1979, 1984).

Intrinsic motivation is the inherent interest and satisfaction in the learning and mastery of an activity (i.e., task enjoyment). High intrinsic motivation is primarily associated with positive consequences, such as increased learning and persistence (even in the face of failure), competence, internal locus of control/responsibility for the outcome, self-esteem, performance, effort expenditure, and general well-being (Gottfried et al., 2001; Guthrie, Wigfield, & Von Secker, 2000; Henderlong & Lepper, 2002; Ryan & Deci, 2000). "Provided that it is perceived as sincere, praise is likely to enhance intrinsic motivation when attributional messages prevent maladaptive inferences, when autonomy is promoted, when perceived competence and self-efficacy are heightened without undue use of social comparison, and when realistic standards and expectations are conveyed" (Henderlong & Lepper, p. 791). Praise can have dramatic implications for one's intrinsic motivation on a task but also for current and future performance (Butler, 1987).

Intrinsic motivation specifically related to learning in school is referred to as academic intrinsic motivation. It is characterized by the adoption of learning goals based on mastery, but not necessarily success, and the pursuit of challenging tasks that would increase one's learning and satisfy curiosity (Gottfried et al., 2001). Academic intrinsic motivation tends to be inversely related with grade level, meaning the younger the child, the higher the academic intrinsic motivation. As a child progresses through elementary school the emphasis on grades and social comparison becomes more prominent; this shift

decreases intrinsic motivation and increases reliance on external motivators (Benenson & Dweck, 1986; Gottfried et al., 2001; Guthrie et al., 2000). Children begin to describe their academic goals and achievement in more negative, yet accurate terms, emphasizing their ability rather than their effort, which has been shown to have negative consequences (Benenson & Dweck; Nicholls, 1979). Particularly around grade four or five is the shift in academic intrinsic motivation made evident. However, it is important to note that academic intrinsic motivation is cumulative. Promoting high intrinsic motivation early will thus be beneficial in fostering prolonged intrinsic motivation and thereby reducing the degree to which one's academic intrinsic motivation decreases as he/she progresses through childhood (Gottfried et al.). The degree of impact and the direction of expected results of praise do depend on the presence or absence of various factors.

Moderators of Praise

Although praise generally leads to positive main effects, these effects are moderated by variables related to the praiser, praisee, and context of the situation. Examples of moderators include self-efficacy, culture, the relationship between the praiser and the praisee, enjoyment of the task, demands of the task, and nature of the attributional feedback (Delin & Baumeister, 1994; Henderlong & Lepper, 2002). Age is also an important moderator of praise. Children in the early grades of elementary school and younger are more likely to believe praise statements and be reinforced/motivated by them; they have less cognitive capability to distinguish warranted and valid praise from generic praise (Brophy, 1981; Burnett, 2001; Delin & Baumeister; Nicholls, 1984). The effectiveness of praise can depend on several of these factors in isolation or interaction.

The most critical moderating variable is the type or nature of praise provided, namely what the personal attribute addressed by the praise is: effort or ability.

Attributional feedback, feedback that references a feature of an individual such as effort or ability, is generally referred to as effort or ability praise/feedback. In other words, it is named for the attribute which the praise statement addresses. The type of praise influences beliefs about the self (including how smart children think they are), the types of tasks people choose (and the reasons for those choices), and to what they attribute the causes of their success and failure outcomes (Brophy, 1981; Burnett, 2001; Dweck, 2002; Mueller & Dweck, 1998; Schunk, 1983).

Effort praise validates a student's process of problem-solving, incremental progress, and degree of mental exertion on a task. Examples of effort attributional feedback are "You've been working hard," (Burnett, 2001, p. 16; Burnett, 2002, p. 6; Henderlong & Lepper, 2002, p. 781; Schunk, 1983, p. 851), "Good. You really tried hard on that one," (Medway and Venino, 1982, p. 29) or "That's very good. I can see you've really applied yourself on these" (Koestner et al., 1987, p. 385). By phrasing praise in such an effort-oriented manner, it reinforces the idea that outcomes are unstable and are subject to motivation and effort for success.

In contrast, ability praise focuses on the person and fixed traits. Examples of ability feedback include: "You must be smart at these problems," (Henderlong & Lepper, 2002, p. 781; Mueller and Dweck, 1998, p. 36) or "You got a high score; you must be smart" (Mueller & Dweck, p. 44), or "You're really good at this" (Kamins & Dweck, 1999, p. 842). These phrases are based on one's performance rather than efforts

and imply that success on tasks is a direct result of one's stable trait of ability. As evidenced above, the type of praise, or attributional feedback, has strong implications for how the praise is interpreted and the consequences of such attributional feedback. Understanding how attributional praise may be interpreted necessitates an analysis of attribution theory, which posits the causes of behavior capable of being inferred by the nature of praise.

Attribution Theory

Attribution theory asserts that the causes of one's own or another's behavior can be accredited to internal or external attributions (Kelley, 1973). Select theories have extended attribution theory by focusing more specifically on academics, self-theories of intelligence, learned helplessness, and self-efficacy as sources of variation in attribution. Bernard Weiner's (1972) theory focused on the causes to which a person attributes their success or failure in academia. He postulated that behavior is a combination of power, meaning the "can" and skills, and motivation, or "trying" to do something (Weiner, 1972; Weiner et al., 1972; Weiner & Kukla, 1970, p.1). Four causes are defined for which one's academic performance can commonly be attributed: ability, effort, luck, or the difficulty of the task (Weiner et al.). Attributing one's behavior to reasons of ability level is based on one's history of success or failure on similar tasks with the assumption that future behavior will be consistent with the past. If high effort expenditure is perceived to be the cause of one's performance, then persistence in the face of failure is likely and the attribution to luck is minimized. Luck attributions are based on random performance,

while attributions of task difficulty are based on social comparison of how many others passed or failed relative to one's own performance.

The above mentioned causes can be classified further into four dimensions: internal, external, stable, and unstable. Internal attributions explain behavior in terms of one's own power to control the situation, namely ability or effort. External attributions, on the contrary, explain behavior as caused by things outside the individual's control (i.e., luck and task difficulty). If the cause is assumed to be stable, or constant and unchangeable, then predictions can be made for future achievement outcomes to be relatively similar to present and past outcomes. Ability and task difficulty are found on the stable dimension. For example, success today when reading leads to the inference of being smart and expectations of the same results tomorrow; on the other hand, while failing at a reading activity one day leads to the inference of being not smart and thus one expects continued failure at reading the next day regardless of how hard one tries, leading to decreased persistence (Weiner et al., 1972; Wilson et al., 2002). Effort and luck, on the other hand, are characterized as unstable. Effort expenditure can be altered according to the task at hand and thus lead to less predictable outcomes. Children found to have high effort attributions demonstrated increased persistence and performance, which makes sense, given that those who attribute failure to unstable causes, such as effort, have higher expectations and work harder in future situations (Weiner et al.; Wilson et al.). The unstable attributes are most often chosen to explain behavior when one's past performance is discrepant from the current performance (Weiner et al.).

Attributing or explaining one's behavior or performance to the four causes leads to differential effects. Weiner and Kukla (1970) studied the effects of internal versus external attribution of outcomes and the consequences of these attributions with respect to reward and punishment. Using a variety of samples, but mostly males in high school or college, the participants were given basic information about a false person's ability along with effort level and outcome on a task. The participants were asked to allocate reward or punishment to these cases by assigning how many tokens should be given to or taken away from the child. Across six studies, Weiner and Kukla found that those described as invoking high effort on the task were rewarded more and punished less than those described with high ability, but also those with low ability were rewarded more than high ability.

Later studies in the series of experiments by Weiner and Kukla (1970) asked the participants to also indicate the degree of pride or shame they would personally feel if they were in the child's place. When the information provided indicated a successful outcome with high effort and low ability, then pride was the strongest self-reward, while shame was the dominant response when failure was attributed to an individual's high ability and low effort, as also found by Weiner (1972). Hence high effort is valued when it leads to success and high ability is punished when it is the cause of failure, as least among high schoolers. These results suggest that influencing the receipt of more unstable and malleable effort-based attributions among children will be most beneficial in increasing achievement and persistence (Wilson et al., 2002). One way to influence how one interprets the outcomes of their behavior and how to act in the future is by the

induction of attributional feedback. The two types of attributional feedback are effort praise and ability praise and lead to the development of unique goals and differential effects, depending on the previously discussed factors related to the praiser, praisee, and situation.

Attributional Feedback

Effort Praise

Attributing one's performance to effort means the focus of the attribution is on how hard someone worked or the process of their work, not the outcome (Burnett, 2002; Dweck, 2002). Those who emphasize effort rather than their outcome are quite distinct from those who emphasize their skill or ability. If effort is valued, then it is probable that the individual subscribes to learning goals stressing one's mastery and learning rather than merely the need to succeed. In addition, a malleable conceptualization of self-intelligence tends to develop among children of all ages when the cause of one's performance is attributed to effort (Mueller & Dweck, 1998). The amount of effort expended and the consequences of such effort are much greater after attributing one's outcome to effort. Likewise, if one is praised according to his/her effort expenditure, positive consequences can be induced as can a change in one's self-attribution.

Research shows that those praised for effort or who attribute their performance to effort adopt goals for learning, which focus on the process and the opportunities to learn (Mueller & Dweck, 1998). If the goal is to develop skills and master concepts, then mistakes are to be expected and are less feared. By realizing that effort is responsible (at least in part) for performance and that the amount of effort expended can vary, people

infer that to improve they need only work harder (Henderlong & Lepper, 2002; Mueller & Dweck). Mastery is the end goal for those who value effort, and thus they expend high effort on tasks that are useful for developing their skills (Nicholls, 1984).

It is to be expected then that students with learning goals would perform better, because they expend greater effort and do not shy away from tasks on which they may make mistakes. This ideation is a core feature of a malleable theory of intelligence, according to Dweck (2002). Although her theory focuses more on changing self-theories instead of attributions, it is highly compatible with the previously presented Weiner theory on the effects of effort praise. For example, Dweck found that those with a malleable theory of intelligence, which is associated with effort attributions and induced by effort praise, attribute outcomes to internal, unstable causes, such as effort, which is changeable, not a fixed trait of a person (Brophy, 1981; Mueller & Dweck, 1998). Holding a malleable self-theory implies that children learn that success or failure at a task are changeable depending on how hard they work, not what skills they have, leads them to work harder in the future (even after failure) and results in greater persistence, performance, and effort expenditure (Dweck; Wilson et al., 2002). Having a malleable theory promotes resiliency and perseverance in spite of failure or mistakes. As children begin to experience more failure during their maturation through school, this resiliency or persistence becomes even more important for ensuring future success.

The increase in persistence is a key benefit of effort praise and effort attributions. As continually found in research, those who receive effort praise have greater persistence after failure than those who receive praise for their ability (Henderlong & Lepper, 2002;

Mueller & Dweck, 1998). For example, Kamins and Dweck (1999) studied kindergarteners in role-play situations involving failure with various types of criticism or praise. The comments were appraisals of ability, effort, or outcome. They found that those who received criticism or effort-oriented praise showed greater persistence, less fixed self-appraisal, and more positive affect than those who received criticism or ability praise who, in turn, showed symptoms of learned helplessness. Mueller and Dweck (1998) also found that the fifth graders who received effort praise showed greater persistence than those who were praised for ability, regardless of failure or success outcomes when completing matrices.

Another important research study found similar results for the effect of effort praise on persistence. Chapin and Dyck (1976) studied 30 fifth, sixth, and seventh graders with reading difficulties who were involved in a five-day reading program with attributional feedback. Students were tested for persistence at the beginning and end of the intervention, as measured by the number of sentences attempted that contained above grade-level vocabulary. The three days of training involved being assigned to one of the five conditions (two of which involved attributional feedback), and each group was given a predetermined pattern of sentences to read that were either above grade level or on grade level, producing failure or non-failure manipulations, respectively. Students in the two effort praise groups demonstrated increased persistence compared to the no praise conditions. However, since the outcomes were manipulated, it is uncertain whether similar effects would be found under a natural schedule of outcomes and among less fluent and younger readers.

Another study implicating the effect of effort praise on persistence was conducted by Andrews and Debus (1978) with sixth graders. Persistence was measured by the time spent on items and the number of trials devoted to each item before moving to the next item. Effort praise was administered after four successful trials and was found to lead to greater persistence and greater attributions of effort after failure, based on self-report. The drive to continue in a challenging situation, despite past failure, is a remarkable quality because it has been found to lead to increased achievement, interest and enjoyment of the activity, effort expenditure, competence, and the setting and striving for high learning goals (Andrews & Debus). Thus, increased achievement and performance is another positive consequence of effort praise or reattribution training (Dweck, 2002; Mueller & Dweck, 1998; Pokay & Blumenfeld, 1990; Schunk, 1983).

