

GOOD WORK!/: EXAMINING THE USE AND IMPACT OF PARENT FEEDBACK
WITHIN THE CONTEXT OF AUTISM

by

MEGAN MICHELLE PRUITT

Bachelor of Science, 2013
Texas Christian University
Fort Worth, Texas

Submitted to the Graduate Faculty of the
College of Science and Engineering
Texas Christian University
in partial fulfillment of the requirements
for the degree of

Master of Science

May 2012

ACKNOWLEDGEMENTS

I would like to first thank Dr. Naomi Ekas for her help and guidance throughout the entire research process. She has been an invaluable mentor. I would also like to thank Dr. David Cross for his vast knowledge with regards to developmental psychology and parent-child interactions and that influence and input towards my project. In addition, I would like to thank Dr. Uma Tauber for providing a unique perspective and her input as well.

Further, I would like to acknowledge the support and hard work of all of the undergraduate research assistants in our lab that were on my coding teams. Without them, none of the coding for my project would have been possible. I am very thankful for their hard work and patience with implementing and working through the coding schemes with me.

Finally, I would like to thank my family and friends who have been a constant source of support and encouragement throughout this entire process.

TABLE OF CONTENTS

Acknowledgements	ii
List of Figures	v
I. Moderation: Parent Depression and Process Positive Feedback.....	28
II. Moderation: Child Restricted/Repetitive and Process Negative.....	31
III. Moderation: Process Positive and Holding.....	38
IV. Moderation: Process Negative and Passive Engagement	39
V. Moderation: Ambiguous Positive and Looking.....	41
VI. Moderation: Ambiguous Negative Holding.....	43
List of Tables	vi
I. Descriptive Statistics.....	16
II. Group Differences for Research Question 1	20
III. Correlations for Research Question 2 (Typically Developing).....	24
IV. Correlations for Research Question 2 (High Functioning).....	25
V. Correlations for Research Question 2 (Low Functioning).....	26
VI. R to Z Transformations for Research Question 2.....	27
VII. Correlations for Research Question 3 (Typically Developing).....	33
VIII. Correlations for Research Question 3 (High Functioning).....	34
IX. Correlations for Research Question 3 (Low Functioning).....	35
X. R to Z Transformations for Research Question 3.....	36
Sensitive Parenting	1
Parent Feedback	2
Methods for Assessing Parent Feedback.....	5

Autism Spectrum Disorder and Parenting	6
Parent Feedback and ASD	7
The Current Study	9
Method	10
Participants	10
Procedure	11
Measures	12
Parent Feedback	12
Motivation	13
Parent Mental Health	13
Child Symptom Severity	14
Intellectual Functioning	14
Results	15
Research Question 1	18
Research Question 2.....	23
Research Question 3.....	32
Discussion	43
References.....	52
Vita	
Abstract	

LIST OF FIGURES

I. Moderation: Parent Depression and Process Positive Feedback.....	28
II. Moderation: Child Restricted/Repetitive and Process Negative.....	31
III. Moderation: Process Positive and Holding.....	38
IV. Moderation: Process Negative and Passive Engagement	39
V. Moderation: Ambiguous Positive and Looking.....	41
VI. Moderation: Ambiguous Negative Holding.....	43

LIST OF TABLES

I. Descriptive Statistics.....	16
II. Group Differences for Research Question 1.....	20
III. Correlations for Research Question 2 (Typically Developing).....	24
IV. Correlations for Research Question 2 (High Functioning).....	25
V. Correlations for Research Question 2 (Low Functioning).....	26
VI. R to Z Transformations for Research Question 2.....	27
VII. Correlations for Research Question 3 (Typically Developing).....	33
VIII. Correlations for Research Question 3 (High Functioning).....	34
IX. Correlations for Research Question 3 (Low Functioning).....	35
X. R to Z Transformations for Research Question 3.....	36

“Good Work!”: Examining the Use and Impact of Parent Feedback within the Context of Autism Spectrum Disorder

Parenting quality has a tremendous impact on children’s social, emotional, and academic outcomes. Sensitive and responsive parenting is generally associated with positive child outcomes (NICHD ECCRN, 1999). Parent feedback, including positive feedback, is one component of sensitivity that is associated with children’s self-esteem and motivation (Brummelman et al., 2014; Kamins & Dweck, 1999). Parent feedback may be especially important in populations where parenting stress is elevated and children face motivational challenges, as is the case with autism spectrum disorder (ASD; Davis & Carter, 2008; Koegel & Egel, 1979). However, due to heightened levels of stress and depression, parents of children with ASD may struggle with providing appropriate feedback. Due to the challenges that parents of children with ASD face, this study examined the impact of parent mental health and child behaviors on parent feedback. In addition, this study also examined the impact of parent feedback on children’s task motivation.

Sensitive Parenting

Parents have a great impact on children’s development from a very early age. Within the first year of life, warm and sensitive parenting is a key component in the formation of the parent-child attachment relationship (Ainsworth, 1979). Warm and sensitive parenting comprises picking up on a child’s emotions, respecting boundaries, remaining engaged with the child and his/her needs, viewing the child in a positive light, and also being positive (NICHD ECCRN, 1999). According to the NICHD Early Child Care Research Network (1999), maternal sensitivity is related to school readiness, verbal comprehension, and

expressive language. Taken together, this body of research suggests that sensitive and responsive parenting predicts a variety of social, emotional, and cognitive outcomes.

Certain maternal characteristics, including depressive symptoms, predict the ability of a mother to engage in sensitive parenting. For example, children were more engaged with their mothers, and mothers were more sensitive, when maternal depressive symptoms were lower (NICHD ECCRN, 1999). During face-to-face interactions with their 2-month-old infants, mothers that were depressed were more intrusive and had greater negative affect (Cohn, Campbell, Matias, & Hopkins, 1990). The effects of depression on sensitive parenting have also been found to have long-term effects. For example, maternal depression predicted less sensitive interactions with their child two and a half years later (Engle & McElwain, 2013). Therefore, maternal depression may have both immediate and long-term impacts on sensitive parenting. In light of these findings, it is important to consider both the outcomes and predictors of sensitive parenting.

Parent Feedback

One important aspect of sensitive parenting is the quality of feedback that parents provide children (NICHD ECCRN, 1999). There are several types of feedback that parents can use. Positive feedback (e.g., praise) is a type of feedback given in response to success or good performance (Kelly, 2002). There are two different types of positive feedback: person and process (Kamins & Dweck, 1999). In response to performance, person positive feedback makes an evaluative statement about ability, goodness, or worth that may be transferrable to multiple situations and contexts (e.g. “You’re so smart!”; “Good girl!”). On the other hand, process positive feedback draws attention to the strategies that a child has used or the effort that they made (e.g. “Good job!”; “That’s right.”). Encouragement is another type of

FEEDBACK AND AUTISM SPECTRUM DISORDER

feedback that refers to the child's current effort and tends to be independent of performance (e.g. "Keep trying!"; "You're almost done!"; Kelly, 2002). The parent does not wait for the child to correctly or incorrectly complete an action but rather acknowledges effort during the process. These different types of feedback can have differential impacts on child developmental outcomes.

Two aspects of children's development that parent feedback has been especially important for is self-esteem and motivation. Kamins and Dweck (1999) found that children provided with person positive feedback developed a sense of self-worth that was contingent on success and also used more self-blame in the face of a challenge or failure. Studies have also found that inflated positive feedback was not only related to low self-esteem but also led children to avoid challenges that may be a part of learning in the classroom and other settings (Brummelman et al., 2014). These studies show that person feedback is not an ideal form of feedback, because it leads children to associate success and failure with stable qualities about themselves.

Feedback has also been found to have a significant link to a child's motivation and task persistence, essential parts of learning experiences. For example, process positive feedback was linked to children developing frameworks that contributed to increased motivation; this included thinking they can change traits, preference for challenge, and strategizing to make improvements (Gunderson et al., 2013). Further, process positive feedback can lead to more intrinsic motivation in children (Koestner, Zuckerman, & Koestner, 1989). On the other hand, when person positive feedback was used, children tended to persist less on tasks, enjoy tasks less, and not perform as well as children who received process positive feedback (Mueller & Dweck, 1998). It is not fully clear what the

FEEDBACK AND AUTISM SPECTRUM DISORDER

mechanisms are behind the impact of person feedback on motivation, but more attention to errors may be one possible explanation (Zentall & Morris, 2012). In general, if a child views a task as changeable, approachable and manageable, they will continue on the task.

However, if they feel that a stable quality about themselves is contributing to failure, they will not want to continue with a task and will be less motivated. In sum, parents' use of process feedback is associated with positive child outcomes, whereas person feedback is consistently linked to negative outcomes.

There is a small body of research examining the factors that predict parents' use of feedback, primarily focusing on child characteristics. For example, parents were more likely to use positive feedback when they perceived their child as having low self-esteem (Brummelman et al., 2014). They also used positive feedback when they were trying to elicit compliance from their child (Owen, Slep, & Heyman, 2012). Some studies have examined what influences children's receptiveness to positive feedback, which could help determine a parent's choice to provide feedback. For example, child depressive symptoms can affect a child's negative reactivity to positive feedback by leading to greater negative affect (Cuellar & Johnson, 2009). Other factors such as locus of control, gender, and grade were related to the type of feedback children preferred (Kelly, 2002). Overall, there has been little research examining parent and child characteristics that may be associated with the use of positive feedback. The current study extended previous work by examining the role of parent stress and parent depression as well as child behaviors. Since these factors can affect general sensitivity and responsiveness, it is also possible that they may impact parent's feedback.

Methods for Assessing Parent Feedback

Most of the research evaluating feedback has been in an experimental setting. In these settings, feedback was manipulated (e.g., person vs. process positive feedback) in order to examine the behavioral outcome. In these studies, children completed tasks and were then given a pre-determined type of feedback (e.g., Cimpian, Aree, Markman, & Dweck, 2007; Corpus, Ogle, & Love-Geiger, 2006; Kamins & Dweck, 1999; Zentall & Morris, 2010; Zentall & Morris, 2012). Computers have also been used to provide feedback to children (Bracken & Lombard, 2004). In other studies, mothers self-reported on the type of positive feedback they provided their child following events that happened during the day (Pomerantz & Kempner, 2013). Although this is more reflective of what type of feedback a child is receiving, self-report measures of feedback may be biased. There is very little data on how often parents and other people use different types of feedback naturally.

As opposed to manipulating feedback, some studies have examined feedback within a naturalistic setting, such as during parent-child interactions, but these are very few. In one design, parents were instructed to act in a certain way (Wahler & Meginnis, 1997), whereas other studies utilized naturalistic parent-child interactions to observe parent feedback (e.g., Gunderson et al., 2013; Reissland, 1994). In these studies, feedback was observed during in-home parent-child interactions (Gunderson et. al, 2013) or while a parent and child played a game together (Reissland, 1994). In both situations, parents were unaware that their feedback was being rated. However, more research needs to be conducted with the naturalistic use of parent feedback in order to more accurately assess the implications for children's development. The current study addresses this issue by examining parent feedback while children complete a puzzle task, something that occurs often in the classroom and at

home. Naturalistic use of feedback may be particularly important to consider in other populations in which motivation is an issue and in which positive feedback is a commonly used therapy component.