Mueller and Dweck (1998) conducted a series of six studies examining the differential effects of effort and ability praise after conditions of both success and failure. They tested fifth graders on matrices tasks in order to investigate the variables of achievement/performance and persistence, among others. Overall, they found effort praise to be more beneficial than ability praise on the above listed variables and led to positive consequences, regardless of prior achievement/ability level. Similar findings were also obtained by Anderson et al. (1979) who measured the effects of feedback given by teachers to first-grade reading groups on achievement and readiness from the beginning to the end of the year. Twenty-seven classrooms (including 10 controls) were involved, and students were given pre-and post-tests measuring their achievement in reading and readiness. They found that the experimental classrooms whose teachers were

trained to provide effort-based praise had significantly higher achievement scores than the control group classrooms whose teachers received no such training. More specifically, specific not general praise was positively correlated with achievement, as was feedback regarding a student's process for arriving at an answer, meaning feedback related to effort not ability.

Effort praise also leads to other positive consequences. Several studies have found effort praise to foster competence, but the key is if people perceive both effort and ability to go together for success and failure, which tends to be true among young children under the age of about 10 (Nicholls, 1979, 1984). Young children who receive effort attributional feedback compared to other types of feedback have been found to demonstrate stronger interest in the activity and a better relationship with their teacher which indirectly impacts their satisfaction in the classroom environment (Burnett, 2002; Butler, 1987; Dweck, 2002; Mueller & Dweck, 1998). Furthermore, avoiding the vulnerabilities associated with ability praise, namely decreased performance, persistence, and intrinsic motivation, is crucial to the effects of perceived competence, positive affect, and future performance orientation associated with effort praise (Mueller & Dweck).

To attain optimal benefits from effort praise, the tasks should be at a moderate level of difficulty. If a task is too easy, then one is not challenged to master it, yet if the task is too difficult, then mastery is an unlikely outcome no matter how much effort is expended and so the task is discouraging (Koestner et al., 1987; Nicholls, 1984; Schunk, 1983). The level of task difficulty has implications on how effective effort praise will be (Henderlong & Lepper, 2002). For instance, if effort on easy tasks is praised, the

credibility of the praise comment is diminished, for children either interpret the praise as insincere or they infer that they have low ability since they are being praised for such an easy task, which normally would not elicit praise for those with average or high ability (Nicholls, 1984).

Ability Praise

Ability praise refers to the attributional feedback given to a child that claims success and failure outcomes are based on and demonstrate one's skills and ability capacity (Burnett, 2002). Praising ability teaches children how to measure their intelligence and skill level. Success is attributed to high ability, and failure is attributed to low ability (Nicholls, 1984). Oftentimes, people believe that we should praise children's ability, whether or not it is high, so to encourage children and foster confidence; however, it has been found to be counterproductive (Dweck, 2002). Praising ability may be interpreted as controlling, because it includes expectations and high standards, thus decreasing intrinsic motivation and achievement (Mueller & Dweck, 1998). Also, once a child encounters inevitable failure, they will infer having lower ability and are more likely to develop a learned helplessness mentality after repeated failure.

As opposed to effort praise, ability praise fosters the creation of performance goals and fixed self-theories. Performance goals focus on success and the selection of tasks that can demonstrate high ability. Mistakes are perceived as aversive and are to be avoided even at the cost of learning (Henderlong & Lepper, 2002; Mueller & Dweck, 1998). The purpose of performance goals is to engage in activities that will demonstrate

how smart one is, because ability is interpreted as the only means to success. Ability is perceived as a stable, internal trait and is inferred by one's outcome on a task. This exemplifies a fixed self-theory of intelligence, in which there is little perceived control over outcomes (Dweck, 2002; Mueller & Dweck; Wilson et al., 2002).

Ability praise does have its benefits though under certain conditions, such as with older children and adolescents. Ability praise induction has sometimes been found to increase self-efficacy (the belief one can succeed) and perceived competence (Henderlong & Lepper, 2002; Koestner et al., 1987). For example, research with high schoolers has found ability praise to have more positive effects than effort praise (Elwell & Tiberio, 1994). It is important to note that these findings may have little significance for young children who tend to prefer effort praise (Koestner et al., 1987; Mueller & Dweck, 1998).

As a brief summary, ability praise has more potential negative consequences than effort praise, especially among young children and after failure. When failure does occur, those with stable ability attributions demonstrate decreased achievement, persistence, effort expenditure, interest in the task, and enjoyment (Delin & Baumeister, 1994; Dweck, 2002; Mueller & Dweck, 1998). Increases in negative affect (such as depression), self-blame, performance goals, and helplessness behaviors have also been found for those who attribute their outcome to ability (Henderlong & Lepper, 2002; Mueller & Dweck; Rhodewalt & Tragakis, 2002). Therefore, ability praise is debilitating: it leads children to forgo challenges and opportunities for learning, eventually leading to lower achievement, because success on tasks depends on prior

learning and current effort. Repeated poor achievement and failure foster a learned helplessness mentality, which is the greatest risk associated with ability praise.

Learned helplessness tends to be found among those who hold ability/trait attributions, fixed self-theories, performance goals, and who perceive themselves to have little control over their outcomes particularly those involving failure (Burhans & Dweck, 1995; Kamins & Dweck, 1999; Wilson et al., 2002). Generally, learned helplessness develops in middle childhood when trait evaluations become more important, yet even preschoolers have been found to experience feelings of helplessness (Anderson et al., 1979). Learned helplessness develops from contingent evaluations of outcomes as indicators of self-worth, rather than the process or effort involved in performance (Burhans & Dweck; Kamins & Dweck). Children who experience learned helplessness respond to failure by wanting to give up, blaming/punishing themselves, and perceiving themselves to have low ability. These in turn negatively impact their choice of tasks, intensity of effort expended, affect, expectations, persistence, and achievement in the future (Burhans & Dweck; Kamins & Dweck; Nicholls, 1984).

Fortunately, by teaching children to attribute failure to lack of effort rather than ability, the severity of learned helplessness can be diminished. This can be accomplished through reattribution training focused on the delivery of effort praise (Andrews & Debus, 1978; Koestner et al., 1987). Although ability praise was not specifically addressed in the current study, it was important to identify ability praise, why it is to be avoided, and contrast it against effort praise to demonstrate why effort praise is thought to be superior to other forms of praise.

Differences Between Effort and Ability Praise

When examining the benefits and repercussions of effort and ability praise, it is important to note that both types of praise have positive effects under conditions of success, including increased competence, self-efficacy, achievement, and consequently, intrinsic motivation (Schunk, 1983). It is after a failure outcome or history of failure that the important differences between the effects of effort and ability attributional feedback become apparent (Kamins & Dweck, 1999). Generally, effort praise leads to improved outcomes after failure, while ability praise is associated with a decrease in performance and achievement (Burnett, 2002; Mueller & Dweck, 1998). The effects of differential praise are evident in the development of divergent goals and self-theories. Notably, the learning goals and mastery-orientation associated with effort praise leads to greater intrinsic motivation and thus future performance (Burnett, 2002; Ryan & Deci, 2000). Also worthy of note is the increased effort expenditure found in relation to effort praise and decrease in effort expenditure found with ability praise, which leads to a decrement in achievement (Mueller & Dweck). Another key difference is the vulnerability to learned helplessness after failure related to ability praise, whereas effort praise promotes resiliency and persistence (Henderlong & Lepper, 2002).

Most pertinent to the selection of using effort praise in the current study were the differential effects of effort and ability praise on achievement and persistence, because these variables are of vital importance to success in academia. Achievement after failure decreases with ability praise, while it increases with effort praise (Burnett, 2002; Dweck, 2002; Mueller & Dweck, 1998). Most studies found persistence to be increased by effort

praise, compared to ability or no praise, in part because of the subscription to learning goals related to effort attributions and praise (Anderson et al., 1979; Chapin & Dyck, 1976; Henderlong & Lepper, 2002; Mueller & Dweck). Persistence is decreased by ability praise for it leads to the development of learned helplessness, the antithesis of persistence (Henderlong & Lepper; Mueller & Dweck).

Other differences pertain to how children interpret the two types of attributional feedback. Effort and ability praise may be interpreted as analogous or distinct, depending mostly on the child's age. Children learn to differentiate between effort and ability attributes by about age 10 (Chapman & Tunmer, 1995; Dweck, 2002; Miller & Hom, 1997; Nicholls, 1979; Rhodewalt & Tragakis, 2002). As this distinction between effort and ability solidifies, children increasingly attribute their achievement to ability and rely less on praise as an indicator of that ability (Nicholls, 1979). Younger children assume being praised means they are smart and worked hard, while older children perceive praise to be an indicator of lower ability (Brophy, 1981; Henderlong & Lepper, 2002; Miller & Hom). As schools rest greater reliance on evaluation and grades, ability attributions become more prominent among older children and inferences of effort become less favored (Burhans & Dweck, 1995; Miller & Hom; Nicholls, 1979, 1984; Schunk, 1983). Therefore, praising effort is thought to imply low ability and explains the decreasing preference for effort feedback among older children even though this may cultivate less adaptive ideations about their performance in the future. This presents a portrayal of the need for retraining children to attribute their successes, and especially their failures, to effort.

Medway and Venino (1982) and Anderson et al. (1979) found it possible to increase achievement and intrinsic motivation by changing the focus of attributions regarding success and failure by means of inducing effort praise with fourth and fifth graders. The effort praise group (compared to a control group who received no praise) showed increased achievement and persistence at a visual discrimination task. In essence, one can provide attributional feedback to a child in hopes of fostering the positive consequences associated with that type of praise. Specifically, praising a child for his/her effort rather than skill level has numerous positive and practical implications, such as the adoption of learning goals, a malleable theory of intelligence, and increased performance, persistence, and intrinsic motivation. An important note about the effects of praise on achievement is that prior achievement levels are irrelevant to the positive consequences of reattribution training (Butler, 1987; Guthrie et al., 2000). Effort praise interventions are ways to indirectly train children to attribute the causes of their successes and failures to effort not ability and focus them on the process as opposed to the outcome (Rhodewalt & Tragakis, 2002).

Summary

Praise serves multiples purposes but generally is used to reinforce and guide children's behavior. When praise is awarded in a manner agreeable with operant procedures, it can lead to mostly positive cognitive, emotional, motivational, and behavioral effects, including increased affect, intrinsic motivation, achievement, and persistence. Praise has been found to be related to the goals, attributions, and self-theories of intelligence chosen by a person, with some types of praise being more

adaptive and beneficial than others. Attributional feedback can influence one's perceptions of their behavior and the selection of tasks and goals in differential ways. Therefore, moderating variables must be taken into account when designing a study, because the effects of praise may differ depending on the focus and outcome of the task, the age of the individual, how one attributes the cause of success or failure outcomes, and most importantly, the attributions implied in the praise statements. The majority of evidence suggests that effort praise is superior to ability praise, especially if failure outcomes are present. Due to the fact that effort praise leads to numerous positive consequences and avoids the vulnerabilities associated with ability praise, it was the focus of the current study.

Finally, it was found that although much research in the field has measured the effects of effort praise to be over and above the consequences of ability praise in a positive direction, the tasks, settings, and samples studied may not be generalizable to the academic domain. The tasks used in past studies have been arbitrary in focus and were manipulated to attain specific outcomes, yet in real life, one's pattern of success and failure cannot always be controlled. In relation to reading, skill interventions have been found to be effective, but when combined with attributional feedback, the achievement and persistence in a subject area should increase significantly more than the intervention alone (Burnett, 2001). However, such procedures have not yet been reported in the reviewed literature. The purpose of the current study was to fill some of the above-mentioned gaps in the research by applying the findings about the benefits of effort praise to a reading intervention.

Current Study

The current study was unique because it examined the effects of effort praise when used for an extended reading intervention among first graders. Most studies in the domain of praise have used older children, adolescents, or college students, yet effort praise has the most promise for success in the early stages of learning. Only a handful of studies have used children younger than third grade (see Anderson et al., 1979; Brophy, 1981; Kamins & Dweck, 1999). Furthermore, the current study was conducted in a school setting with a task that was meaningful and real: reading stories. In order to better understand exactly how effort praise or reattribution training is beneficial or effective for the education system, it was thought that praise should be studied without the manipulation of success/failure outcomes. In the current study this was accomplished by using a task of moderate difficulty, that is, reading books at a child's instructional level so that a he/she experiences both success and failure according to his/her own natural pattern (Hebert, 2004).

Other unique elements of the current study related to its procedure. Praise was used as an independent variable, as opposed to an unanalyzed component of some more general procedure in reading interventions as in past studies (Topping, 1987). For the few studies that have tested praise empirically, it has been done at a group rather than an individual level and usually for arbitrary tasks (Kuhn & Stahl, 2003). In addition, the reading/praise intervention occurred over a span of several weeks as opposed to hours or days which was typical with studies in this area. Hence a look at the long-term

implications and effects of praise was expected to be revealed (Benenson & Dweck, 1986).

Furthermore, unique measurements, which were thought to be more appropriate for the variables and age groups studied, were used to assess achievement and persistence. Most studies that measured performance used broad, standardized achievement tests, which may not relate well to the specific skills addressed by the intervention. However, the current study measured achievement in reading by measuring each student's Oral Reading Fluency (ORF) using the Developmental Reading Assessment (DRA) and comparing gains in ORF and reading levels from the beginning to the end of the intervention. Persistence was measured according to Persistence Response Time (PRT), which was created for the current study. Finally, the current study uniquely contributed to the fields of education and school psychology, which is discussed in detail later.

The current study involved a guided reading intervention, called paired reading, for individual first-grade students from a small, Midwestern school identified with a primarily at-risk population (as defined by a majority of students receiving free and/or reduced lunch). Paired reading is an evidence-based reading intervention found to work well with all ability levels, but makes the greatest gains among poor readers (Anderson et al., 1979; Kuhn & Stahl, 2003; Topping, 1987). The participating students were randomly divided into two groups, for the literature suggested the need for including a control group for praise studies (Benenson & Dweck, 1986; Henderlong & Lepper, 2002). The experimental group received effort praise for reading and the control group

received non-attributional praise while reading (e.g., "Good job."). The procedure included pretests and posttests of achievement and also persistence measurements from each session. The reading intervention was administered twice a week at a moderate level of difficulty, meaning the instructional level for each individual student. Praise induction was provided when the child was successful, according to the previously described operant procedures and at a frequency of about 10-15 times per session.

The present study was driven by the question: Does effort praise lead to improvements in achievement and persistence among first graders? In support of this question, the praise intervention was expected to lead to the following results:

Assumption 1. The two groups would not differ on achievement on the pretest measure, but if differences exist they will be controlled for statistically.

Hypothesis 1. The experimental group receiving effort praise would demonstrate a significantly greater increase in achievement on posttest measures compared to the control group.

Hypothesis 2. The experimental group would demonstrate an increasingly greater degree of persistence throughout the intervention as compared to the control group, meaning increasingly shorter PRTs.

Method

Participants

Sixteen first-grade students participated in the study. The sample included 11 females and 5 males with a mean age of 7 years, 3 months and ranged from 6 years, 6 months to 7 years, 9 months in age. In terms of ethnicity, the sample included 75% (n =

12) Caucasian, 19% (n = 3) African-American, and 6% (n = 1) Mixed children. Forty-four percent (n = 7) of the participants qualified for free and/or reduced lunch.

The participants were recruited from a general education classroom only. Individual achievement levels prior to the intervention were not assessed because it has not been found to moderate the effects of effort praise (Guthrie et al., 2000). Students were recruited from the first-grade classroom on the criteria that they did not have any severe speech/language impairments and spoke English as their primary language. The participants were randomly assigned by block (grade levels 1-4 based on each participants' instructional level in reading, see Appendix A) to effort praise or non-attributional praise conditions.

First graders were selected for the study based on the reviewed literature and the effectiveness of reading interventions at this age level. Kuhn and Stahl (2003) and Anderson et al. (1979) found fluency instruction to be most effective during the first few years of formal schooling and at the preprimer to second-grade reading levels. After the beginning of first grade, children have acquired the fundamental skills necessary for reading and thus can begin to develop fluency at reading. Attitude towards reading decreases after about third grade, but the downward trend begins between first and second grade (Chapman & Tunmer, 1995). Therefore, fluency instruction is most effective between late first grade and third grade (Kuhn & Stahl). Furthermore, few studies in the area of attributional praise have studied the effects of effort praise on individual first-grade students.

Materials

Developmental Reading Assessment (DRA). Oral reading fluency (ORF), or words correctly read per minute, was assessed with DRA benchmark stories. The DRA can be used for assessing the reading development of students in kindergarten through fifth grade. This assessment depicts incremental changes in reading level, fluency, and comprehension progress over time (Beaver, 2001). The benchmark stories of DRA are divided into 20 levels, identified for kindergarten, preprimer, primer, and first through fifth grade levels, labeled as A, 1-3, and 4-44 (even numbers only). First-grade DRA levels are 14 and 16, but generally include the preprimer and primer levels too (Beaver).

The DRA was chosen over alternative achievement measures, because it is sensitive to change and directly allows for the selection of books at an instructional level to be used for the weekly intervention session. The DRA has been found to have good reliability and validity (Celebration Press, n.d.; Weber, 2000; Williams, 1999). Test-retest reliability after 3 weeks was $r = .99$, and interrater reliability ranged from $r = .92$ - .99 (Weber). The DRA has also been found to demonstrate content and criterion validity. Ninety-eight percent of teachers indicated that they agreed or strongly agreed that the DRA data directed them towards planning what to teach next (Williams). DRA scores significantly correlated with the Total Reading subtest on the Iowa Test of Basic Skills with $r = .71$ (Williams). The DRA has also been used in past research similar to the current study, that is: as a pre/post intervention measure of achievement, to assess reading level, to guide book selection, to evaluate reading programs, and to identify those who made progress in their reading instruction by changes in DRA independent reading

levels (Celebration Press; Conklin & Wilkins, 2002; Jacobsen et al., 2002; Johnson, Dunbar, & Roach, 2003).

The instructional level of each participant was identified using DRA stories (i.e., story read with 90-95% accuracy). This passage then served as the benchmark for both the pretest and posttest of reading fluency achievement. Scores of ORF represent the number of correctly read words per minute from the benchmark probe. Since ORF is based on one's rate of reading, no ceiling effect was expected by using the same reading probe. Given that the intervention took six sessions to complete and that other stories were used with the participants during that time, it was expected that practice effects would not be an issue by using the same benchmark.

Reading materials. Books for the paired reading intervention were selected prior to each session to be at an appropriate instructional level for the participants. Research has suggested the necessity for reading material to be at an instructional level, which also matches research on effort praise being most effective for tasks with a moderate level of difficulty (Anderson et al., 1979; Schunk, 1983). These books were selected according to one's DRA instructional level, lending support for the treatment utility of using the DRA in the current study. A comparison chart (see Appendix A) between DRA levels and Guided Reading levels steered the selection of leveled guided reading books to be of uniform task difficulty (see Fountas & Pinnell, 1999). The participants chose from two books identified for their level each session, so to increase one's enjoyment and intrinsic motivation for the task due to the installment of autonomy into the intervention. Every session incorporated a different book or story to control for practice effects which would

overestimate achievement or persistence. The chosen books were not used for scoring but only as the reading material for the intervention.

Persistence Response Time (PRT). Created for the purpose of the current study, the PRT measure was intended to assess a child's persistence, or willingness to continue in spite of failure, during a paired reading intervention. PRT was defined by the amount of time spent between failure (i.e., an error in reading) and an attempt at reading alone. Following the procedure of paired reading, once a child made an error, the experimenter corrected the mistake and began reading in unison with the child from the spot of failure until signaled by the child that he/she was ready to engage in solo reading. It was assumed that the shorter the time between an experienced failure and the self-driven choice to attempt reading alone, the greater the desire to persist. This hypothesis also assumed that the nature of the praise given to the participants would have impacted their desire to persist.

Interrater reliability was measured by percent agreement between the two experimenters on coding the audiotapes. For the PRT's to be considered an agreement between the experimenters, the two reported times must have been within 3 seconds of each other. Three seconds was established as an acceptable range, because this accounted for experimenter error in using the stopwatch. Percent agreement was calculated by the number of agreements divided by the total number of observations (agreements plus disagreements) and then that quotient was multiplied by 100. The percent agreement for this measure was 81.3%, demonstrating moderate reliability.

Prizes. Three prizes were offered to each participant after the posttest was completed, of which they were to select one prize. The prizes included a reading book, a workbook of word puzzles, and a set of math flashcards.

Videotapes. A digital video recorder was used on a tripod when taping the participants. Three 60-minute Mini-DV tapes were used for the three sessions of taping. The intent of videotaping a sample of the sessions was to record and observe the children's nonverbal reactions to the praise and intervention. Children's behavioral responses after each praise statement during the taping sessions was coded according to the categories labeled: *smile, no expression, attentive, interruptive, complimentary, and negative reaction.* Operational definitions of these categories are discussed in detail later.

Interrater reliability of the videotape coding was calculated by percent agreement on the frequency of each behavior. The overlapping behavioral codes were considered agreements, while disparate coding was considered as a disagreement. The percent agreement for the behavioral observations suggested moderate reliability with 86% agreement, as calculated by the same formula as for PRT's.

Procedure

Pilot study. The intervention and use of the persistence measure was piloted. Two first-grade girls were tested with the DRA for their instructional reading level and then read a book with the experimenter using the paired reading procedure while receiving effort praise. The frequency of praise appropriate for the intervention was tested with the girls and their impressions of the praise were also surveyed. Praise was delivered too frequently (about 2-3 times a minute) for the girls. This conclusion was

based on their comments after the pilot and the difficulty of the experimenter to fit the praise in without greatly disrupting the reading procedure. It was deciphered that a more moderate and appropriate rate of praise was needed. The schedule of praise was based on balancing the research between Parent-Child Interaction Therapy (used to change inappropriate behavior) which suggests praise once every 20 seconds and Schunk's (1983) research when feedback was given every 8 minutes (personal communication, B. Kuhn, January 24, 2005). Based on the above information, it was thought that praise should be delivered at a rate slightly higher than once a minute, or about 10-15 times in a 10 minute session.

Their persistence was analyzed from an audiotape recording after the intervention. Each of the two girls in the pilot read independently at least five times during the intervention, and thus, persistence data was available. During the pilot, the girls had progressively slower PRT's during their session, lending support for the PRT measure. Also, potential flaws with the intervention were identified so that alterations could be made prior to actual data collection. For example, one of the girls in the pilot would stop to converse in the middle of reading, which hindered the effectiveness of the paired reading procedure, reduced the amount of reading completed (and thus the praise frequency), and altered her PRT. From this experience, it was decided that the expectations would be more clearly defined for the children to include a statement in the instructions as a precaution; they were told "Later" if they began having a conversation during the reading intervention.

Experimental study. After approval, the recruitment of participants began by choosing a school that was open to hosting the study and whose first-grade teacher did not engage in frequent praising of children's ability in the classroom, for that could have counteracted the potential effects of the effort praise intervention. Based on classroom observation, it was found that the teacher at the selected school did not routinely praise children for ability, but rather relied most frequently on class-wide praise of behavior. Parents were contacted by mail and through a letter sent home from school for the purpose of obtaining informed consent for their child to participate in the study.

After obtaining informed consent from the parents, the experimenters spent a morning in the first-grade classroom getting to know the children so that they would be comfortable around the experimenters. An interview with the teacher prior to the pretest helped determine a starting point of DRA levels for each student. Then a variety of DRA leveled stories were given to each student until he/she read one with 90-95% accuracy. Children's oral reading accuracy and fluency were assessed by timing children as they read each DRA book and through the use of running records, which involved logging a child's errors, self-corrections, and reading behaviors, like voice expression, during oral reading (Fountas & Pinnell, 1996). The story that qualified for being at a participant's instructional level served as the measure of ORF for each student, a pretest of reading achievement. Books identified for guided reading from the pretest data were selected for the subsequent weeks of experimentation. Incremental changes in instructional level was objectively measured for all participants at the beginning, middle, and end of the intervention to determine whether or not they needed to move into another guided

reading level; if a participant's instructional level did change, then the book options for the following session mirrored this change.

Following the pretest and identification of instructional level, the participants were randomly assigned to the two conditions: effort praise group or non-attributional praise group. All participants within a group received the intervention in a single session. The purpose of dividing the groups between two experimenters was to reduce experimenter error in the administration of praise, so that the predetermined praise statements were only applied to the appropriate intervention group. The order in which the experimenters worked with each group was counterbalanced to further control for experimenter error.

At the beginning of each reading/praise intervention session, the task was introduced to each participant. Then the child was given two books to choose from for that day. The paired reading procedure was explained and a signal for the student to communicate his/her readiness to read solo was established (i.e., tapping the experimenter on the hand or arm). Next, the participant and an experimenter began reading the book together until the child signaled to read alone. Once a child made an error in reading, the experimenter would correct the error, have the child repeat the word, and then resume reading in unison with the child, until signaled again by the child to stop reading; this cycle continued throughout the story or until session time expired (see Appendix B).