Autism Spectrum Disorder and Parenting

ASD is a prevalent developmental disorder affecting 1 in 68 children in the United States (CDC, 2014). It is defined by deficits in social interaction and communication, having preferences for routines, and inappropriately focusing on items (APA, 2013). As a result of these behaviors, parents face unique challenges that are associated with lower levels of psychological well-being, including depression (Ekas & Whitman, 2010). Mothers of children with ASD report higher levels of stress, problems in the parent-child relationship, and distress (Davis & Carter, 2008). Due to the fact that parents of children with ASD report heightened levels of depression and pessimism (Abbeduto et al., 2004), these problems may spill-over and impact parents' interactions with their children.

When parents experience stress or mental health problems the quality of their parenting may be impacted (Borre & Kliwer, 2014). Therefore, parents of children with ASD may be especially at-risk for these negative effects. Kasari and Sigman (1997) found that when parents reported more parenting stress, their children did not respond as much to social bids. It is possible that the child's lack of responsiveness is leading to parenting stress. It is also just as conceivable that the parenting stress is related to the parent not being able to effectively engage their child. Further, greater ASD severity has also been linked to lower quality parent-child interactions with respect to coordination, communication, emotional expressiveness, responsivity, and mood (Beurkens, Hobson, & Hobson, 2013). Further evidence for the impact on parenting in this population comes from research conducted with

infants at-risk for ASD. In observations of parent-child interactions in this group, parents showed lower levels of sensitive responding and were more directive (Wan et al., 2012).

Therefore, due to the unique experiences of parenting a child with ASD, sensitive parenting can be adversely impacted. Because of the impact of parenting on developmental outcomes, it is extremely important to understand how parenting behaviors are impacted as the result of raising a child with ASD. The current study examined the effects of maternal depression on parent feedback.

As with typically developing (TD) children, parenting quality plays an important role in children with ASD's social, emotional, and cognitive development. For example, high quality parent-child interactions have been linked to the development of social skills in children with ASD (Haven, Manangan, Sparrow, & Wilson, 2014). Further, language development in children with ASD has been linked to parental sensitivity and responsiveness (Baker, Messinger, Lyons, & Grantz, 2010; Siller & Sigman, 2008). In addition, interventions have been created to teach parents adapted communication techniques, and this has been linked to increases in reciprocal social interaction in the children (Aldred, Green, & Adams, 2004). This body of research is relatively new and further research is needed that examines the effects of parenting behaviors on the development of children with ASD. The current study focused on parent feedback as one dimension of parenting behavior.

Parent Feedback and ASD

Although parent feedback (e.g., positive feedback) should be considered as an important component of parenting within ASD, it is more commonly studied within the context of ASD treatment. One of the more readily used therapies for children with ASD is Applied Behavior Analysis (ABA), which uses reinforcement to change behaviors. Once paired with tangible

FEEDBACK AND AUTISM SPECTRUM DISORDER

items as reinforcers, positive feedback has been established as a mechanism to promote behavior (Dozier, Iwata, Thomason-Sassi, Wordsell, & Wilson, 2012). Because of the social communication deficits present in ASD, children do not readily respond to social overtures; however, research has shown that verbal positive feedback has been an effective component of treatment plans in ABA. Positive feedback has been used to treat a wide topography of behaviors in children with ASD, including problem behavior that is reinforced by escape (Lomas, Fisher, & Kelley, 2010), acquisition of language skills (McGee, Krantz, Mason, & McClannahan, 1983), social and work-related behaviors (Rigsby-Eldredge & McLaughlin, 1992), labeling objects (Volkert, Lerman, Trosclair, Addison, & Kodak, 2008), help-seeking behavior (Bergstrom, Najdowski, & Tarbox, 2012), and bedwetting (Henriksen & Peterson, 2013). Positive feedback is clearly an important tool for treating children with ASD.

Although positive feedback is not often evaluated outside of the treatment setting in children with ASD, it may still have important developmental outcomes for these children. For example, in a longitudinal study of mothers of adolescent children with ASD, maternal positive feedback was related to lower future symptom severity in some domains, such as repetitive behaviors (Smith, Greenberg, Seltzer, & Hong, 2008). In this study, positive feedback was coded from excerpts of mothers talking about their child. To my knowledge, this is the only study that examined positive feedback outside of a treatment context.

Although children with ASD may respond differently to positive feedback, possibly because of a difference with respect to the development of pride and mastery in this population (Kasari, Sigman, Baumgartner, & Stipek, 1993), there is no research explicitly examining whether or not this is evident during naturalistic parent-child interactions. Further, the rate at which mothers naturally use positive feedback during observations is unknown. Because

FEEDBACK AND AUTISM SPECTRUM DISORDER

positive feedback can potentially impact child outcomes, it may also promote motivation, which is a key issue in ASD.

Children with ASD have significant problems in the area of motivation, which may impact parent-child interactions. In addition to deficits in social motivation, children with ASD also display a lack of motivation for on-task behavior that has been linked with incorrect responding on tasks, which then leads to an inconsistency in responding and less persistence (Koegel & Egel, 1979). Since positive feedback may be effective in enhancing motivation in TD children, this could be an effective strategy for parents to use during interactions with their children with ASD. As further support for this argument, studies of children with ADHD have found that reward was associated with enhanced performance and that type of reward impacted motivation (Carlson & Tamm, 2000). Therefore, it is important to consider the implications of positive feedback on motivation with children with ASD. If the naturalistic use of positive feedback could be better understood, parents could potentially use positive feedback to positively impact child outcomes as well as interactions with the child.

The Current Study

The overarching goal of the current study was to examine the predictors and outcomes of parent feedback. I examined the effects of parent depression and child symptom severity on parent feedback. This study also examined the impact of different types of parent feedback on child motivation. Similar to how it is conceptualized within the TD population, this study viewed feedback as a component of sensitive parenting within parent-child interactions. With respect to the predictors of parental feedback, I hypothesized that higher levels of maternal depressive symptoms and child ASD symptoms would be associated with

FEEDBACK AND AUTISM SPECTRUM DISORDER

less process feedback and more person feedback. I expected this relationship in both groups; however, due to the heightened levels of depression in parents of children with ASD, I expected the association to be stronger in that group. It was also hypothesized that parent feedback would predict children's task motivation. More specifically, the use of person positive feedback would be associated with greater motivation for the TD children. Given the lack of research with children with ASD, I did not make any specific hypotheses about what types of feedback would be related to task motivation for ASD children, but it was expected that the relationships would be similar to the TD group.

Method

Participants

Fifty-three parents visited the lab for an observational visit with their child (TD = 32; ASD = 21) who was between the ages of 3 and 6 ($M = 51.06$ months, $SD = 9.53$). Sixty-six percent of the children were male. Children were only included in the study if they completed the puzzle tasks. Eleven children in the ASD group had an intellectual functioning score of 70 or higher and were considered high functioning (HF). The remaining 10 children with ASD had a score lower than 70 and were considered low functioning (LF). Parents were between the ages of 24 and 52 ($M = 34.96$, $SD = 5.92$). The majority of parents (88.7%) were married and 81% had a college degree. Further, most families reported an household income of \$40,000 or more (90.6%). The participants were recruited from the local community through schools as well as local therapy centers and resources for ASD. The majority of the parents were mothers; however, there were two cases where the adult that accompanied the child to the visit was the child's father and one where the adult was the child's grandmother. Both of these cases were in the group of children without ASD. In all

FEEDBACK AND AUTISM SPECTRUM DISORDER

cases, the parent lived at home with the child full time and was either their biological parent or legal guardian.

Procedure

Prior to the visit, parents were mailed information about their study visit and a series of questionnaires to complete and bring with them to the laboratory visit. Upon arrival, parents completed informed consent for their participation and permission for their child. In addition, all children completed a verbal assent. If the child was unable to verbally assent, a gestural consent was also accepted (e.g., nodding head, running into the room, etc.). The parent and child then engaged in several tasks together as part of a larger visit within the lab. However, the main task used for analysis for this study was a moderately challenging puzzle in which the parent was instructed to let the child work on their own but to give any help that they thought their child needed. The task was designed so that the child would need some parental assistance, thus providing opportunities for the parent to provide feedback. The child was given three minutes to complete the puzzle before moving to the next task. However, they were always allowed the opportunity to finish the puzzle. There were also two other puzzles, an easy one where the child was given two minutes to complete it and a hard one where they were given five minutes; however, these puzzles were not used in analyses due to a insufficient opportunity for the parents to provide feedback. The puzzles were designed to increase in difficulty and require more parental assistance. The parent received a \$25 gift card as compensation for their participation. The child was also given a small prize at the end of the visit. There were a total of three visits in which the same procedure was used (the actual puzzles used varied) over the course of a year with the visits occurring six months apart.

Measures

Parent Feedback. Parent feedback during the puzzle task was coded based on a system developed by Zentall (2009). Independent coders were trained with a gold standard coder until they reached acceptable levels of interrater reliability ($\kappa > .70$). After a child completed an action that was relevant to the puzzle task the parent's verbal response was coded. There were two general categories of parent feedback: positive and negative. If a child had performed an action correctly, the feedback was considered positive, and if they child had incorrectly done something, the feedback was rated as negative. The coder also distinguished between two different types of feedback. Person feedback reflects a stable attribute of the child that would be applicable in other contexts (e.g., "You are so smart!" or "This is really hard for you."). If the statement was about the task itself (e.g., "That's right."; "You did it."; "Good Job!"; "Rotate it."; "That does not fit there.") then it was coded as process feedback. If the statement was not specific enough to fit into either of these categories (e.g., "Good!"; "High five!"; "No"; "Yes"), then it was coded as ambiguous. The aforementioned codes were only applicable if the parent's statement followed the completion of a specific action on the puzzle by the child. However, there were times when statements were made by the parent while the child was in the process of completing an action on the puzzle. These statements were coded as encouragement and included statements such as "You can do it!" or "You're almost done!" Total scores were calculated for each of these types of individual feedback as well as an overall feedback total, an overall positive score, and an overall negative score. Interrater reliability for the coding of parent feedback for this sample was .84.

Motivation. The child's motivation during the task was coded based on a system also developed by Zentall (2009). Independent coders were trained with a gold standard coder until they reached acceptable levels of interrater reliability ($\kappa > .70$). The child's behaviors were coded on a second-by-second basis. Three categories of child behaviors were coded: motor, visual, and verbal. There were several types of motor behaviors that were rated and the behaviors were not mutually exclusive. *Talking about the puzzle* was coded if the child was discussing the task. *Looking at the puzzle* was coded if the child's attention was directed towards the puzzle. *Holding the puzzle* was coded if the child was holding a puzzle piece but not actually completing an action with it. *Passive engagement* was coded if the child was interacting with the puzzle but in an inappropriate manner (e.g., just playing with the pieces but not actually trying to put them together to complete the puzzle). *Active engagement* was coded if they were attempting to complete the puzzle and using the pieces to complete the puzzle. A new code called *active and looking* was calculated by determining the instances when the child was both actively engaged with the puzzle and had his or her attention directed towards the puzzle. Proportion scores were then calculated to determine the amount of time they spent doing each different type of engagement. The interrater reliability for child motivation for this sample was .82.