It was during these weekly paired readings that the experimental intervention was induced. While the child read, the experimenter praised the child after he/she signaled to

begin solo reading and variably after the following cues if preceded by success: (a) when he/she successfully read or sounded out a difficult word, (b) when he/she corrected one's own errors, (c) long periods of independent reading, (d) at the end of a page or paragraph if preceded by correct reading, and (e) at the end of the story/session (see Appendix B for when these were to be introduced during the paired reading procedure). Each child was to be praised between 10 and 15 times per session. In actuality, the frequency of praise ranged from 7-22, with a mean of 14.45 times per session.

A prescribed script of optional praise statements pertinent to each experimental group along with a list of inappropriate phrases was given to and used by the experimenters (see Appendix C). The praise statements followed the previously described operant procedures as closely as possible, with particular emphasis on being specific to the task and process, contingent on success, noncontrolling, and sincere. To elaborate, the praise was only to be administered after successful outcomes on the task and/or when a child tried to sound out a word (i.e., the process). To eliminate the possibility for praise being interpreted as controlling, no explicit expectations were incorporated into the praise such as "could" or "should". The praise statements were memorized by the experimenters to enhance the sincerity of the praise. Furthermore, the child's name was addressed with a praise statement at least once per session to promote personalization and sincerity.

Twice a week for 3 weeks each child participated in the paired reading intervention for the duration of one story (or about 10-15 minutes) and received either effort or non-attributional praise depending on their assignment to the experimental or

control group, respectively. The same procedure was followed every session: have the child choose between two books at his/her instructional level, turn on the tape recorder, remind the child of the reading procedure and signal, preview the story, read the story while introducing praise statements and measuring persistence, discuss the story (when time permits), conclude with a final praise statement, and turn off the recorder. After the sixth intervention was complete, a posttest for reading achievement (i.e., ORF) was administered using the same DRA level probe as in the pretest. Upon completion of the posttest, the participants were offered a choice of one of three available prizes for helping with the study. The child's prize selection served as an additional measure of persistence, depending on their choice.

Three sessions were videotaped in order to measure participants' nonverbal reactions to the praise statements and behavioral response towards the intervention, which could not be ascertained from the audiotapes. The order in which the students engaged in the intervention varied every week, so the participants who were involved in the first hour of the session were taped on these select days. At the onset of the intervention, the presence of the video camera was not expected to have an impact on performance to a significant degree. Some participants of the control group were videotaped once and a sample of the experimental group was videotaped twice, once with each experimenter. These sessions allow for a sample of behaviors from each group, with emphasis on the experimental group; however, given that there were an unequal numbers of behaviors observed for the two groups, percentages are reported.

Data Analysis

The current study measured the effect of a praise condition on changes in achievement from beginning to end of the intervention and persistence at reading during each session. To address the first research question, 2, one-way analysis of covariance (ANCOVA) tests were conducted to test for differences between group means on a posttest after adjusting for differences in pretest scores (Borg & Gall, 1983). On each of these tests the independent variable was the treatment condition (effort or non-attributional praise group), a dependent variable was the posttest measure, and the covariate was the corresponding pretest score. ANCOVA assumes that there exists homogeneity of variance and regression for the results to be meaningful (Tabachnick & Fidell, 2001). Levene's Test of Equality of Error Variances was used to assess for homogeneity of variance, for it tests the null hypothesis that the two groups have equal error variance. Homogeneity of regression means that pretest scores are linearly related to posttest scores and that this linear relationship is not significantly greater for one group than another (i.e., there was no interaction between the covariate and the independent variable; Stevens, 2002). These two assumptions were tested for each of the independent ANCOVA tests and are reported below.

The second research question was intended to address how persistence was affected by the praise intervention. Persistence was measured by the latency in seconds between a child's most immediate error in reading and the initiation of independent reading, referred to as PRT. In some cases, no PRT's were recordable during sessions, because some participants never read on their own (which was a necessary qualification

for measuring PRT). Given this information it was not feasible to calculate aggregate group means, because the participants that read independently were not consistent across sessions. Since no statistical test could be conducted on the PRT data and result in meaningful information, persistence had to be examined at an individual level because of the variability present both within and between groups.

Qualitative data on nonverbal reactions to the intervention was collected from the videotapes. It was suspected that children might respond to the receipt of praise in various ways, and that this information, if captured, could shed light on how the effort or non-attributional praise statements affected the children socially and personally as opposed to quantitatively. Eighteen of the individual participant sessions (spread across three separate days and both groups) were videotaped and analyzed for participants' responses to the praise statements. The children demonstrated behaviors after each praise statement that could be qualified into six distinct categories of reactions: smile, no expression, attentive, interruptive, complimentary, and negative reaction. The *smile* category included such behaviors that were marked by upward movements of the mouth (such as the corners) and eyes and/or sounds of laughter. In contrast, the *no expression* category included behaviors in which no movements of the mouth and/or eyes were observable. Being *attentive* was characterized by the initiation of the child to make eye contact with the experimenter while receiving praise, to look at where the experimenter was pointing in the book during a praise statement, to act in accordance with the behavior being praised upon resumed reading (e.g., a return to pointing to the words with their finger when praised for "following along" with their finger), and/or to nod. A child was

classified as *interruptive* when he/she resumed reading before the praise statement was completed or if he/she did not even pause at all from reading to listen to the praise comment. *Complimentary* behavior was defined by acts suggesting pride by the child, meaning biting their lip, sitting taller in their chair, sitting forward over the book, eyes widening, taking a deep breath, and/or reading louder immediately after the praise. Finally, *negative reactions* included yawning, rubbing of the eyes, tipping one's head down to the praise statement, and/or turning the page to keep working.

Results

Hypothesis 1: Achievement

The data on achievement was analyzed by ANCOVA. The primary measure of achievement in reading was gains in the number of correct words read in a minute (or ORF) by the participants. It was hypothesized that the experimental group would demonstrate significantly greater gains in ORF from pretest to posttest than the control group. However, the two groups were not statistically found to differ significantly on the posttest when controlling for pretest scores, $F(1, 13) = 0.17, p = .688$. Table 1 lists the pretest and posttest means and standard deviations, as well as the adjusted pretest and posttest means, for the two groups on the ORF measure. The ranges for the two groups were dramatically different. The experimental group had an average span of 121.5 correct words per minute between the highest and lowest scores, while the control group's average span of ORF scores was 24.25. Figure 1 displays this variability between the two groups on the range of pretest and posttest ORF scores, which illustrates

why controlling for pretest scores was necessary for reducing error and accurately determining the effect of the intervention.

Although there was considerable variance in the two groups on the dependent variable, when controlling for the pretest variance, this difference was not significant; thus the data met the assumption for homogeneity of variance as determined by Levene's test, $F(1, 14) = .004, p = .951$. The test of the pretest was significant, meaning that it can appropriately be used to adjust for differences on the dependent variable $F(1, 13) = 94.051, p < .001$ (Tabachnick & Fidell, 2001). Similarly, there was no interaction found between the pretest and the treatment group, thus meeting the need for homogeneity of regression, $F(1, 12) = 1.94, p = .189$. Hence, both assumptions of ANCOVA were met but the hypothesis was not supported.

Examining the achievement gains in reading was also accomplished by analyzing the increases of guided reading levels during the intervention, which occurred if participants were in need of a higher difficulty level of reading material in order to still read with 90-95% accuracy. Hence, it was expected that the experimental group would have significantly greater increases in their guided reading levels than the participants of the control group. However, the ANCOVA results showed that the two groups did not significantly differ in the magnitude of guided reading level elevations, $F(1, 13) = 0.17, p = .686$ (see Table 1 for the means, standard deviations, and adjusted means for the pretest and posttest). The two groups actually had nearly identical ranges of guided reading levels throughout the intervention; the experimental group ranged from 7-17 across pretest and posttest and the control group ranged from 8-18. The pretest of guided

reading levels had a significant linear relationship with posttest guided reading levels, $F(1, 13) = 77.088, p < .001$, and this linear trend did not significantly favor one group over the other, $F(1, 12) = .00, p = .994$, thus meeting the homogeneity of regression assumption. However, these two groups did not have equivalent error variances, $F(1, 14) = 5.427, p = .035$, and the homogeneity of variance assumption for ANCOVA was not met. Although, when tested with a one-way Analysis of Variance (ANOVA) and no covariate, then the two groups showed equivalent error variances but still did not significantly differ in their gains in reading levels, $F(1, 14) = .129, p = .725$. The experimental group did not have significantly greater gains in guided reading levels than the control group, thus disputing the current hypothesis.

Hypothesis 2: Persistence

Although it was hypothesized that the experimental group would demonstrate greater persistence than the control group, this hypothesis remains unsupported. No statistical test was conducted on the aggregate or individual PRT data given the magnitude and instability of missing data. To examine individual patterns, each participant's PRT data across sessions (whether missing or not) are displayed in Figures 2-5. On these individual figures, it should be noted that: a) connected lines represent consecutive sessions in which PRT data was available for the individual, b) isolated data points are presented if a participant did not engage in independent reading during consecutive sessions, and c) blank graphs reflect those individuals who never read alone after an error during the course of the intervention.

Overall, an average of 4.5 students from the experimental group ($n = 8$) engaged in independent reading at least once on any given day, while an average of 5.7 participants in the control group ($n = 8$) did the same. Across participants and sessions, the range of PRT's for the experimental group was 5.875 to 67.1 seconds; for the control group, the range of PRT's for the duration of the study was 5.69 to 104.81 seconds. Each group had one participant that never engaged in independent reading and thus had no PRT data available (see Figures 3b and 4a). One participant in the experimental group (see Figure 3a) had only one data point throughout the study. Four people in the control group read independently at least once each session, while only two people in the experimental group read alone during each session (however, one of these two students does not have persistence data even though he read independently, because he never made a corrected error; see Figure 3c).

In the experimental group, three participants (see Figures 2a, 2b, and 2c) had a downward trend for those sessions that have data points, with the exception of Christine's last session when she had a longer PRT again. Two experimental group participants showed relatively stable trends in their PRT's across sessions (see Figures 3c and 3d). One experimental group participant showed a slightly positive trend across sessions, meaning longer PRT's (see Figure 2d). In general, interpreting the experimental group's trends is problematic due to the quantity of missing data points.

The graphs of the individuals from the control group showed similar PRT trends as the experimental group but with less variability and more data points. Three participants in the control group also had increasingly shorter PRT's across sessions, thus

demonstrating a downward trend (see Figures 4b, 5b, and 5d). Four control group participants showed no significant progress (but slightly in the expected direction), like two of the experimental group participants (see Figures 4c, 4d, 5a, and 5c).

The second way persistence was assessed was by the children's "prize" selection at the end of the intervention. Although indirect, their choice indicated how likely they were to persist in reading beyond the confines of the intervention by freely choosing the book over other alternative prizes. It was suspected that children who received effort praise would be more motivated and persistent in reading and thus would be more likely to choose the reading book (as opposed to the activity book or math flashcards) than the control group who only received neutral praise comments. In the experimental group, 25% (n = 2) of the children chose the reading book, while 12.5% (n = 1) of the participants in the control group chose the book. Given that the word puzzle activity book option also had a linguistic basis, it was of value to also compare the percentage of students who selected a prize related to literacy versus math. One-hundred percent of the experimental group (n = 8) picked either the book or word activity book, while only 37.5% of the control group (n = 3) selected one of the literacy-based prizes. This information is in the expected direction, but no statistical support for the hypothesis was found.

Qualitative: Behavioral Observations

Of the 18 participants that were videotaped, some children displayed more than one behavior for a given praise statement, so several behaviors may have been recorded for one incident of praise. Given the unequal number of opportunities for praise and

behaviors for each praise statement, percentages are reported for the experimental and control groups for the occurrence of the behaviors identified as: *smile, no expression, attentive, interruptive, complimentary, and negative reaction* (see Table 2).

Overall, the *smile*, *attentive*, and *complimentary* categories were interpreted as positive behaviors, because they included those behaviors that were desirable participant responses and demonstrated participants' engagement in the intervention. The participants who had received effort praise demonstrated 9% more positive reactions than members of the control group. The *no expression* and *interruptive* categories were coded as neutral behavioral responses. A response that had no expression could not be interpreted as positive or negative and thus was considered neutral. The interruptive behaviors do not lend themselves to a clear rationale as to their meaning, especially since it was only observed among students in the experimental group. Since the reason for these behaviors was unknown for each individual participant, they were interpreted as a neutral response overall. The experimental group exhibited 6% more neutral behaviors than the control group. As to be expected, the *negative reaction* behaviors were coded to be generally negative, because these sorts of behaviors indicated participant disengagement with the intervention. The frequency of these behaviors in the two groups was within one percent of each other.

Discussion

Research in the area of effort praise has generally led to positive results for achievement and persistence, as well as for other dependent variables. The present study compared effort praise to non-attributional praise during a reading intervention with first

graders over the course of 3 weeks. It was hypothesized that participants who received effort praise for successful reading would demonstrate greater achievement gains and better persistence after failure experiences than the participants in the control condition who received generic praise. Overall, these hypotheses were not supported, for no statistically significant differences resulted between the two groups on various measures for both achievement and persistence. Areas within the realm of achievement that were assessed were ORF and guided reading levels. Persistence was not found to be significant with respect to PRT or prize selection. Behavioral observations did offer some inclination that the effort praise condition had a positive effect. Possible explanations for why these hypotheses were not supported are discussed below.

Hypothesis 1: Achievement

Oral Reading Fluency (ORF). The hypothesis was not supported, but there was a significant linear trend between the pretest and posttest. In other words, the praise intervention was effective in increasing achievement across sessions but equally for the two groups. It is possible that this is a result of the reading procedure itself, for paired reading has been found to be an effective intervention for improving reading skills (Anderson et al., 1979; National Reading Panel, 2000; Vacca et al., 2000).

The present sample of first graders received reading instruction and/or practice at least once a day but was only getting systematically praised for their efforts in reading twice a week and in a different setting from a different adult, likely evoking minimal impact. Anderson et al. (1979) demonstrated effort praise to be effective for reading tasks, but the study lasted 1 year with more frequent delivery of effort praise from

classroom teachers, whom have significant influence over their students. The present study manipulated praise twice a week for 3 weeks, whereas the studies by Chapin and Dyck (1976) and Anderson et al. had daily intervention; greater achievement gains are expected when the intensity of the intervention is greater. The current praise intervention may not have been frequent or salient enough to show the intended effects. Some other studies (Koestner et. al, 1987, 1989; Medway & Venino, 1982; Mueller & Dweck, 1998) have shown positive results within a day, but these experiments generally studied the effects of praise for less complex tasks and/or under artificial circumstances (e.g., manipulated success and failure experiences instead of natural occurrences of these experiences).

Another explanation for the similar gains between groups is that the types of praise tested are both effective forms of praise and thus do not result in disparate gains. On a related note, participants may not have recognized the nature of the praise statements but simply whether or not they were being praised. The affective component of praise may have been more powerful than the content of the praise, for it is not assumed that children would be cognizant of the type of praise they were receiving. Furthermore, it was quite possible that children attended most to those praises that was made salient to them rather than to each statement. During oral reading, it was possible that children focused on the task and thus heard but do not interpret or accept the specific intervention praise as being different or meaningful beyond the usual classroom praise. Although children were most likely unaware of the type of praise they were receiving, positive effects from the effort praise were still expected to manifest.

Since less is known about how effort praise compares to neutral praise, it is quite possible that non-attributional praise may have positive effects equal to or similar to those of effort praise. The hypothesis in favor of the effort praise group was postulated because of the positive achievement outcomes found in previous studies (Pokay & Blumenfeld, 1990). However, past studies compared effort praise to ability praise or criticism. The present study did result in increased gains from pretest to posttest, similar to the findings in Mueller and Dweck's (1998) series of 6 studies. However, the specific outcomes of the present and past studies do not match with regards to differential gains for one form of praise, which reverts back to the limitation that different types of praise were being compared (Anderson et al., 1979; Mueller and Dweck). Given that there was neither an alternative group that tested the reading intervention without praise nor a group that tested other types of praise, such as ability praise, an explanation as to why achievement gains were made for both groups remains unverified.

Guided reading levels. Upon analysis, it was found that students did in fact increase in their level of guided reading overall, but due to the similar increases in guided reading levels from pretest to posttest, the experimental group did not significantly differ in their gains over the control group. The length of the intervention was probably insufficient for making dramatic changes in one's instructional reading level. Given past research on the DRA and its reliable identification of reading progress, the lack of measurable differential gains is not likely due to the instrument used (Celebration Press, n.d.). Similar to the ORF results, the examination of effort praise against non-

attributional praise may not have been the type of praise comparison that leads to immediate differential effects.

Hypothesis 2: Persistence

Persistence Response Time (PRT). Missing data points did not allow for statistical analysis at the individual, session, and/or group levels. Thus, the hypothesis of greater persistence among those in the experimental group could not be supported or negated. Individual graphs were created to facilitate understanding regarding the variability in the PRT data. About half of all the participants in each group demonstrated a negative trend (which was desirable) across sessions for which a data point was available. This suggests that if participants were to persist each day, they would have become increasingly more persistent during the course of the intervention, as hypothesized.

The children were expected but not forced to engage in independent reading. The paired reading procedure dictates that children have the autonomy to choose if and when they will signal to read independently. This autonomy may have had an impact on the number of opportunities for persistence to even be measurable, because the occurrence of independent reading would have been on the participants' own volition. Some participants may have enjoyed reading with the support of an adult, some may have feared making a mistake with an unfamiliar experimenter, and some may have simply forgotten that they were expected to read independently. In addition, upon making an error, the student was rejoined in reading by the adult, which could have made the recognition of an error more salient for the participants and/or reduced their confidence in

reading independently. Consequently, some students refrained from solo reading during parts or all of the paired reading procedure. All of these are possible reasons why there were so few persistence intervals that were measurable.

The key limitation of missing data points could have been resolved by forcing the children to read on their own, but this then would have defeated the purpose of measuring persistence and instead measured their ability to follow directions. By this argument, the missing data does in fact have merit, because it demonstrates, to a point, that the majority of the participants were not highly persistent and certainly not on a consistent basis. This may be informative about the construct of persistence in general and particularly as defined in the present study.

The lack of support for the persistence hypothesis is due primarily to the missing data points, but also to the measurement of PRT's, child factors, and the presence of the video camera. Although the present study did not generate the same results, it did expand upon the aforementioned studies, because it tested the effect of effort praise on persistence in a "real-world" setting with natural (not fixed) schedules of failure/error, which again highlights a reason why this variable was so difficult to test in the current study. Unlike the study by Andrews and Debus (1978) that used self-report to measure persistence, the present study utilized an inventive way to measure persistence, the PRT, and thus it is difficult to explicitly relate the current findings to previous work with persistence. Given that the use of PRT's was fraught with problems, it is unlikely that it would be used by the experimenter again if given the chance to replicate the study. However, this does not undermine the importance of finding a better way to measure

persistence, for this is a critical variable in knowing how to foster success among children.

Given the child's control over the persistence measure, individual child factors played a key role in this study, such as his/her enjoyment of reading in general, the difficulty level of the book, and one's degree of confidence. The role of contextual factors can be seen in a child who one day did not persist after doing so previously because he was on a behavior plan for staying quiet. He then generalized this plan to the study setting and read only with the experimenter so that he could earn his reward. Participants may not have persisted because they forgot that they were expected to read on their own or the signal to do so. Similarly, first graders are typically not given the freedom to choose when they are to read on their own, so expecting such a behavior may not have been age appropriate.

The characteristics of first graders in general is worthy of note due to the high variability found among children this age. First graders are at all different reading abilities, based on the amount of pre-literacy enrichment they had during development and attendance at a kindergarten. Also, first graders still maintain a high degree of individuality because they have not yet been forced to conform to the norms of school and society which increases the inter-individual variability. It is suspected that children at this age prefer one-on-one adult attention and thus would be less willing to initiate independent reading, because then they would lose their individualized adult support, although temporarily.

The presence of the video camera was speculated to be another reason why so few participants from the experimental group exhibited persistence in either of the last two sessions. The students may have been preoccupied with behaving appropriately in the presence of the camera that they were less inclined to persist at reading. The participants may have been timid to read knowing that it was being recorded, because of the prospect of being evaluated (which was a concern voiced by several of the students) and/or were "camera shy." Both experimenters agreed that the experimental group was shyer overall than the control group, which could also explain the different reactions to persisting in the presence of the camera. Shy students are probably less willing to read on their own to a stranger (whether or not they are actually persistent at reading in other settings).

For the experimental group, the video camera was not introduced into the procedure until the sessions 5 and 6, by which time they most likely had created a mental protocol for what happens when working with the experimenters. However, that conceptualization was changed by the presence of the video camera. It is only natural for children to react adversely to such changes. The control group was not as adversely impacted by the video camera. Since the taped session was the control group's first time with one of the experimenters (session 2), the participants likely did not know what to expect from working with a different adult and thus were less impacted by the camera.

Also worthy of consideration is the use of instructional reading levels for the paired reading procedure. By definition, participants would have made errors 5-10% of the time when they were reading, which could have been quite frequently in a short time frame depending on the rate at which the child read. If the cut-off for reading materials

was set for errors 10-20% of the time, participants would likely be less likely to persist, because they would have more experience with failure and feel less confident in their ability/willingness to read independently. In addition, the achievement gains would likely not have been significant, because students do not learn as well when they are at a frustration level. On the other hand, if errors were expected to occur only 1-5% of the time, then students may have chosen to read independently more often. However, would this still be considered persistence (i.e., the willingness to proceed despite failure) or rather behavioral momentum that drove a participant to initiate solo reading? It is likely that students would choose to read because they felt confident, not because they wanted a challenge; however, this is purely speculative. For individual sessions, there were some participants who were reading a book that fit each of the above scenarios and their persistence was affected in the same ways. Hence, it is assumed that a moderate level of task difficulty was best for obtaining optimal results in achievement and persistence (as indicated above in describing previous research).

Prize. A child's preferred activity after the intervention was used to assess whether they persisted in reading. Twice as many participants in the experimental than the control group chose the book instead of the math flashcards or activity book. When examining the difference in group preferences for literacy-based prizes versus non-literary prizes, the experimental group chose prizes that related to reading on every occasion; the prevalence of this choice favored the experimental group over the control group. So although all participants did not choose the book option at high rates, the

participants in the experimental group did demonstrate a preference for linguistically-based prizes.

Participants were told that they could choose a prize because they helped with the research project, but the use of the term "prize" may have skewed the results compared to previous findings. Koestner, Zuckerman, and Koestner's (1987) study looked at one's persistence based on whether they engaged in the target task during free time. In the present study, the participants were not being measured on how long they spent working on the intervention task or which activity they wanted to do next, instead they were asked what reward they wanted to keep, which may be measuring a somewhat different construct than persistence. Rather, students were told they could keep the prize and take it home, so they may have made their choice based on what they already had at home or what they considered to be fun or appealing. For example, the book of word puzzles may have been interpreted as a more appealing task within the realm of literacy and thus was chosen more frequently than reading books.

Behavioral observations. From the video observations of select sessions with individual participants, six general categories of behaviors were exhibited by the participants in response to praise statements. As expected, the experimental group showed higher percentages of positive and neutral behavioral responses than the control group, even though the differences were not large. The finding that more positive responses were evident in the experimental group is encouraging, because it demonstrates that the effort praise may have had a positive effect on the participants, even though it did not result in significantly greater achievement or persistence than the non-attributional

praise. Also, this supports previous findings that praise leads to positive affect/behavior (Nicholls, 1984).

Behaviors coded as neutral were the most popular among both groups. This is reasonable, because people do not generally display overtly positive or negative reactions during a task without a reason. Praise statements that may have elicited a greater response would be those that were particularly sincere/genuine or those that the child felt were well-deserved because they know they did something well. The interruptive behaviors were only displayed by participants in the effort praise group; it is thought that since the effort praise statements took longer to utter than non-attributional phrases, students were either more eager to persist at reading than to hear the positive comment or did not know that it was acceptable to stop and listen in the middle of the story. The small percentage of negative responses to the praise is also encouraging, because it is an indicator that the students did in fact view the praise as favorable or at least not as aversive nor cumbersome. The behavioral observations were helpful in part, but because not every session was taped, some potentially rich data were lost. In the early sessions, the participants engaged in more overt behaviors in response to the effort praise (according to experimenter impressions, which are less reliable) seemingly because it was novel and specific. It is suspected that participants then became accustomed to the nature of effort praise and reacted less dramatically to it.