Parent Mental Health. To assess the mental health problems experienced by the parent, they completed the Center for Epidemiologic Scales Depression Scale (CES-D; Radloff, 1977). This is an established self-report measure of the symptoms of depression experienced by an individual during the past week and consists of 20 items. Individuals rated how often they felt or behaved on a 4-point Likert scale (0= rarely or none of the time to 3 = most or all of the time). Higher scores reflected more depressive symptoms. A score a

sixteen or higher is used as a cut-off to indicate the possibility of clinical depression. For this sample, the measure is a reliable measure of depression (Cronbach's alpha = .69)

Child Symptom Severity.

To assess child symptom severity the Social Communication Questionnaire (SCQ) lifetime version (Rutter, Bailey, & Lord, 2003) was used. If the child was under four we administered the current version. The SCQ is also an established measure to assess ASD symptoms severity and confirm diagnosis, with cutoff scores of fifteen deemed as indicative of a diagnosis of ASD. There are 19 yes or no questions about whether certain behaviors have ever been present (the current version asks parents to focus on the past three months). The following 21 questions correspond to behaviors between the fourth and fifth birthdays (the current version focuses on the past twelve months). The scores can be divided into different subscales to reflect deficits in the reciprocal social interaction domain, the communication domain, and the restricted, repetitive, and stereotyped patterns domain. Higher scores represent more deficits in these domains. For this sample, the SCQ was a reliable measure of symptom severity for both the current version (Cronbach's alpha = .79) and the lifetime version (Cronbach's alpha = .60).

Intellectual Functioning. To obtain a measure of the child's intellectual functioning, the Differential Abilities Scale-II (DAS-II) was used (Elliot, 2007). It consists of three different components: verbal, nonverbal, and spatial reasoning. In accordance with the administration guidelines, if the child was younger than 42 months, then they were only administered four subtests (verbal comprehension, picture similarities, naming vocabulary and pattern construction), whereas the children above 42 months were given six subtests (verbal comprehension picture similarities, naming vocabulary, pattern construction,

matrices, and copying). The General Conceptual Ability (GCA) composite scores were then calculated and used to reflect intellectual functioning. The ASD group was then divided, based on these scores, into those with and without an intellectual disability using a cut-off score of 70.

Results

In order to determine if there were any potential covariates, a series of one-way Analyses of Variance (ANOVA) were conducted for all categorical demographic variables, and correlations were tested with any continuous demographic variables. Child age, parent age, child gender, ethnicity, and household income were not associated with any of the types of parent feedback or child motivation. However, process negative feedback differed based on levels of marital status, $F(1,51) = 4.37, p \leq .05$, with married parents using more process negative feedback as compared to single parents, and parent education $F(5, 47) = 3.53, p \leq .01$, where lower levels of college education were associated with more process negative feedback. Therefore, in all additional analyses where process negative feedback was an outcome, marital status and parent education were controlled for. Further, passive engagement significantly differed based on levels of parent education, $F(5,47) = 11.82, p \leq .001$, where lower levels of college education were associated with more passive engagement. Therefore, in all further analyses where passive engagement was the outcome, parent education was controlled for. The means and standard deviations of all study variables of interest are presented in Table 1.

Table 1
Descriptive statistics

Variable	TD			HF			LF		
	Mean	SD	Range	Mean	SD	Range	Mean	SD	Range
1. Parent Depression	8.25	5.24	0.00 – 20.00	16.00	9.83	3.00 – 33.00	15.60	8.13	6.00 – 30.00
2. Child Social Deficits	.81	.93	0.00 – 3.00	7.45	3.24	2.00 – 12.00	7.90	2.92	4.00 – 14.00
3. Child Communication Deficits	2.63	1.74	.00 – 7.00	7.00	1.26	5.00 – 9.00	6.10	1.37	4.00 – 8.00
4. Child Restricted/Repetitive	1.56	1.48	.00 – 5.00	6.91	1.14	5.00 – 8.00	6.10	2.18	1.00 – 8.00
5. Person Positive Feedback	.19	.59	.00 – 3.00	.45	1.21	.00 – 4.00	.10	.32	.00 – 1.00
6. Person Negative Feedback	.00	.00	.00 - .00	.00	.00	.00 – .00	.00	.00	.00 – .00
7. Process Positive Feedback	3.84	3.41	.00 – 14.00	2.55	2.58	.00 – 8.00	2.90	3.07	.00 – 9.00
8. Process Negative Feedback	4.56	4.46	.00 – 16.00	3.64	6.15	.00 – 21.00	3.20	4.37	.00 – 14.00
9. Ambiguous Positive Feedback	7.38	5.59	.00 – 24.00	6.64	5.80	.00 – 21.00	5.70	7.36	.00 – 20.00
10. Ambiguous Negative Feedback	2.72	3.24	.00 – 12.00	1.91	2.74	.00 – 8.00	1.10	2.13	.00 – 7.00
11. Encouragement	2.88	2.20	.00 – 9.00	3.45	3.83	.00 – 14.00	5.40	2.32	2.00 – 9.00

Variable	TD			HF			LF		
	Mean	SD	Range	Mean	SD	Range	Mean	SD	Range
12. Talking about the Puzzle	.15	.13	.00 – .41	.15	.13	.00 – .41	.01	.02	.00 – .05
13. Looking at the Puzzle	.97	.04	.85 – 1.00	.88	.21	.33 – 1.00	.80	.26	.20 – 1.00
14. Holding the Puzzle	.10	.17	.00 – .90	.14	.15	.01 – .41	.14	.16	.00 – .51
15. Passive Engagement	.02	.08	.00 – .46	.01	.03	.00 – .09	.06	.11	.00 – .37
16. Active Engagement	.91	.10	.50 – 1.00	.77	.26	.11 – .97	.53	.24	.08 – .88
17. Active and Looking	.89	.11	.50 – 1.00	.77	.26	.11 – .97	.52	.25	.06 – .88

Research Question 1: Group Differences in Parent Depression, Child Symptom Severity, and Child Motivation

In order to investigate whether there were group differences in parent mental health, child symptom severity, motivation, and feedback, a series of one-way ANOVAs were conducted using three group divisions: TD children, high functioning (HF) ASD children and low functioning (LF) ASD children. As shown in Table 2, significant group differences were found for parent depression, child social deficits, child communication deficits, child restricted/repetitive behaviors, encouragement, talking about the puzzle, looking at the puzzle, active engagement, and active and looking. As shown in Table 2, using Tukey's HSD adjustment, post-hoc tests revealed that for parent depression, the parents with HF children ($M = 16.00, SD = 9.83$) and LF children ($M = 15.60, SD = 8.13$), reported significantly more depressive symptoms than parents of TD children ($M = 8.25, SD = 5.24$). Parents of HF and LF children did not significantly differ from one another. HF children ($M = 7.45, SD = 3.24$) and LF children ($M = 7.90, SD = 2.92$) had significantly more social deficits than TD children ($M = .81, SD = .93$). The HF and LF children were not significantly different. Further, HF ($M = 7.00, SD = 1.26$) and LF ($M = 6.10, SD = 1.37$) children had more communication deficits than TD children ($M = 2.63, SD = 1.74$), but they were not significantly different from one another. A similar relationship was found for HF ($M = 6.91, SD = 1.14$) and LF children ($M = 6.10, SD = 2.18$) in relation to TD children ($M = 1.56, SD = 1.48$) for restricted/repetitive behaviors.

With respect to parent feedback, LF children ($M = 5.40, SD = 2.32$) received more encouragement than TD children ($M = 2.88, SD = 2.20$). However, TD ($M = 2.88, SD = 2.20$) and HF children ($M = 3.45, SD = 3.83$) did not differ from one another nor did the HF and LF

FEEDBACK AND AUTISM SPECTRUM DISORDER

children. This was the only group difference found with respect to parent feedback. Further, there was no occurrence of person negative feedback, so it was not included in any further analyses regarding parent feedback.

For child motivation, TD children ($M = .15$, $SD = .13$) and HF children, ($M = .15$, $SD = .13$) talked about the puzzle more compared to LF children ($M = .01$, $SD = .02$), but they did not differ from each other. Further, LF children ($M = .80$, $SD = .26$) looked at the puzzle less than the TD children ($M = .97$, $SD = .04$). Lastly, TD children ($M = .91$, $SD = .10$) and HF children ($M = .77$, $SD = .26$) were both more actively engaged with the puzzle than the LF children ($M = .53$, $SD = .24$) and did not differ from each other. Further, a similar relationship was found for actively engaged and looking at the puzzle for the TD children ($M = .89$, $SD = .11$) and HF children ($M = .77$, $SD = .26$) compared to the LF children ($M = .52$, $SD = .25$). With respect to both active engagement and active and looking, TD children marginally were more motivated than the HF children.

Table 2

Group Differences

Variable	df	Overall <i>F</i>	<i>p</i>	η_p^2	Observed Power	Tukey HSD (<i>p</i> value)	Bonferroni (<i>p</i> value)
1. Parent Depression	2, 50	7.52	.001***	.23	.93		
TD vs. HF						.007**	.007**
TD vs. LF						.014**	.016*
HF vs. LF						.990	1.00
2. Child Social Deficits	2, 50	71.55	.000***	.74	1.00		
TD vs. HF						.000***	.000***
TD vs. LF						.000***	.000***
HF vs. LF						.872	1.00
3. Child Communication Deficits	2, 50	39.90	.000***	.62	1.00		
TD vs. HF						.000***	.000***
TD vs. LF						.000***	.000***
HF vs. LF						.404	.603
4. Child Restricted/Repetitive	2, 50	63.78	.000***	.72	1.00		
TD vs. HF						.000***	.000***
TD vs. LF						.000***	.000***
HF vs. LF						.472	.734
5. Person Positive Feedback	2, 50	.74	.484	.03	.17		
6. Process Positive Feedback	2, 50	.82	.445	.03	.18		

Variable	df	Overall <i>F</i>	<i>p</i>	η_p^2	Observed Power	Tukey HSD (<i>p</i> value)	Bonferroni (<i>p</i> value)
7. Process Negative Feedback	2, 48	.68	.511	.03	.16		
8. Ambiguous Positive Feedback	2, 50	.31	.733	.01	.10		
9. Ambiguous Negative	2, 50	1.22	.303	.05	.26		
10. Encouragement	2, 50	3.52	.037*	.12	.63		
TD vs. HF						.804	1.00
TD vs. LF						.028*	.032*
HF vs. LF						.217	.288
11. Talking about the Puzzle	2, 50	6.05	.004**	.20	.87		
TD vs. HF						1.00	1.00
TD vs. LF						.004**	.004**
HF vs. LF						.020*	.022*
12. Looking at the Puzzle	2, 50	5.81	.005**	.19	.85		
TD vs. HF						.163	.208
TD vs. LF						.006**	.007**
HF vs. LF						.462	.715*
13. Holding the Puzzle	2, 50	.41	.668	.02	.11		
14. Passive Engagement	2, 49	1.23	.301	.05	.26		