The richness of behavioral data may have been impacted by the procedures used in videotaping. The experimental group was videotaped near the end of the intervention because of availability of the camera and the notion that it might be best to observe the

behavioral reactions after the experimenters were more proficient at delivering effort praise. In actuality, this may have been a flawed approach, because the novelty of the praise may have decreased towards the end of the intervention, thus diminishing the frequency of behavioral reactions. The control group was only recorded once (early in the intervention) and so fewer opportunities for rating behavior were available for the control group. The unequal number of sessions was intended to simply provide a sample of the behaviors in each group, but with greater emphasis on the experimental group, because that was the target group. Percentages were used for comparing the prevalence of behaviors in each group based on the number of opportunities recorded. Ideally, both groups would have been videotaped on the same days and for the same number of sessions so that conclusions could be more accurately drawn.

Implications for School Psychologists

Effort praise induction may have long-term advantages for children in terms of promoting resiliency and persistence and deterring learned helplessness, for it affects academic intrinsic motivation which is cumulative, even though the current study was not able to support past research. Furthermore, effort praise leads to the predilection for learning goals and a more malleable and adaptive self-theory of intelligence, which, as discussed previously, is beneficial for enhancing intrinsic motivation, achievement, and persistence. However, a potential problem with the current study was that the effects may not be evident at the time of data collection, because the influence on children's self-perceptions, attitudes, and behavior was subtle. Likewise, although effort praise interventions may in fact have long-term consequences, they would most likely be

immeasurable and confounded by children's experiences outside of the experimental procedure.

In researching effort praise, valuable information was gained from the literature review in terms of how effort praise should theoretically impact children. Previous research identified the frequency with which children typically receive praise and the various types of praise available (Brophy, 1981; Burnett, 2002). Knowing the different kinds and moderators of praise allows school psychologists to adapt the praise statements they give to children and teachers according to the situation, reason for praise delivery, and preferences of each individual (Henderlong & Lepper, 2002). Effort praise is not a true reinforcer for children unless operant procedures (used for other reinforcements) are put in place. The behavioral observations from the present study highlight that the praise acted as a reinforcer, in the literal sense of the word, about half the time, as demonstrated by the favorable responses to the praise or resuming behaviors that earned them such praise. School psychologists can benefit from knowing how praise can be used as a reinforcer so to foster behavioral changes and encourage positive behaviors among students.

The implications of the present study can be applied to the practice of school psychology and to education in general. School psychologists are educational consultants and are expected to help teachers and parents know how to increase the outcomes for their students. Factors that foster achievement, persistence, and resiliency among children should be emphasized to school staff so to ultimately benefit children.

From a practical perspective, the present study demonstrated the need for objective assessment. The initial subjective impressions of the experimenters regarding the effectiveness of the praise from the children's reactions to it were inaccurate when compared to the objective data. In particular, the experimenters thought that some children were demonstrating dramatic achievement and persistence gains, but once the audio and video tapes were reviewed, it was revealed that these impressions were misleading. This illustrates the need for school psychologists to collect data and monitor that data when evaluating a child's progress, because one's initial reactions to an intervention may be inaccurate. Valuable lessons were learned from the present study, despite nonsignificant results, and these lessons have direct implications for school psychologists.

Limitations

It may, in retrospect, not be too surprising that statistical significance was not found in the current study because of all the procedural differences from previous research. The present study had several limitations which hindered the effectiveness of the effort praise. Only 16 first graders participated in the study thus decreasing the power of the data. Given the limitation of a small sample, attempts were made to increase power by having an equal number of participants in the two groups. As expected in a small sample, random assignment of participants did not necessarily lead to equivalent groups. This was the case in the present study as demonstrated by the vast range of achievement scores in the experimental group. Randomization by block was intended to make the two groups more equivalent since the sample size was so small, but this attempt

still did not create truly equal groups. ANCOVA was used for the achievement data, because this test has greater power than ANOVA for small samples and adjusts for initial differences in groups that could not be accounted for in their entirety by randomization (Tabachnick & Fidell, 2001).

Another limitation of the present study was the treatment integrity of the praise delivery. Attempts were made prior to the beginning of the intervention to clarify the demands and expectations of the intervention with the experimenters so that they would be delivering the praise consistently and effectively, as well as facilitating the paired reading procedure appropriately. However, the audio tapes indicated that the experimenters differed in how the praise was delivered (e.g., the variety, sincerity, length, and specificity of statements). Experimenters also differed in which behaviors their praise comments were targeted. Experimenter 1, for example, primarily gave praise when students had tried to sound out words on their own, while Experimenter 2 generally gave praise when participants had read smoothly through a series of words. The participants may have been confused on how praise was awarded because of the discrepancy between experimenters. Not knowing what reading behaviors result in the receipt of praise could have hindered the effect of that praise as a reinforcer for their reading. This could have deflated the potential for significant praise results in the study. In addition, some errors were made by the experimenters for when praise was to be delivered, such as giving effort praise to someone in the control group or offering praise after a participant made an error.

It is important to note that the frequency of these experimenter differences in praise delivery decreased during the course of the intervention. The impact of these differences was balanced across groups, because the experimenters alternated working with the two groups. In addition, children do not realistically receive only one type of praise in life, which lends credence to the implications of the study (as opposed to prior research which tested praise in isolation). The children's interpretation of the earned praise statements remains unknown. It is possible that first graders may have just paid attention to receiving praise in general and not to the specific phrasing/content of the praise. This would also explain why the two praise groups showed no significant differences. Given the various limitations of this real-world study, it is not surprising that the hypotheses were not supported. However, a great deal was learned from these limitations and direction is given for how to adjust for such limitations in future research.

Future Research

The present study added to the research on effort praise and clarified the limitations associated with generalizing the past findings to young children in a school setting when participating in a meaningful reading task. The study produced divergent evidence to that found in the literature, which may be beneficial for promoting research in the area of effort praise. If the present study was to be repeated, the following modifications are recommended. An examination of participants' beliefs about the receipt of praise may help in explaining the findings and in understanding the impact of praise on children's cognitions and feelings. Similarly, the addition of intrinsic motivation and self-theories of intelligence as dependent variables would be beneficial in

generalizing how the theory of effort praise relates to the delivery of effort praise in applied situations. A look at the long-term impact of effort praise is warranted. This study could also be improved by merely using more established measures of persistence, a larger sample size, and better consistency with treatment implementation.

Further research in the area of effort praise is warranted in order to develop a more general theory of the effectiveness of effort praise across a variety of tasks, settings, and samples, which would promote the generalizability and external validity of the findings. The intensity of the effort praise was not strong in the present study because participants were only exposed to this sort of praise for about 20 minutes a week. It is assumed that the more intense the effort praise intervention, the stronger the effects, which explains why studies that tested effort praise in isolation showed more significant results. For children in schools, it is appropriate to have people they encounter on a regular basis be the ones delivering the praise. Future research should train teachers and parents on appropriate and effective praise, so that children are receiving praise on a more consistent basis from people who are important to them; Anderson et al. (1979) did a variation of this, but the praise was only given during small group time and not throughout the day. It would also be beneficial to examine the effects of combined effort and ability praise statements on children compared to either type alone. Finally, it is recommended that the impact of effort praise be studied with gifted populations as well as cross-culturally.

Conclusion

In sum, the hypotheses for greater achievement gains and persistence for those who received the effort praise intervention, as compared to non-attributional praise, were not supported. However, the information collected from behavioral observations showed the greatest promise for demonstrating the positive effects of effort praise. Overall, both types of praise did produce significant gains in achievement from pretest to posttest. The findings of the present study demonstrated that previous work in the area of effort praise may be lacking in external validity, for the results did not generalize to the current applied setting and sample. However, key procedural differences and limitations existed in the current study, thus leading to divergent results from prior research. In addition, intraindividual and intragroup variability were critical limitations in the present study. However, knowledge gained during the study regarding its limitations was important for guiding suggestions for future research.

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Appendix A

Conversion Chart for Book Selection

READING LEVEL CORRELATIONS

Grade Level (Basal)	Guided Reading Level	DRA Levels	Success For All Levels	Reading Recovery Levels	Stages of Reading	Lexiles	DRP Text
Kindergarten	A B	A 1 2	1-3	1-2	Emergent		
Pre-Primer	C D E	3 4 6-8	4-25 25	3-8	Emergent/ Early	200-400	
Primer	F G	10 12	26-27	9-12	Early/ Transitional	200-400	
1st Grade	H I	14 16	38-48	13-17	Early/ Transitional	200-400	25-30
2nd Grade	J-K L-M	18-20 24-28	2.0	18-28	Transitional Fluency/ Extending	300-600	30-44
3rd Grade	N O-P	30 34-38	3.0	30-38	Fluency/ Extending	500-800	44-54
4th Grade	Q-R	40	4.0	40-42	Fluency/ Extending/ Advanced	600-900	46-55
5th Grade	S-V	44	---	44	Fluency/ Extending/ Advanced	700-1000	49-57
6th Grade	W-Z	---	---	---	Advanced	800-1050	51-60

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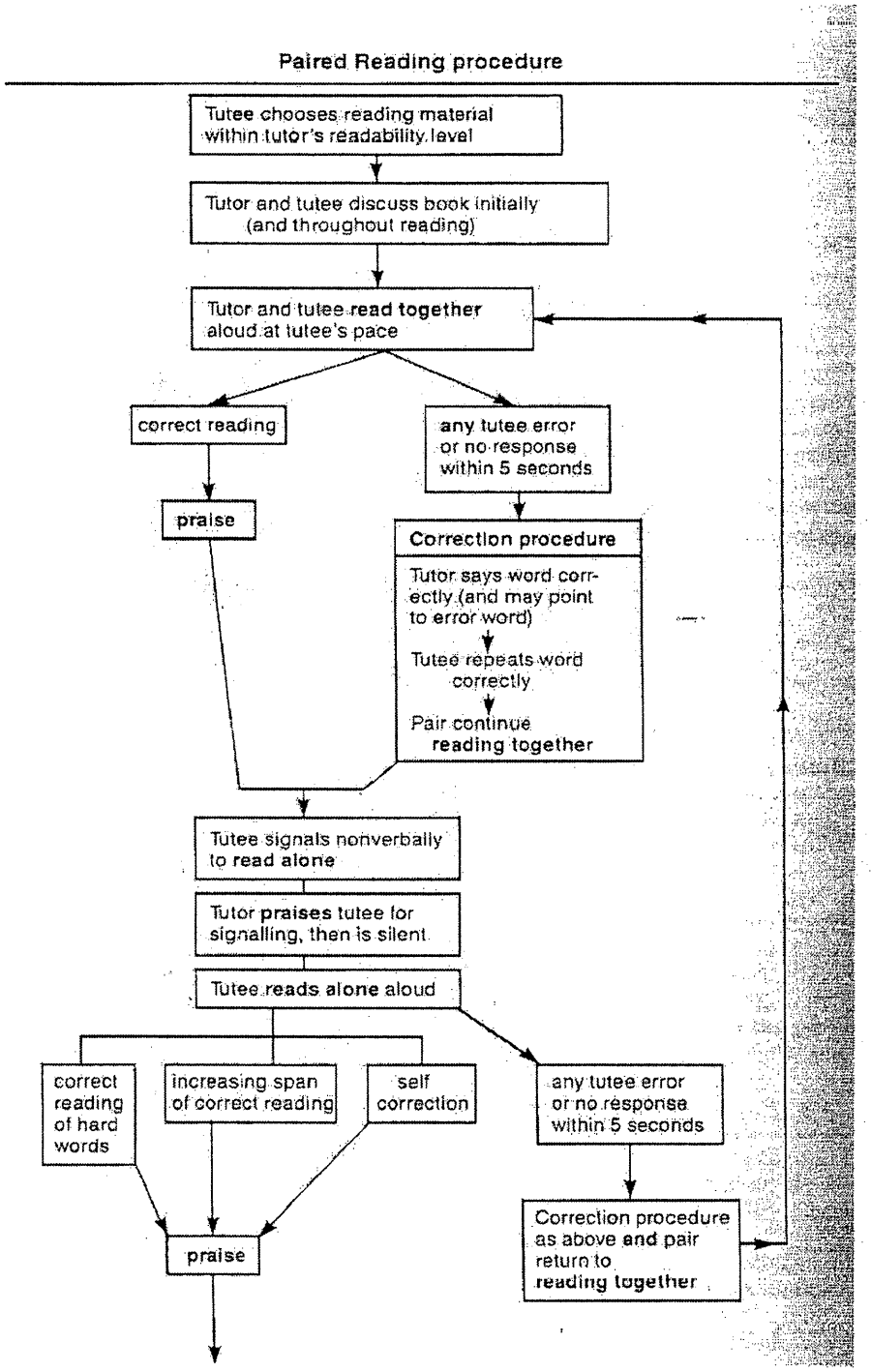
Appendix B

Paired Reading Procedure



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Appendix C

Praise Script

Non-attributional Praise:

- "Wow"
- "That's great"
- "Good"
- "Excellent"
- "Terrific"
- "Good job"
- "Great"
- "That's good"
- "Alright"
- "Super"
- "Very good"
- "OK!"
- "Outstanding"
- "Fantastic"
- "Nice"
- "Nice job"
- "Hooray"
- "Woohoo"
- "Superb"
- "That's it"
- "I like that"
- "Well done"
- "Way to go"

Effort Praise: includes any of the above non-attributional statements AND one or a combination of the following, while specifically addressing the reading behavior targeted for praise:

- "I can't believe how hard you're trying to read on your own"
- " I like how you're really trying to sound out the words"
- "You are working so hard on reading this story"
- "You must be working hard on this"
- "Good working, you really seem to be trying your best"
- "You are using good strategies"
- "I can tell how hard you were working on this"
- "I like how you didn't give up at a hard word, but instead you kept trying to get it right"
- "I really like when you try reading on your own"

- "You seem to be learning this well"
- "I can tell you put a lot of effort into it"
- "You are trying pretty hard. I like that"
- "I can't believe how much you've tried reading on your own. That's good working"
- "It seems that you were trying really hard that time"
- " I like when you follow along with your finger, that's how you get to be a good reader"
- "I am so pleased with how you read that . . ."
- "That hard work is paying off"
- "You did it! You . . ., that shows me you're working hard to read this well"
- That's what I like to see, a boy/girl sounding out words [or wanting to read on his/her own]"
- "That's amazing how you tried to . . ."