Variable	df	Overall <i>F</i>	<i>p</i>	η_p^2	Observed Power	Tukey HSD (<i>p</i> value)	Bonferroni (<i>p</i> value)
23. Active Engagement	2, 50	18.77	.000***	.43	1.00		
TD vs. HF						.065	.077
TD vs. LF						.000***	.000***
HF vs. LF						.007**	.007**
24. Active and Looking	2, 50	17.43	.000***	.41	1.00		
TD vs. HF						.095	.115
TD vs. LF						.000***	.000***
HF vs. LF						.007**	.008**

p* ≤ .05; *p* ≤ .01; ****p* ≤ .001; *Follow-u*

Research Question 2: The Relationship between Parent and Child Characteristics and Feedback

In order to examine research question two, correlations were computed separately for each group to determine the relationship between parent and child characteristics and parent feedback. For significant correlations, a Fischer's r to z transformation was computed to determine if the strength of the correlations were significantly different between groups. Given the small sample size, I then conducted an exploratory moderation analysis with group status as the moderator. As shown in Table 3, for the TD children, there was a significant, negative relationship between parent depressive symptoms and process positive feedback, $r = -.37, p \leq .05$. As seen in Table 4, this relationship was not significant for the HF group, $r = -.24$. However, within the LF group (see Table 5), there was a significant, positive relationship between parent depressive symptoms and process positive feedback, $r = .73, p \leq .05$. The relationship between parent depressive symptoms and process positive feedback was found to not be weaker for the TD group than the HF group, $z = -.36, p = .36$, but was significantly stronger for the LF group compared to the TD group, $z = 3.13, p \leq .001$, and was significantly stronger for the LF group compared to the HF group, $z = -2.27, p \leq .01$. Further moderation analyses revealed a significant effect of child status on the relationship between parent depressive symptoms and process positive feedback, $F(2, 47) = 5.30, p \leq .01, \Delta R^2 = .18$. Simple slopes tests revealed that the slope for the TD group was significant, $b = -.24, SE = .10, p \leq .05$, where greater parent depressive symptoms predicted less process positive feedback. The slope for the LF group was also significant, $b = .28, SE = .12, p \leq .05$, where more parent depressive symptoms predicted greater use of process positive feedback (See Figure 1).

Table 3

Correlations between Parent and Child Characteristics (Deficits) and Parent Feedback for the TD Group

Variable	Person Positive	Process Positive	Process Negative	Ambiguous Positive	Ambiguous Negative	Encouragement
1. Parent Depression	.08	-.37*	-.16	-.02	-.29	-.08
2. Child Social	-.05	-.08	.45**	.29	.35*	.05
3. Child Communication	.07	-.12	-.23	-.11	-.06	.39*
4. Child Restricted/ Repetitive	-.05	-.16	-.08	-.05	-.29	.41*

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

Table 4

Correlations between Parent and Child Characteristics (Deficits) and Parent Feedback for the HF Group

Variable	Person Positive	Process Positive	Process Negative	Ambiguous Positive	Ambiguous Negative	Encouragement
1. Parent Depression	.08	-.24	-.27	.15	.28	-.44
2. Child Social	.17	.25	.37	.37	.50	.62*
3. Child Communication	-.26	.03	.51	-.07	.29	.58
4. Child Restricted/ Repetitive	.11	-.36	-.73*	-.29	-.29	-.27

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

Table 5

Correlations between Parent and Child Characteristics (Deficits) and Parent Feedback for the LF Group

Variable	Person Positive	Process Positive	Process Negative	Ambiguous Positive	Ambiguous Negative	Encouragement
1. Parent Depression	.62	.73*	-.31	.30	.66*	.16
2. Child Social	.01	.49	.17	-.19	.11	.27
3. Child Communication	-.54	.40	-.21	.33	-.42	.44
4. Child Restricted/ Repetitive	.15	-.21	.38	.18	.12	.76**

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

FEEDBACK AND AUTISM SPECTRUM DISORDER

Table 6

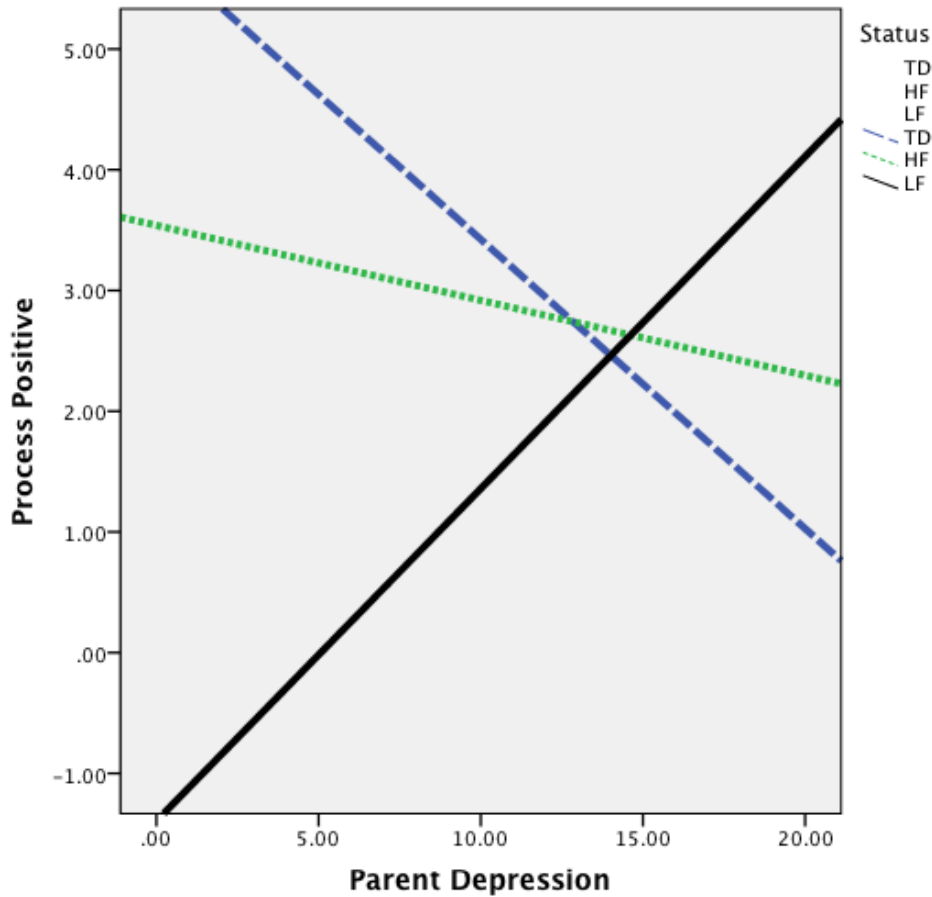
R to z transformations to Examine Differences in the Strength of Relationships between Parent and Child Characteristics and Parent Feedback

Correlation	<i>z</i>	<i>p</i>
1. Parent Depression → Process Positive		
TD vs. HF	-.36	.36
TD vs. LF	-3.13	.001**
HF vs. LF	-2.27	.01*
2. Parent Depression → Ambiguous Negative		
TD vs. HF	1.47	.07
TD vs. LF	-2.59	.005**
HF vs. LF	-.98	.16
3. Child Social Deficits → Process Negative		
TD vs. HF	.24	.41
TD vs. LF	.74	.23
HF vs. LF	.42	.34
4. Child Social Deficits → Ambiguous Negative		
TD vs. HF	-.46	.32
TD vs. LF	.61	.27
HF vs. LF	.85	.20
5. Child Social Deficits → Encouragement		
TD vs. HF	-1.69	.05*
TD vs. LF	-.54	.29
HF vs. LF	.87	.19
6. Child Communication → Encouragement		
TD vs. HF	-.63	.26
TD vs. LF	-.14	.44
HF vs. LF	.37	.36
7. Child Restricted/Repetitive → Process Negative		
TD vs. HF	2.12	.02*
TD vs. LF	-1.14	.13
HF vs. LF	-2.57	.005**
8. Child Restricted/Repetitive → Encouragement		
TD vs. HF	1.78	.04*
TD vs. LF	-1.33	.09
HF vs. LF	-2.46	.007**

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

Figure 1

Moderation of the relationship between parent depression and process positive feedback by child status.



When examining the relationship between parent depressive symptoms and ambiguous negative feedback, there was a significant positive relationship for the LF group, $r = .66, p \leq .05$. However, there was no significant relationship for the TD group, $r = -.29$, or the HF group, $r = .28$. After r to z transformations, the relationship between parent depressive symptoms and ambiguous negative feedback was only stronger for the LF group compared to the TD group, $z = 2.59, p \leq .01$ and marginally stronger for the TD group compared to the HF group, $z = 1.47, p = .07$. Moderation analyses revealed that this

relationship between depressive symptoms and ambiguous negative feedback was only marginally moderated by status, $F(2, 47) = 3.09, p = .05, \Delta R^2 = .11$.

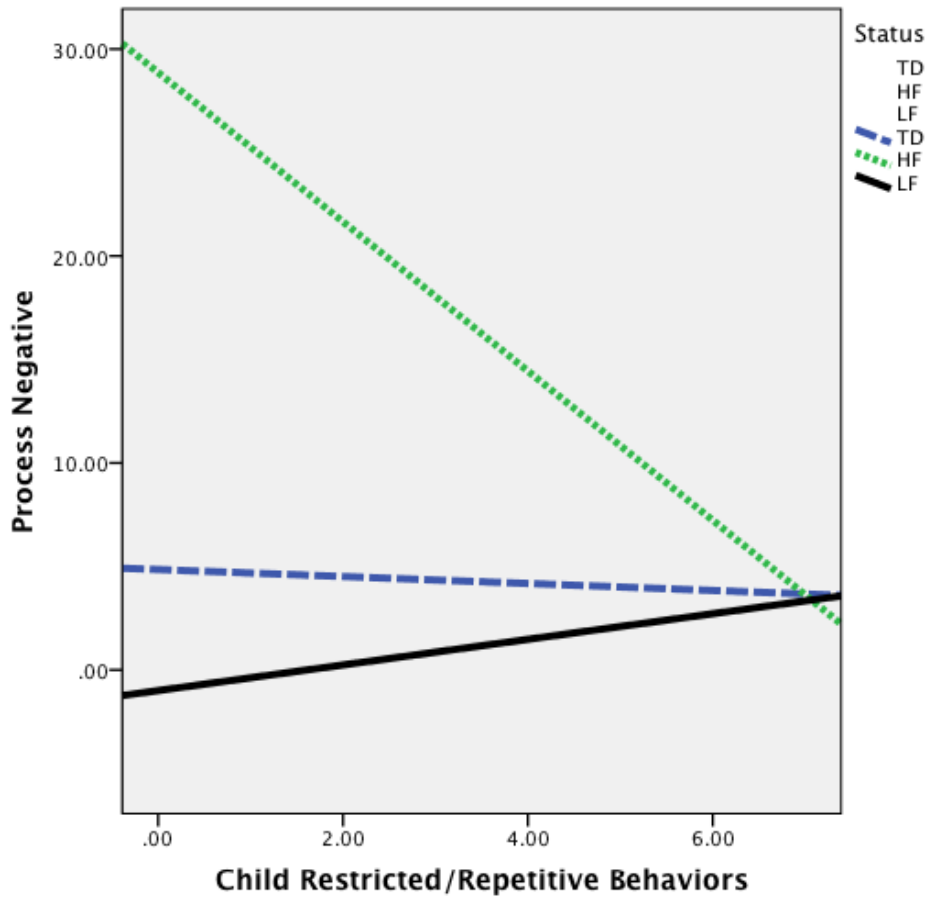
For child characteristics, there was a significant positive relationship between child social deficits and process negative feedback for the TD group, $r = .45, p \leq .01$. This relationship was not significant for the HF group, $r = .37$, and the LF group, $r = .17$. Further, for the TD group, child social deficits were also positively related to more ambiguous negative feedback, $r = .35, p \leq .05$. This relationship was also not significant for the HF group, $r = .50, p \leq .05$, or the LF group, $r = .11, p \leq .05$. According to r to z transformations, there were no significant differences in the strengths of the relationships between child social deficits and process negative feedback or ambiguous negative feedback. Further, for the HF group, there was a significant, positive relationship between child social deficits and encouragement, $r = .62, p \leq .05$. This relationship was not significant for the TD, $r = .05$, or the LF group, $r = .27$. The only significant difference in relationships between child social deficits and encouragement was for the HF group compared to the TD group, where the relationship was stronger for the HF group, $z = 1.69, p \leq .05$. Moderation analyses revealed that status does not moderate the relationship between child social deficits and encouragement, $F(2, 47) = 1.28, p = .29$.