Inappropriate Statements:

- Reference to a fixed trait or one's ability level
- "Keep it up"
- "You could have/should have done better"
- "You should always try that hard"
- "I know you can do better"
- "You could have tried this. . ."
- "Now you should always get that word right"
- "You should be getting better if you keep trying"
- "You are the best"
- "I can tell you're really good/great at this"
- "You are/must be [really] smart"
- "You're a good boy/girl"
- "You are a great reader"
- "You really have a knack for reading"
- "You are a good student"
- "You seem very smart"

Table 1

Means, Standard Deviations, and Adjusted Means on Two Dependent Variables

	Experimental		Control	
Source	*M*	*SD*	*M*	*SD*
	Oral reading fluency[a]			
Pretest	61.50	36.82	45.69	7.20
Posttest	73.31	43.67	58.06	10.27
Adjusted pretest	53.59		53.59	
Adjusted posttest	64.45		66.92	
	Guided reading level			
Pretest	10.50	2.88	11.38	3.29
Posttest	11.38	3.46	12.00	3.51
Adjusted pretest	10.94		10.94	
Adjusted posttest	11.83		11.54	

[a]Error was reduced equally for both groups by controlling for pre-test differences in oral reading fluency, thus the homogeneity of variance assumption was met for this test only.

Table 2

Percentages[a] *of Behaviors Exhibited in the Experimental and Control Groups*

Behavioral label	Experimental	Control
Smile*	28.87	21.05
No expression**	58.45	63.16
Attentive*	12.68	5.26
Interruptive**	10.56	0
Complimentary*	9.86	15.79
Negative reaction***	13.38	14.04

Note. *Positive behavior. **Neutral behavior. ***Negative behavior.

[a]Percentages are based on total number of times the various behaviors occurred after a praise statement (opportunity), but multiple behaviors could have been coded for each opportunity, hence the percentages that sum to more than 100.

Figure Captions

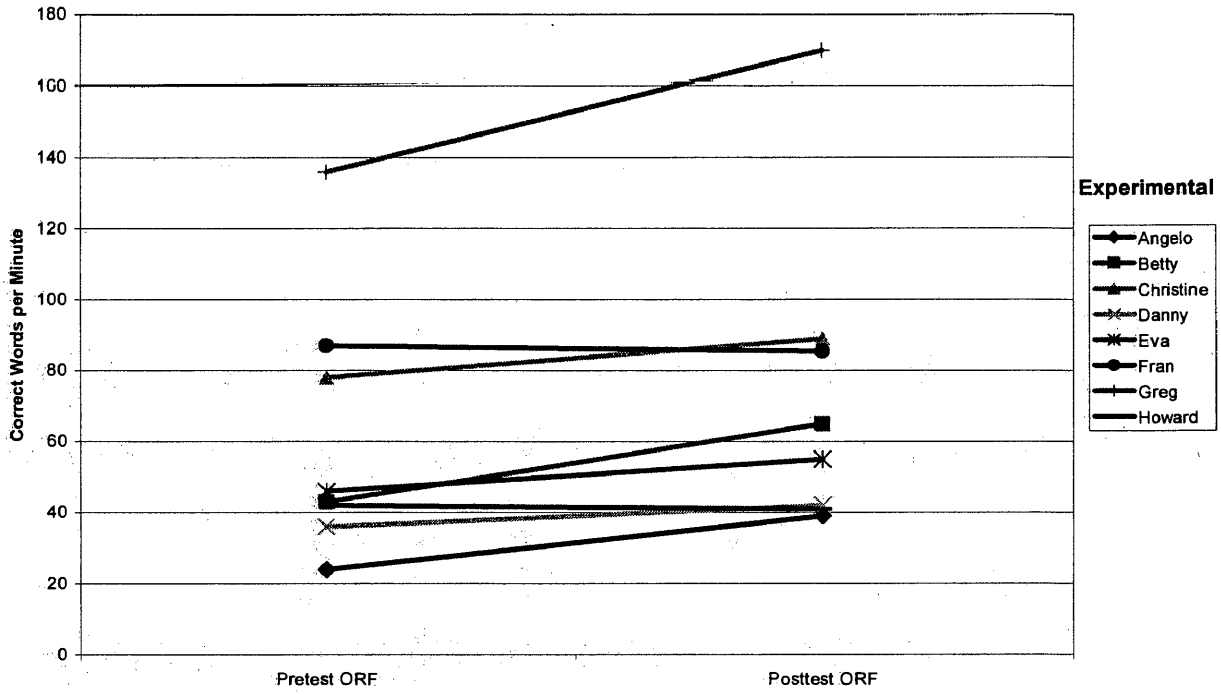
Figure 1. Experimental and control groups' pretest and posttest ORF for each participant.

Figure 2. Four experimental group participants' individual PRT data per session of the study.

Figure 3. Four more experimental group participants' individual PRT data per session of the study.

Figure 4. Four control group participants' individual PRT data per session of the study.