For child communication deficits, there was a significant, positive relationship with encouragement for the TD group, $r = .39, p \leq .05$. There was not a significant relationship for the HF group, $r = .58$, or the LF group, $r = .44$. There were no significant differences between the groups with regards to the relationship between child communication deficits and encouragement after conducting r to z transformations.

For the HF group, a significant, negative relationship was found between child restricted/repetitive behaviors and process negative feedback, $r = -.73, p \leq .05$. There was no relationship for the TD group, $r = -.08$, or the LF group, $r = .38$. The strength of the relationship between child restricted/repetitive behaviors and process negative feedback was stronger for the TD group compared to the HF group, $z = 2.12, p \leq .05$, and weaker compared to the LF group, $z = -2.57, p \leq .01$. The TD group and the LF group did not differ significantly. Moderation analyses revealed that status was a significant moderator of the relationship between child restricted/repetitive behaviors and process positive feedback, $F(2, 45) = 4.89, p \leq .01, \Delta R^2 = .14$. Simple slopes tests revealed that only the slope for the HF group was significant, $b = -3.61, SE = 1.17, p \leq .01$, where more child restricted/repetitive behaviors predicted less process negative feedback. The slopes for the other groups were non-significant (See Figure 2).

Figure 2

Moderation of the relationship between child restricted/repetitive behaviors and process negative feedback by child status.



There was also a significant, positive relationship between child restricted/repetitive behaviors and encouragement for the TD group, $r = .41$, $p \leq .05$, and the LF group $r = .76$, $p \leq .01$. There was no relationship for the HF group, $r = -.27$. The relationship was significantly stronger for the TD group compared to the HF group, $z = 1.78$, $p \leq .05$, and there was a marginally significant weaker relationship for the TD group compared to the LF group, $z = -1.33$, $p = .09$. Finally, the relationship was significantly weaker for the HF group compared to the LF group, $z = -2.46$, $p \leq .01$. Moderation analyses revealed that the

relationship between restricted/repetitive behaviors and encouragement was only marginally moderated by status, $F(2, 47) = 2.50, p = .09, \Delta R^2 = .08$.

Research Question 3: The Relationship between Parent Feedback and Child Motivation

Similar to the previous research question, correlations were computed separately for each group between parent feedback and child motivation. Significant correlations were followed-up with Fisher's r to z transformations (see Table 10) and moderation analyses. As seen in Table 9, for the LF group there was a significant positive relationship between person positive feedback and talking about the puzzle, $r = .89, p \leq .001$. This relationship was not significant for the TD group as seen in Table 7, $r = -.17$, or the HF group as seen in Table 8, $r = -.29$. The relationship between person positive feedback and talking about the puzzle was significantly stronger for the LF group compared to the TD group, $z = 3.78, p \leq .001$, and the HF group, $z = 3.32, p \leq .001$. Moderation analyses revealed that status did not moderate the relationship between person positive feedback and talking about the puzzle, $F(2, 47) = .22, p = .81$.

Table 7

Correlations between Parent Feedback and Child Motivation for the TD Group

Variable	Talking	Looking	Holding	Passive	Active	Active and Looking
1. Person Positive	-.17	.05	-.11	-.06	.12	.16
2. Process Positive	-.14	-.13	.58***	-.19	.12	.07
3. Process Negative	-.31	-.33	.33	-.21	-.01	-.13
4. Ambiguous Positive	-.38*	-.49**	.09	-.25	.08	-.09
5. Ambiguous Negative	-.32	-.29	.65***	-.13	-.01	-.14
6. Encouragement	-.20	-.21	-.05	-.17	-.05	-.11

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

Table 8

Correlations between Parent Feedback and Child Motivation for the HF Group

Variable	Talking	Looking	Holding	Passive	Active	Active and Looking
1. Person Positive	-.29	.23	.12	-.10	.23	.24
2. Process Positive	-.37	.08	.04	-.23	.04	.04
3. Process Negative	.01	.03	.32	.37	.06	.02
4. Ambiguous Positive	-.17	.42	.52	.29	.37	.36
5. Ambiguous Negative	.06	.29	.15	-.06	.39	.37
6. Encouragement	-.22	.05	-.15	-.03	.08	.07

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

Table 9

Correlations between Parent Feedback and Child Motivation for the LF Group

Variable	Talking	Looking	Holding	Passive	Active	Active and Looking
1. Person Positive	.89***	.27	-.22	-.19	.50	.51
2. Process Positive	-.16	-.26	-.40	-.41	.08	.05
3. Process Negative	-.15	-.03	.08	.94***	-.39	-.38
4. Ambiguous Positive	-.07	-.56	-.19	-.18	-.37	-.40
5. Ambiguous	.87***	.35	-.32	-.29	.51	.52
Negative						
6. Encouragement	.16	-.23	.01	.35	-.02	-.03

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

FEEDBACK AND AUTISM SPECTRUM DISORDER

Table 10

R to z transformations to Examine Differences in the Strengths of Relationships between Parent Feedback and Child Motivation

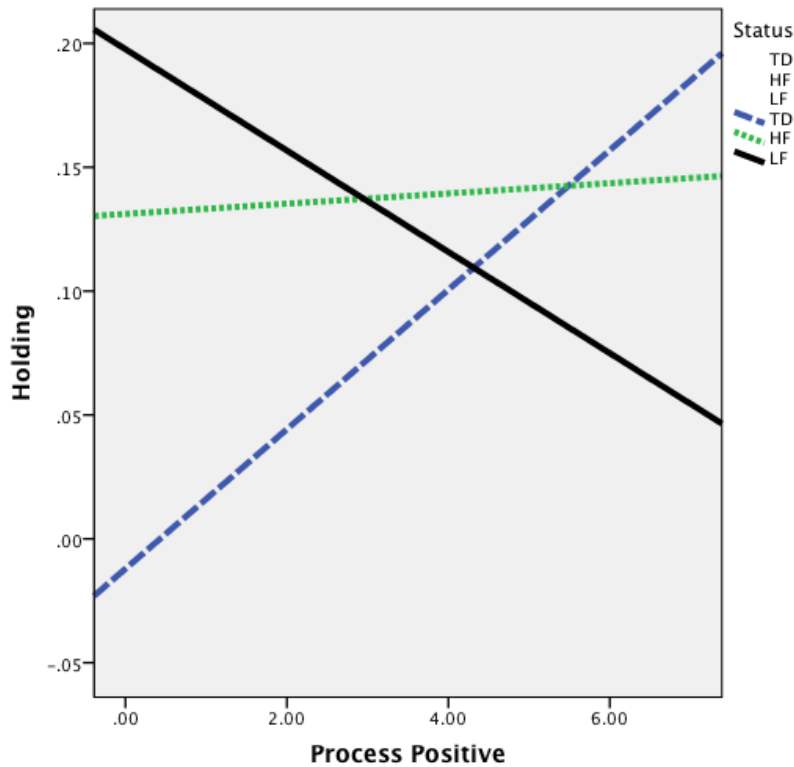
Correlation	<i>z</i>	<i>p</i>
1. Person Positive → Talking about the Puzzle		
TD vs. HF	.32	.37
TD vs. LF	-3.78	.000***
HF vs. LF	-3.32	.001***
1. Process Positive → Holding the Puzzle		
TD vs. HF	1.56	.06
TD vs. LF	2.58	.005**
HF vs. LF	.90	.18
2. Process Negative → Passive Engagement		
TD vs. HF	-1.51	.07
TD vs. LF	-4.63	.000***
HF vs. LF	-2.61	.005**
2. Ambiguous Positive → Talking about the Puzzle		
TD vs. HF	-.57	.28
TD vs. LF	-.78	.22
HF vs. LF	-.20	.42
3. Ambiguous Positive → Looking at the Puzzle		
TD vs. HF	-2.46	.007**
TD vs. LF	.23	.41
HF vs. LF	2.09	.02*
3. Ambiguous Negative → Talking about the Puzzle		
TD vs. HF	-.98	.16
TD vs. TD	-3.95	.000***
HF vs. LF	-2.46	.007**
4. Ambiguous Negative → Holding the Puzzle		
TD vs. HF	1.56	.06
TD vs. LF	2.63	.004**
HF vs. LF	.93	.18

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

For the TD group, there was a significant positive relationship between process positive feedback and the child holding the puzzle, $r = .58, p \leq .001$. However, there was no relationship for the HF group, $r = .04$, or the LF group, $r = -.40$. The relationship between process positive feedback and holding the puzzle was significantly stronger for the TD group compared to the LF group, $z = 2.58, p \leq .01$, and marginally stronger compared to the HF group, $z = 1.56, p = .06$. Moderation analyses revealed that status significantly moderated the relationship between process positive feedback and the child holding the puzzle, $F(2, 47) = 4.22, p \leq .05, \Delta R^2 = .13$. Simple slopes tests revealed that only the slope for the TD group was significant, $b = .03, SE = .01, p \leq .01$, where more process positive feedback was associated with the child holding the puzzle more. The slopes for the other groups were non-significant (See Figure 3).

Figure 3

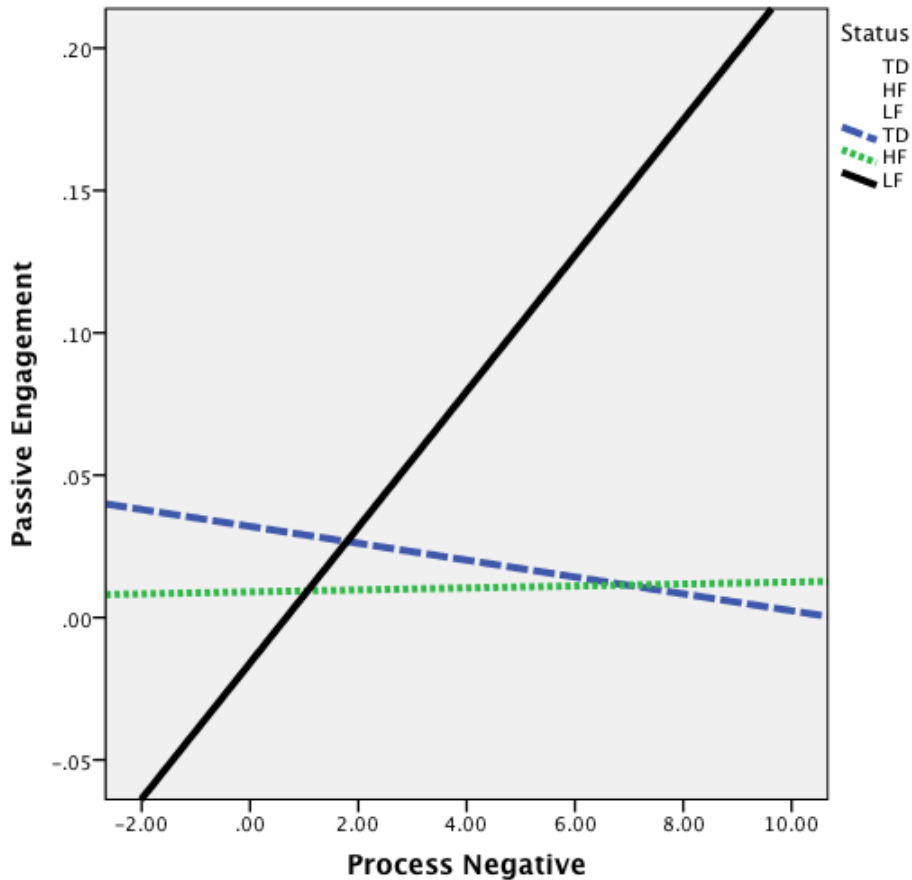
Moderation of the relationship between process positive feedback and holding the puzzle by child status.



For the LF group, controlling for parent education, process negative feedback was positively related to passive engagement, $r = .94, p \leq .001$. There was no significant relationship for the TD group, $r = -.21$, or the HF group, $r = .37$. The relationship between process negative feedback and passive engagement was stronger for the LF group compared to the TD group, $z = 4.63, p \leq .001$, and the HF group, $z = 2.61, p \leq .01$. Moderation analyses revealed that this relationship was moderated by child status, $F(2, 46) = 10.20, p \leq .01, \Delta R^2 = .28$. Simple slopes tests revealed that the slopes for the HF and TD groups were non-significant and only the slope for the LF group was significant, $b = .02, SE = .01, p \leq .001$, where more process negative feedback predicted greater passive engagement (See Figure 4).

Figure 4

Moderation of the relationship between process negative feedback and passive engagement by child status.



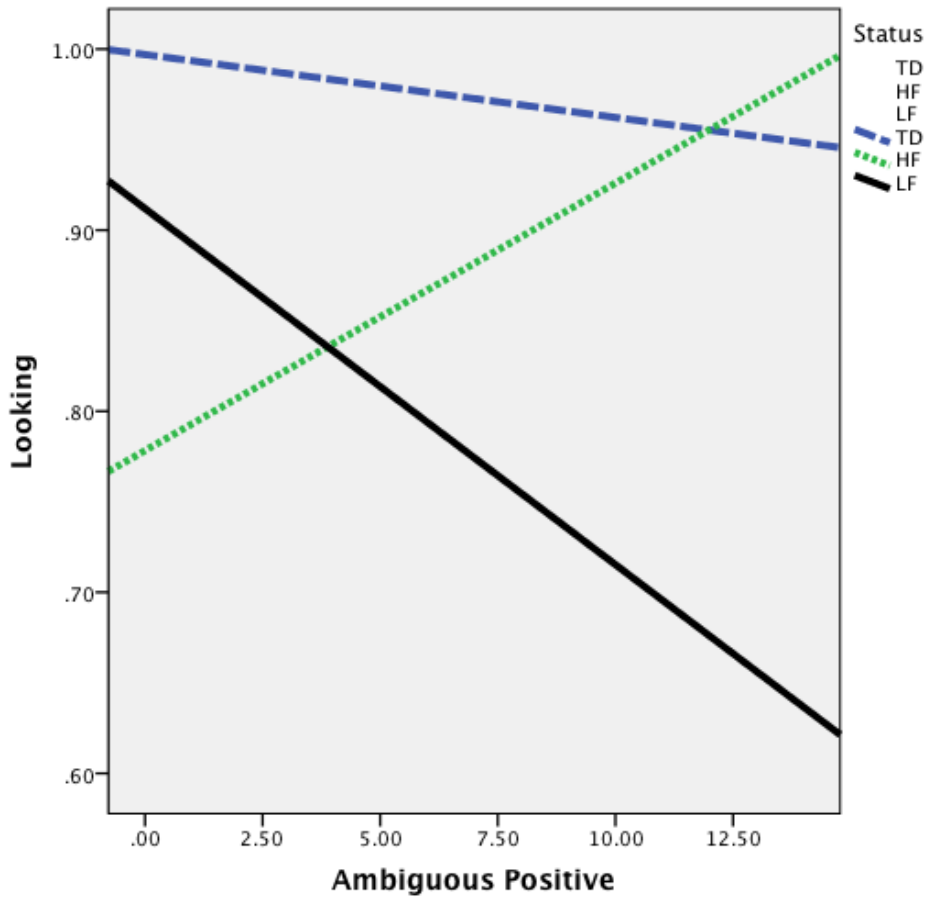
For the TD group, there was a significant, negative relationship between ambiguous positive feedback and talking about the puzzle, $r = -.38, p \leq .05$. There was no relationship for the HF group, $r = -.17$, or the LF group, $r = -.07$. There were no group differences in this relationship. For the TD group, there was also a significant, negative relationship between ambiguous positive feedback and looking at the puzzle, $r = -.49, p \leq .01$. There was no relationship for the HF group, $r = .42$, or the LF group, $r = -.56$. For the relationship between ambiguous positive feedback and looking at the puzzle, it was significantly weaker

FEEDBACK AND AUTISM SPECTRUM DISORDER

for the TD group compared to the HF group, $z = -2.46$ $p \leq .01$, for whom the relationship was stronger compared to the LF group, $z = 2.09$, $p \leq .05$. Moderation analyses revealed that status significantly moderated this relationship, $F(2, 47) = 6.99$, $p \leq .01$, $\Delta R^2 = .18$. Simple slopes tests revealed that the slope for the HF group was significant, $b = .01$, $SE = .01$, $p \leq .05$, where more ambiguous positive feedback was associated to the child looking at the puzzle more. Further, the slope for the LF group was also significant, $b = -.02$, $SE = .01$, $p \leq .01$, where more ambiguous positive feedback was associated with the child looking at the puzzle less. The simple slope was not significant for the TD group (See Figure 5).

Figure 5

Moderation of the relationship between ambiguous positive feedback and looking at the puzzle by child status.

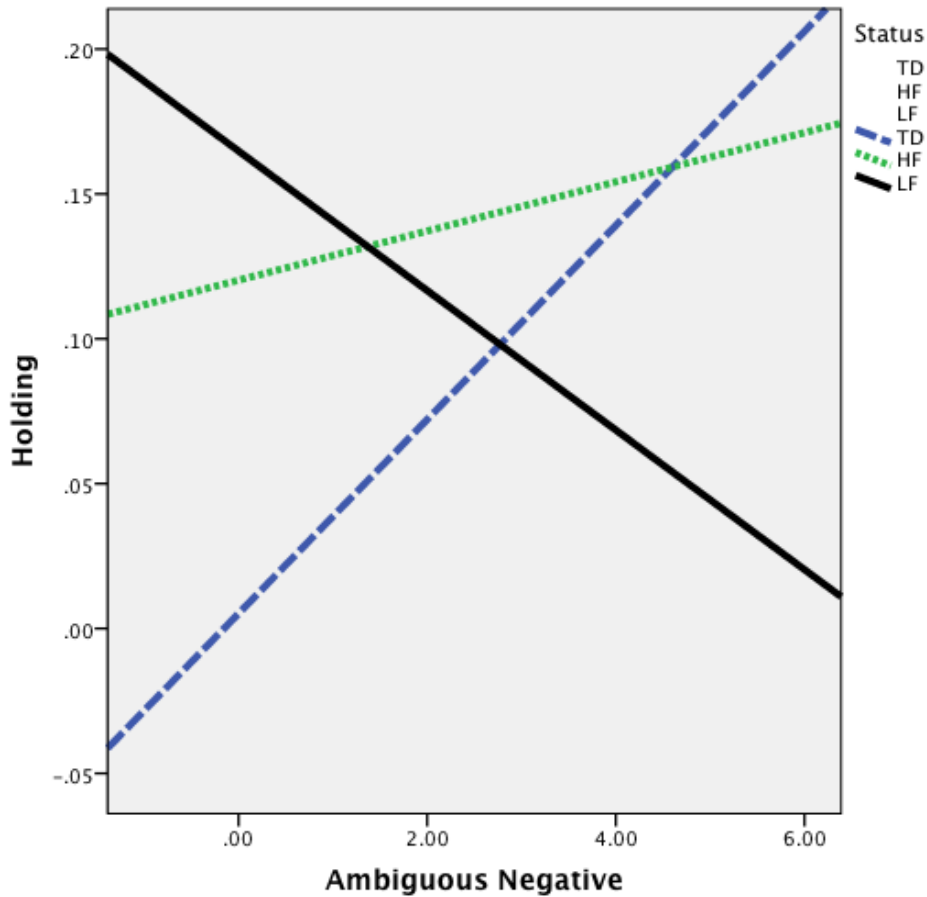


For the LF children, ambiguous negative feedback was positively related to talking about the puzzle, $r = .87, p \leq .001$. There was no relationship for the TD group, $r = -.32$, or the HF group, $r = .06$. The relationship between ambiguous negative feedback and talking about the puzzle was stronger for the LF group compared to the TD group, $z = 3.95, p \leq .001$, and the HF group, $z = 2.46, p \leq .01$. Child status did not significantly moderate this relationship, $F(2, 47) = .91, p = .41$.

Finally, for the TD group, there was a significant, positive relationship between ambiguous negative feedback and holding the puzzle, $r = .65, p \leq .001$. There was no relationship for the HF group, $r = .15$, or the LF group, $r = -.32$. The relationship between ambiguous negative feedback and holding the puzzle was significantly stronger for the TD group compared to the LF group, $z = 2.63, p \leq .01$, and marginally stronger compared to the HF group, $z = 1.56, p = .06$. Child status significantly moderated this relationship, $F(2, 47) = 3.60, p \leq .05, \Delta R^2 = .11$. Simple slopes tests revealed that the only slope that was significant was for the TD group, $b = .03, SE = .01, p \leq .001$, where more ambiguous negative feedback was associated with the child holding the puzzle more. There was not a significant association for the HF and LF groups (See Figure 6).

Figure 6

Moderation of the relationship between ambiguous negative feedback and holding the puzzle by child status.