Figure 5. Four more control group participants' individual PRT data per session of the study.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120
100
80
60
40
20
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Correct Words per Minute
Pretest ORF
Posttest ORF
Experimental
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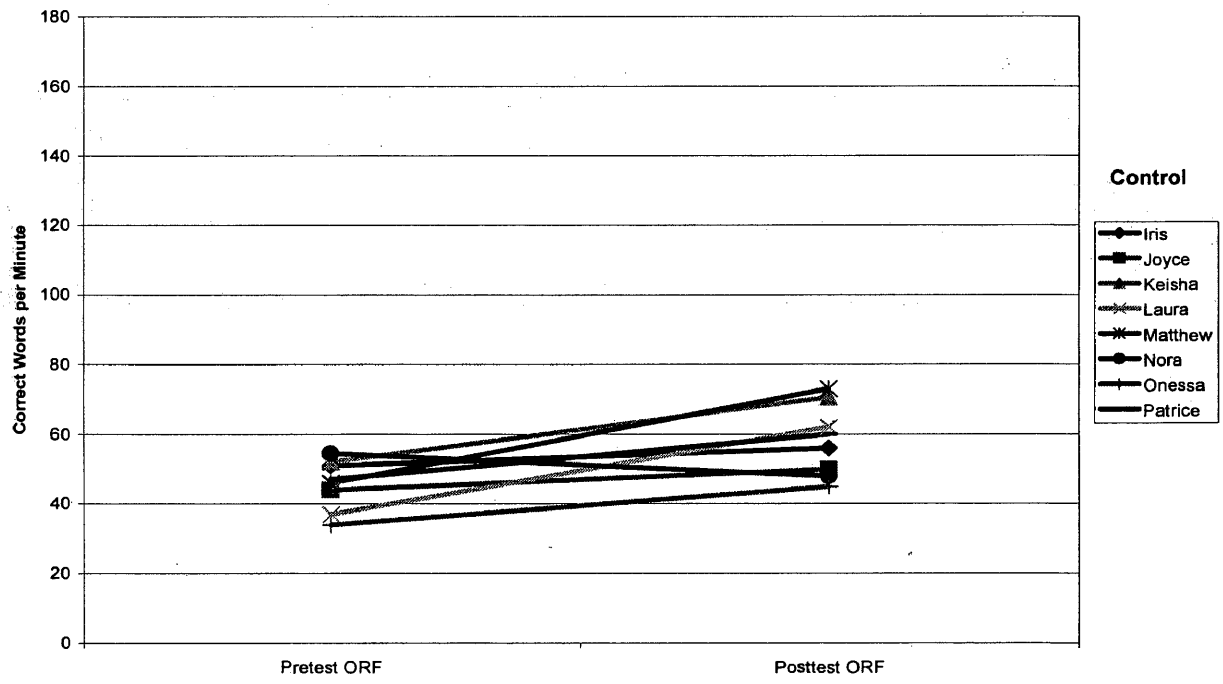
Christine
Danny
Eva
Fran
Greg
Howard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120
100
80
60
40
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Pretest ORF
Posttest ORF
Control
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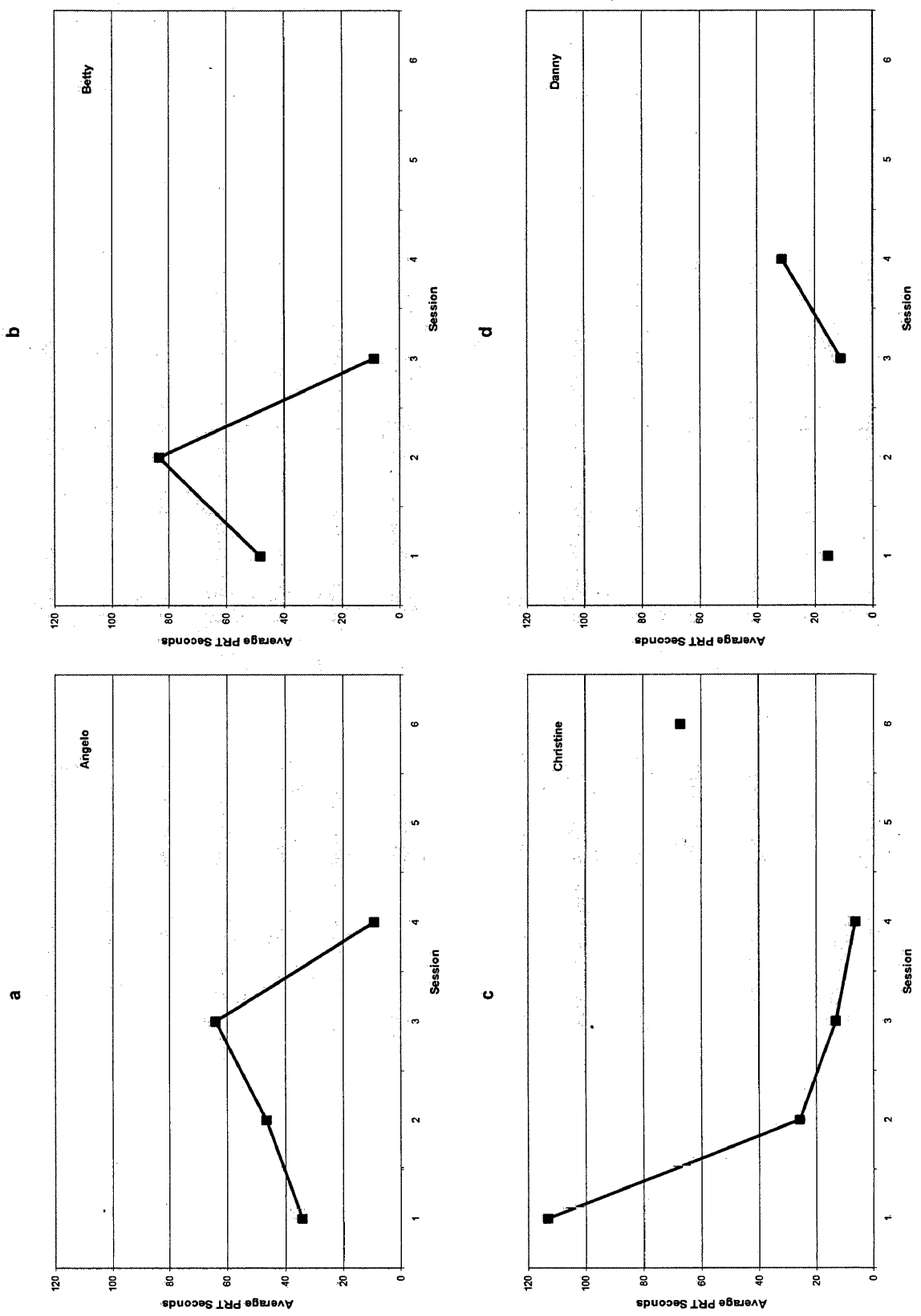
Joyce
Keisha
Laura
Matthew
Nora
Onessa
Patrice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Average PRT Seconds
Session
b
Betty
Average PRT Seconds
Session
c
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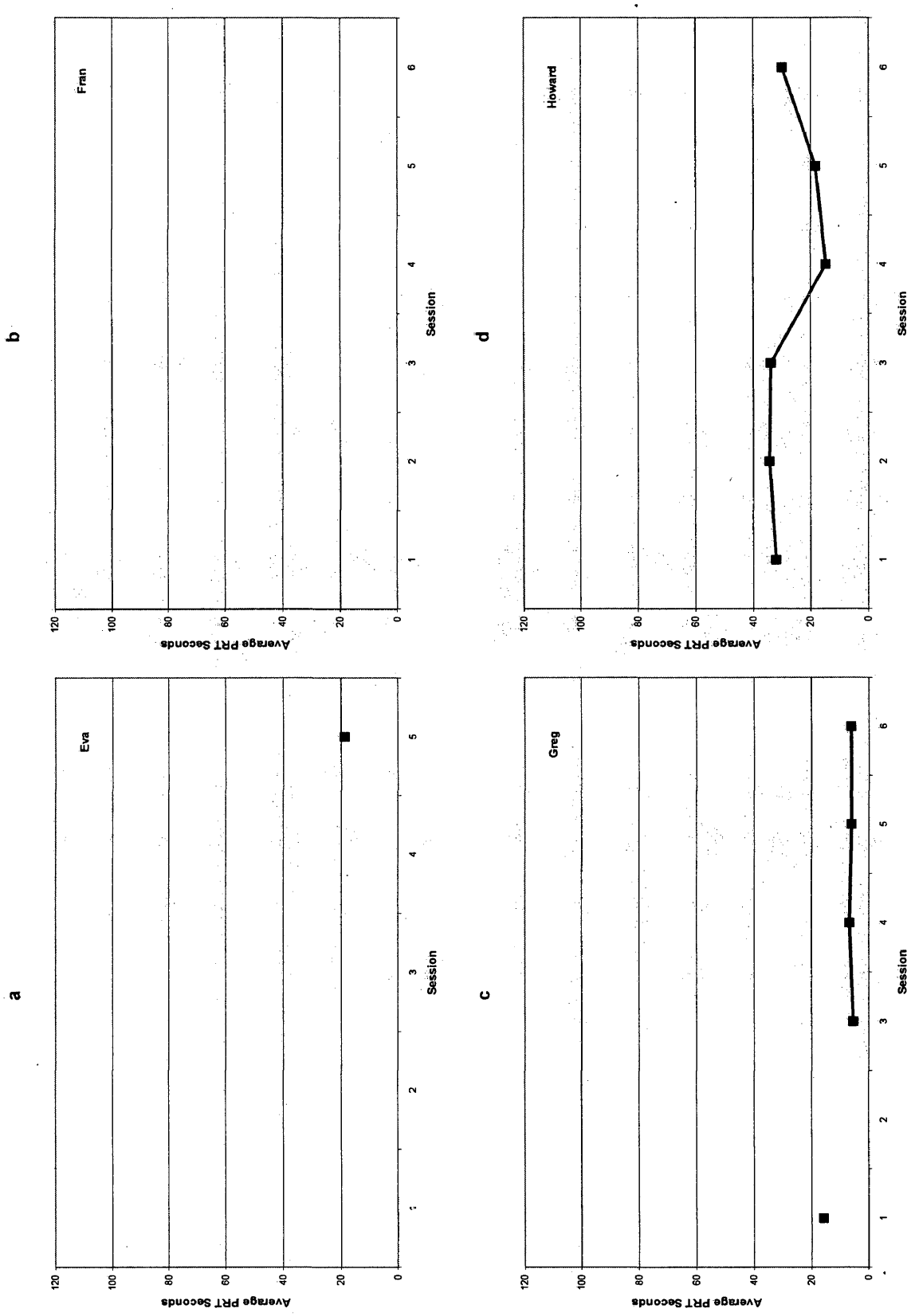
Average PRT Seconds
Session
d
Danny
Average PRT Seconds
Session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Eva
Average PRT Seconds
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Fran
Average PRT Seconds
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Greg
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Session
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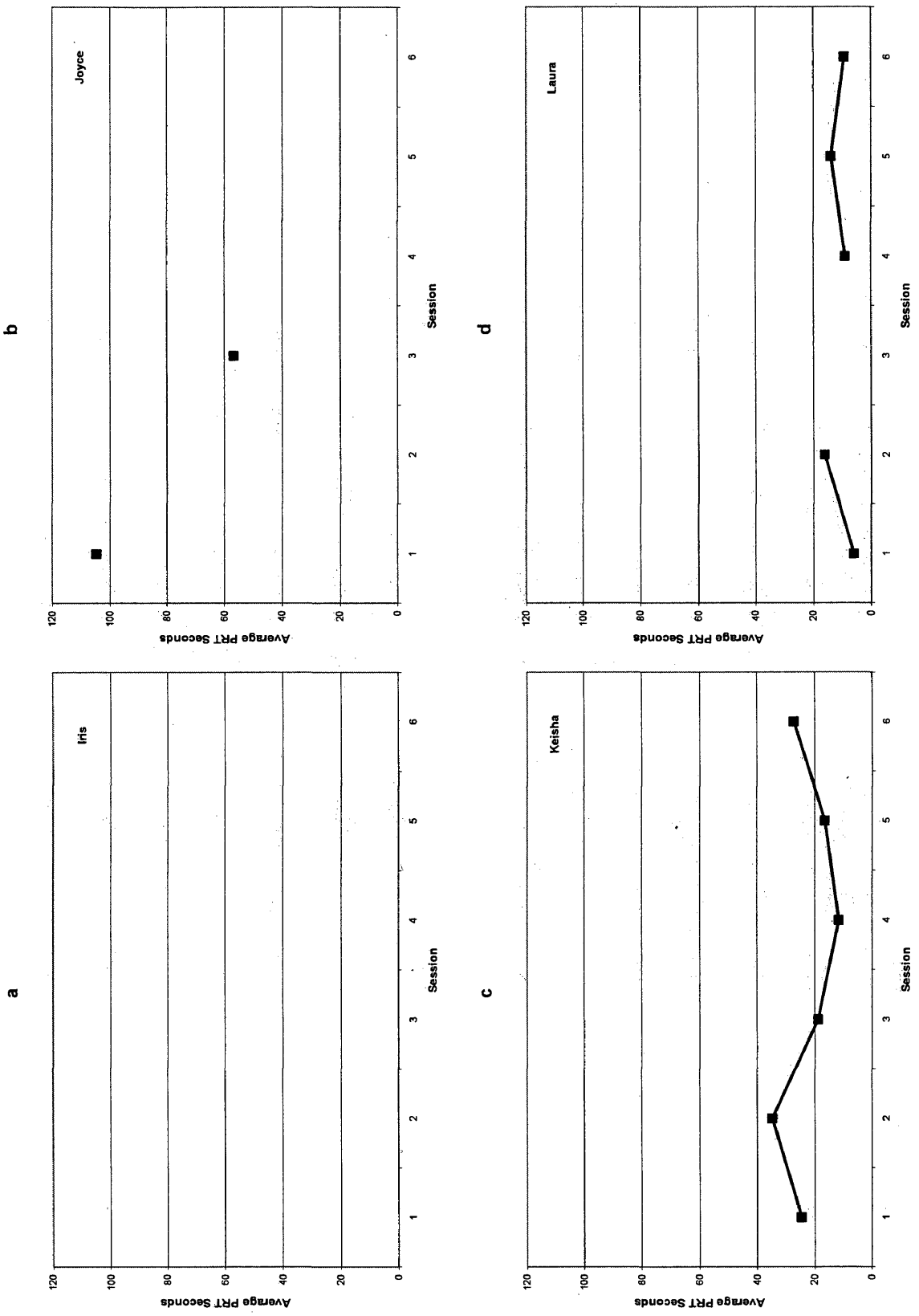
Howard
Average PRT Seconds
Session


a
Iris
b
Joyce
c
Keisha
d
Laura
Average PRT Seconds
Session
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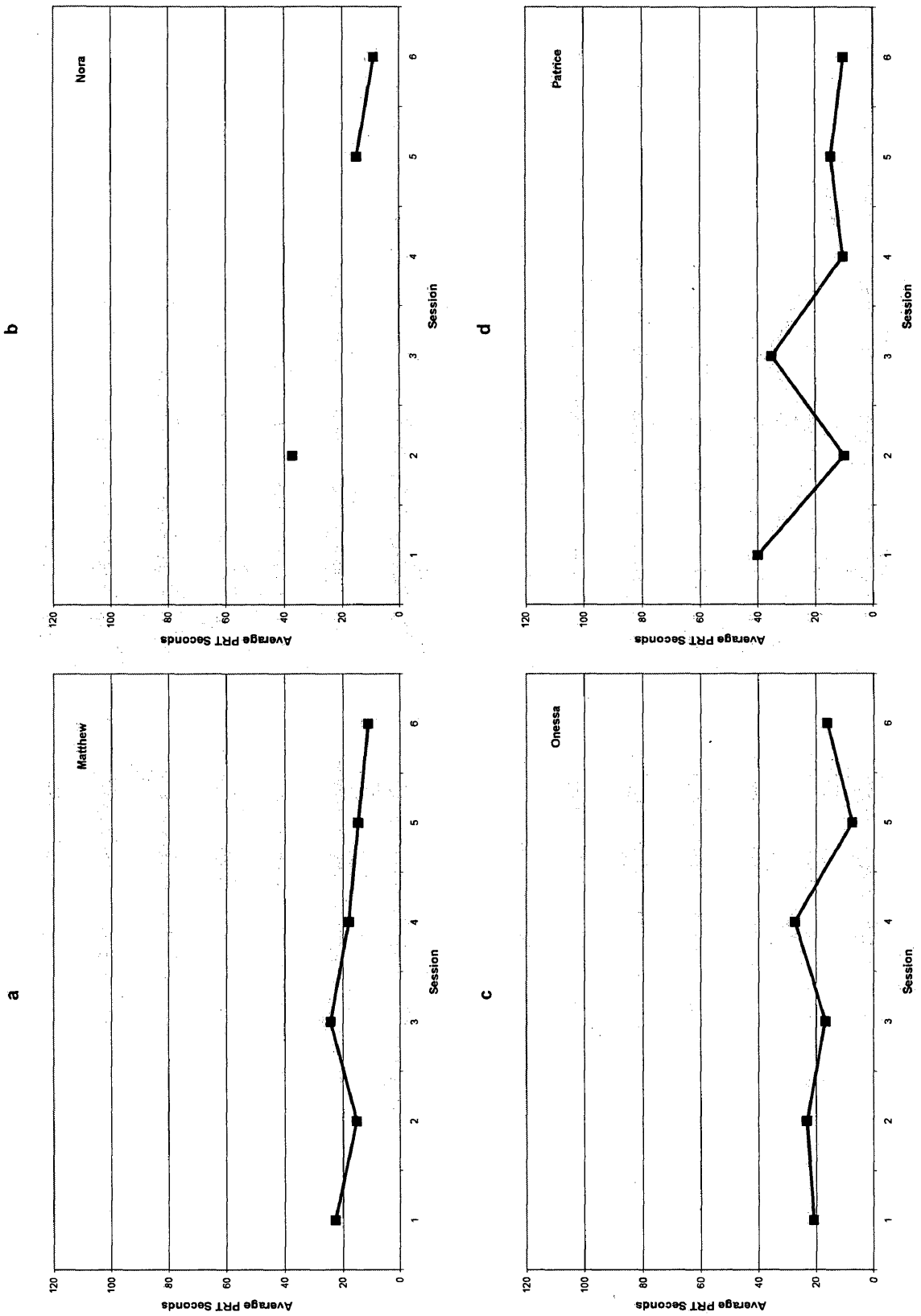
40
60
80
100
120
1
2
3
4
5
6


a
Matthew
b
Nora
c
Onessa
d
Patrice
Average PRT Seconds
Session
0
20
40
60
80
100
120
1
2
3
4
5
6