Discussion

The primary goal of this study was to examine the predictors of parent feedback and the associations between the naturalistic use of parent feedback child motivation in a sample of children with ASD compared to TD children. First, this study found significant group differences for parent depression, child symptom severity, parent encouragement, and several aspects of child motivations. Next, I aimed to identify the parent and child characteristics that contributed to the types of feedback that parents used. I found that greater parent

depressive symptoms predicted less process positive feedback for the parents of TD children but more process positive feedback for the parents of LF children. In addition, elevated levels of child restricted/repetitive behaviors were associated with less process negative feedback for the parents of HF children. Third, this study also examined the effect of different types of parent feedback on child motivation. The study found that more process positive feedback and ambiguous negative feedback was associated with greater proportions of holding the puzzle for the TD children. Further, for the LF children, more process negative feedback was associated with passive engagement. In addition, ambiguous positive feedback was associated with increased looking at the puzzle for TD children and less looking for LF children.

Group Differences in Parent and Child Characteristics and Behaviors

The first goal of this study was to compare maternal depression, child symptom severity, parent feedback types, and child motivation in TD parent-child dyads versus dyads with children with ASD. Consistent with previous research (e.g., Bitsika & Sharpley, 2004) we found that mothers of children with ASD reported higher levels of depression compared to mothers of TD children. Therefore, it appears that the presence of a child with ASD in the home may be contributing to these differences. There is an extensive body of research (e.g., Abbeduto et al., 2004; Ekas & Whitman, 2010; Firth & Dryer, 2013) that suggests that the severity of ASD symptoms contributes to the elevated levels of depressive symptoms found in parents of children with ASD. Interestingly, in this study there were both HF and LF children and the parents of these two groups of children did not differ in their levels of depressive symptoms. This suggests that symptom severity may not be the only factor contributing to the differences between parents of children with ASD and parents of TD

children, because I would have expected the parents of LF children to report the highest levels of depressive symptoms. Therefore, it is possible that other factors related to ASD may be fueling the presence of depressive symptoms in parents of a child with ASD. Some of these include the relationships between behavior problems (McStay, Dissanayake, Scheeren, Koot, & Begeer, 2014), parenting stress (Davis & Carter, 2008), or family functioning (Higgins, Bailey, & Pearce, 2005). However, these were not explicitly explored in this study and, therefore, this may not be the only explanation.

For parent feedback, there were no differences in any of the major types of feedback (person versus process) conceptualized by Kamins and Dweck (1999) based on the child's ASD status. This finding does not support my hypothesis that the amount of feedback provided would differ. It appears that the difficulties associated with raising a child with ASD were not impacting parents' use of feedback. Since parent feedback is one component of sensitive parenting, these results suggest that parents of children with ASD are able to maintain high quality parent-child interactions, despite the challenges they face. Indeed, Baker and colleagues (2010) also found that there were no differences in maternal sensitivity based on whether or not children were later diagnosed with ASD. Interestingly, although parents of children with ASD report elevated levels of depression, their parenting abilities appear to be relatively unaffected, which supports the idea of compartmentalization. That is, parents of children with ASD are able to keep their mental health problems separate from their parenting activities.

This study expanded previous research by measuring an additional form of parent feedback, encouragement, which is provided while the child is performing an action. I found that parents of LF children provided more encouragement compared to parents of TD

children. Some researchers have suggested that providing children with prompts so that they can continue on a task until it is finished could potentially increase motivation (Koegel & Egel, 1979). In addition, the LF children also have an intellectual impairment. Therefore, it is possible that parents of LF children may have to try especially hard to keep their children focused on the task, thus they provide more encouragement.

With respect to child motivation, this study did find diminished motivation in the ASD group as previously established (e.g. Koegel & Egel, 1979), but it was only in the LF group. LF children were talking about the puzzle less, less actively engaged, and had less active engagement and looking compared to the TD and HF children. However, the TD and HF children were performing at a similar level. Because of the way the groups were divided, the low functioning group also met the requirements for an intellectual disability. There has been an established link between intellectually disability and a lack of motivation (Gilmore & Cuskelly, 2011), which may explain the results. Interestingly, the HF children displayed comparable levels of motivation as TD children. Perhaps, in the absence of an intellectual disability, it is possible to display levels of motivation that mirror TD children despite the presence of ASD symptoms. However, further studies need to be conducted to further disentangle the unique contributions of intellectual functioning and ASD to motivational deficits. Further, with regards to talking about the puzzle, lower levels in the LF group were expected due to the fact that there were a high number of nonverbal children within that group. Therefore, in future studies it may be important to only include either HF children or verbal children.

The Relationship between Parent and Child Characteristics and the Use of Feedback

The second goal of this study was to examine the effects of parent and child characteristics on parent feedback. This study found that parent depressive symptoms impacted the use of the process positive feedback. This is a form of parent feedback that has been shown to be particularly beneficial for children's outcomes (e.g. Gunderson et al., 2013). However, the relationship was different for parents of TD children and parents of LF children. For the TD group, parent depression was associated with a lower use of process positive feedback. Therefore, similar to how parent depression affects global ratings of parent sensitivity (Engle & McElwain, 2013), I found that depression is also impacting this specific component of sensitive parenting. However, for the LF parents I found the opposite pattern of association. It is possible that although these parents are providing process positive feedback, they may be doing it in a repetitive, monotonous manner. Unfortunately, this study did not measure the parents' affect while providing feedback. In addition, it is also possible that parents of LF children are very aware of their child's deficits and know that they need to provide feedback. It also provides further support for the idea of compartmentalization that I discussed earlier. Although parents of children with ASD, particularly LF children, show elevated rates of depressive symptoms, they are able to maintain optimal levels of quality parenting behaviors. Longitudinal research is needed to determine the direction of effects and further test the compartmentalization hypothesis.

Consistent with previous research examining the effects of ASD symptom severity on parenting (e.g. Beurkens et al., 2013), I found that ASD symptom severity also impacted the use of parent feedback, consistent with my hypothesis. Child restricted and repetitive behaviors were related to less process negative feedback, and this was significant for the HF

group only. Generally, process negative feedback consists of providing corrections when the child performs an incorrect action. Therefore, the more restricted and repetitive behaviors that HF children display, the less corrections parents provide them. Restricted and repetitive behaviors are behaviors in which the child does the same action repeatedly, says the same phrase repeatedly, or had a marked preference for a particular routine. It is possible that because of restricted/repetitive behaviors the child may be more resistant to correction, which is a form of change. Parents may refrain from using these corrections in order to avoid negative interactions with their child. Further, the child's behaviors may prevent the parent from being able to correct them on the task because they are focused on addressing their child's behavior. Unfortunately, this study did not measure whether the children were engaging in restricted/repetitive behaviors during the task. This would be an important avenue for future research in order to determine whether these behaviors interfere with parent feedback.

The Relationship between Parent Feedback and Child Motivation

The final goal of this study was to examine associations between parent feedback and child motivation. For the TD group, both process positive feedback and ambiguous negative feedback were positively related to holding the puzzle, a form of child motivation. Although process positive feedback has been linked to greater motivation, which is consistent with previous research (Zentall & Morris, 2010), there is little research on ambiguous negative feedback. Further research is needed to examine whether the same parents are using both forms of feedback during the same interaction period. It is possible that the combination of process feedback and negative feedback may work together to encourage increased motivation. Children may need some guidance if they are doing something incorrectly and

FEEDBACK AND AUTISM SPECTRUM DISORDER

ambiguous negative statements are enough to let them gently know they are doing something incorrectly without overtly correcting. However, as soon as they succeed, they also need the positive process statements so that they know that the strategy they implemented to correct their action worked, and they can further use that strategy in other instances of challenge. Future studies should include both positive and negative forms of feedback and examine interactions between types of feedback.

For the HF children, ambiguous positive feedback was related to increased motivation, in the form of looking at the puzzle. This was consistent with new research suggesting that ambiguous statements and gestures are related to more persistence (Morris & Zentall, 2014). However, for the LF children, this type of feedback was related to lower rates of looking at the puzzle. This could be because children with ASD may respond differently to positive feedback (Kasari et al., 1993). Due to the social overtures and social exchange that occurs via positive feedback, children with ASD may respond better to concrete corrections (e.g., process negative feedback) as opposed to more socially linked remarks. Indeed, I found that process negative feedback was related to more passive engagement for the LF children. In ABA practices, one component of behavioral intervention is error correcting (e.g. Kates-McElrath & Axelrod, 2006). These error corrections lead to increases in target behavior in the context of ABA; however, in a naturalistic setting they may lead to increased motivation. Finally, parents may interpret motivation differently for their children with ASD. For example, any action on the puzzle may be viewed as progress to the parents, and they feel more comfortable correcting their child in order to motivate the child to continue trying.

Limitations and Future Directions

Although our findings contribute to the body of research examining motivation in children with ASD, there are several limitations with the present study. First, this study had a small sample size leading to low levels of power to detect relationships. Although we found several significant moderation models, there were many that were marginal and would have benefited from additional children, particularly in the HF and LF groups. Second, the naturalistic frequency of performing different types of parent feedback may have been lower due to the observations used in this study as opposed to experimental manipulation. For example, the parents in this study did not use any person negative feedback and used low levels of person positive feedback. Indeed, I did not find an association between person feedback and motivation (Pomerantz & Kempner, 2013). However, it is a positive finding that there were low levels of person feedback in general, because research has shown this is not beneficial for children (e.g., Kamins & Dweck, 1999). In addition, because of the use of feedback in ABA therapy, it may be possible that parents of children with ASD have extensive experience with therapy that may also impact the relationships between parent feedback and child motivation. Therefore, future studies should measure therapy history and experience. Due to the issue of intellectual functioning, further research should focus on groups that are mental age matched. However, this study did highlight the experiences of LF children and their parents, who are not always included in studies due to the aforementioned reasons. Finally, due to observational coding, it is possible that there may have been bias in the coding of parent feedback and child motivation due to the fact that, for some children, it was rather clear what their diagnosis was after coding started. However, at

least 25% of all cases were coded for reliability and the coding systems were designed to be as objective as possible.

Overall, this study makes an important contribution to our understanding of the predictors of parent feedback and the associations between parent feedback and child motivation in the ASD population. It expanded on previous research to include specific parent and child characteristics as predictors of parent feedback, as opposed to focusing only on broad indicators of parenting. In addition, parent feedback was not only conceptualized as positive, but also included negative statements and encouragement. Finally, this study was the first to examine the naturalistic use of parent feedback, as opposed to experimental or therapeutic, setting in parents of children with ASD. The results of this study can inform the development of intervention programs that can teach parents how to use the appropriate forms of parent feedback during situations in which their child may not be motivated

References

- Abbeduto, L., Seltzer, M.M., Shattuck, P., Krauss, M.W., Orsmond, G., & Murphy, M.M. (2004). Psychological well-being and coping in mothers of youths with autism, down syndrome, or fragile x syndrome. *American Journal on Mental Retardation, 109*(3), 237-254.
- Ainsworth, M.D.S. (1979). Infant-mother attachment. *American Psychologist, 34*(10), 932-937.
- Aldred, C., Green, J., & Adams, C. (2004). A new social communication intervention for children with autism: Pilot randomized controlled treatment study suggesting effectiveness. *Journal of Child Psychology and Psychiatry, 45*(8), 1420-1430. doi: 10.1111/j.1469-7610.2004.00338.x
- American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.
- Baker, J.K., Messinger, D.S., Lyons, K.K., & Grantz, C.J. (2010). A pilot study of maternal sensitivity in the context of emergent autism. *Journal of Autism and Developmental Disorders, 40*, 988-999. doi: 10.1007/s10803-010-0948-4
- Bergstrom, R., Najdowski, A.C., & Tarbox, J. (2012). Teaching children with autism to seek help when lost in public. *Journal of Applied Behavior Analysis, 45*(1), 191-195. doi: 10.1901/jaba.2012.45-191
- Beurkens, N.M., Hobson, J.A., Hobson, R.P. (2013). Autism severity and qualities of parent-child relations. *Journal of Autism and Developmental Disorders, 43*, 168-178. doi: 10.1007/s10803-012-1562-4

- Bitsika, V. & Sharpley, C.F. (2004). Stress, anxiety and depression among parents of children with autism spectrum disorder. *Australian Journal of Guidance and Counseling, 14*(2), 151-161.
- Borre, A. & Kliwer W. (2014). Parental strain, mental health problems, and parenting practices: A longitudinal study. *Personality and Individual Differences, 68*, 93-97.
- Bracken, C. & Lombard, M. (2004). Social presence and children: Praise, intrinsic motivation, and learning with computers. *Journal of Communication, 54*(1). 22-37. doi:10.1111/j.1460-2466.2004.tb02611.x
- Brummelman, E., Thomaes, S., Overbeek, G., Orobio de Castro, B., van den Hout, M.A., & Bushman, B.J. (2014). On feeding those hungry for praise: Person praise backfires in children with low self-esteem. *Journal of Experimental Psychology: General, 143*(1), 9-14. doi: 10.1037/a0031917
- Carlson, C.L. & Tamm, L. (2000). Responsiveness of children with attention deficit-hyperactivity disorder to reward and response cost: Differential impact on performance and motivation. *Journal of Consulting and Clinical Psychology, 68*(1), 73-83. doi: 10.1037//0022-006X.68.1.73
- Center for Disease Control and Prevention (2014). Prevalence of autism spectrum disorder among children aged 8 years: Autism and developmental disabilities monitoring network, 11 sites, United States, 2010. *Morbidity and Mortality Weekly Report, 63*(2), 1-21.
- Cimpian, A., Aree, H.C., Markman, E.M., & Dweck, C.S. (2007). Subtle linguistic cues affect children's motivation. *Psychological Science, 18*(4), 314-316.

Cohn, J.F., Campbell, S.B., Matias, R., & Hopkins, J. (1990). Face-to-face interactions of postpartum depressed and nondepressed mother-infant pairs at 2 months.

Developmental Psychology, 26(1), 15-23.

Corpus, J.H., Ogle, C.M., & Love-Geiger, K.E. (2006). The effects of social-comparison versus mastery praise on children's intrinsic motivation. *Motivation and Emotion,*

30(4), 335-345. doi: 10.1007/s11031-006-9039-4

Cuellar, A.K. & Johnson, S.L. (2009). Depressive symptoms and affective reactivity to maternal praise and criticism. *Journal of Social and Clinical Psychology, 28(9),*

1173-1194.

Davis, N.O. & Carter, A.S. (2008). Parenting stress in mothers and fathers of toddlers with autism spectrum disorders: Associations with child characteristics. *Journal of*

Autism and Developmental Disabilities, 38, 1278-1291. doi: 10.1007/s10803-007-0512-z

Dozier, C.L., Iwata, B.A., Thomason-Sassi, J., Wordsell, A.S., & Wilson, D.M. (2012). A comparison of two pairing procedures to establish praise as a reinforcer. *Journal of*

Applied Behavior Analysis, 45(4), 721-735.

Ekas, N. & Whitman, T.L. (2010). Autism symptom topography and maternal

socioemotional functioning. *American Journal on Intellectual and Developmental Disabilities, 115(3), 234-249. doi: 10.1352/1944-7558-115.3.234*

Elliot, C.D. (2007). *Differential Ability Scales-II*, San Antonio, TX: Pearson.

Engle, J.M. & McElwain, N.L. (2013). Parental depressive symptoms and marital intimacy at 4.5 years: Joint contributions to mother-child and father-child interaction

at 6.5 years. *Developmental Psychology, 49(12), 2225-2235. doi: 10.1037/a0032450*

- Firth, I. & Dryer, R. (2013). The predictors of distress in parents of children with autism spectrum disorder. *Journal of Intellectual and Developmental Disability, 38*(2), 163-171. doi: 10.3109/13668250.2013.773964
- Gilmore, L. & Cuskelly, M. (2011). Observational assessment and maternal reports of motivation in children and adolescents with down syndrome. *American Journal on Intellectual and Developmental Disabilities, 116*(2), 153-164. doi: 10.1352/1944-7558-116.2.153
- Gunderson, E.A., Gripshover, S.J., Romero, C., Dweck, C.S., Goldin-Meadow, S., & Levine, S.C. (2013). Parent praise to 1- to 3-year-olds predicts children's motivational frameworks 5 years later. *Child Development, 84*(5), 1526-154. doi: 10.1111/cdev.12064
- Haven, E.L., Manangan, C.N., Sparrow, J.K., & Wilson, B.J. (2014). The relation of parent-child interaction qualities to social skills in children with and without autism spectrum disorders. *Autism, 18*(3), 292-300.
- Henriksen, N. & Peterson, S. (2013). Behavioral treatment of bedwetting in an adolescent with autism. *Journal of Developmental and Physical Disabilities, 25*, 313-323. doi: 10.1007/s10882-012-9308-y
- Higgins, D.J., Bailey, S.R., & Pearce, J.C. (2005). Factors associated with functioning style and coping strategies of families with a child with an autism spectrum disorder. *Autism, 9*(2), 125-137.
- Kamins, M.L. & Dweck, C.S. (1999). Person versus process praise and criticism: Implications for contingent self-worth and coping. *Developmental Psychology, 35*(3), 835-847.

- Kasari, C. & Sigman, M. (1997). Linking parental perceptions to interactions in young children with autism. *Journal of Autism and Developmental Disorders*, 27(1), 39-57.
- Kasari, C., Sigman, M.D., Baumgartner, P., & Stipek, D.J. (1993). Pride and mastery in children with autism. *Child Psychology and Psychiatry, and Allied Disciplines*, 34(3), 353-362.
- Kates-McElrath, K. & Axelrod, S. (2006). Behavioral intervention for autism: A distinction between two behavior analytic approaches. *The Behavior Analyst Today*, 7(2), 242-252.
- Kelly, F.D. (2002). The effects of locus of control, gender, and grade upon children's preference for praise or encouragement. *The Journal of Individual Psychology*, 58(2), 197-207.
- Koegel, R.L. & Egel, A.L. (1979). Motivating autistic children. *Journal of Abnormal Psychology*, 88(4), 418-426.
- Koestner, R., Zuckerman, M., & Koestner, J. (1989). Attributional focus of praise and children's intrinsic motivation: The moderating role of gender. *Personality and Social Psychology Bulletin*, 15(1), 61-72.
- Lomas, J.E., Fisher, W.W., & Kelley, M.E. (2010). The effects of variable-time delivery of food items and praise on problem behavior reinforced by escape (2010). *Journal of Applied Behavior Analysis*, 43(3), 425-435. doi: 10.1901/jaba.201.43-425
- McGee, G.G., Krantz, P.J., Mason, D., & McClannahan, L.E. (1983). A modified incidental teaching procedure for autistic youth: Acquisition and generalization of receptive object labels. *Journal of Applied Behavior Analysis*, 16(3), 329-338.

FEEDBACK AND AUTISM SPECTRUM DISORDER

McStay, R.L., Dissanayake, C., Scheeren, A., Koot, H.M., & Begeer, S. (2014).

Parenting stress and autism: The role of age, autism severity, quality of life and problem behaviour in children and adolescent with autism. *Autism, 18(5)*, 502-510.

doi: 10.1177/1362361313485163

Morris, B.J. & Zentall, S.R. (2014). High fives motivate: The effects of gestural and

ambiguous verbal praise on motivation. *Frontiers in Psychology, 5*, 1-6. doi:

10.3389/fpsyg.2014.00928

Mueller, C.M. & Dweck, C.S. (1998). Praise for intelligence can undermine children's

motivation and performance. *Journal of Personality and Social Psychology, 75(1)*,

33-52.

NICHD Early Child Care Research Network (1999). Child care and mother-child

interaction in the first 3 years of life. *Developmental Psychology, 35(6)*, 1399-1413.

Owen, D.J., Slep, A.M.S., & Heyman, R.E. (2012). The effect of praise, positive

nonverbal response, reprimand, and negative nonverbal response on child

compliance: A systematic review. *Clinical Child and Family Psychology Review, 15*,

364-385. doi: 10.1007/s10567-012-0120-0

Pomerantz, E.M. & Kempner, S.G. (2013). Mothers' daily person and process praise:

Implications for children's theory of intelligence and motivation. *Developmental*

Psychology, 49(11), 2040-2046. doi: 10.1037/a0031840

Radloff, L.S. (1977). The CES-D scale: A self-report depression scale for research in the

general population. *Applied Psychological Measurement, 1(3)*, 385-401.

Reissland, N. (1994). The socialisation of pride in young children. *International Journal*

of Behavioral Development, 17(3), 541-552.

- Rigsby-Eldredge, M. & McLaughlin, T.F. (1992). The effects of modeling and praise on self-initiated behavior across settings with two adolescent students with autism. *Journal of Developmental and Physical Disabilities, 4*(3), 205-218.
- Rutter, M., Baliey, A., & Lord, C. (2003). *The social communication questionnaire: Manual*: Western Psychological Services.
- Siller, M. & Sigman, M. (2008). Modeling longitudinal change in the language abilities of children with autism: Parent behaviors and child characteristics as predictors of change. *Developmental Psychology, 44*(6), 1691-1704. doi: 10.1037/a0013771
- Smith, L.E., Greenberg, J.S., Seltzer, M.M., & Hong, J. (2008). Symptoms and behavior problems of adolescents and adults with autism: Effects of mother-child relationship quality, warmth, and praise. *American Journal on Mental Retardation, 113*(5), 387-402. doi: 10.1352/2008.113:387-402
- Volkert, V.M., Lerman, D.C., Trosclair, N., Addison, L., & Kodak, T. (2008). An exploratory analysis of task-interspersal procedures while teaching object labels to children with autism. *Journal of Applied Behavior Analysis, 41*(3), 335-350. doi: 10.1901/jaba.2008.41-335
- Wahler, R.G. & Meginnis, K.L. (1997). Strengthening child compliance through positive parenting practices: What works?. *Journal of Clinical Child Psychology, 26*(4), 433-440.
- Wan, M.W., Green, J., Elsabbagh, M., Johnson, M., Charman, T., & Plummer, F. (2012). Parent-infant interaction in infant siblings at risk of autism. *Research in Developmental Disabilities, 33*, 924-932. doi: 10.1016/j.ridd.2011.12.011

FEEDBACK AND AUTISM SPECTRUM DISORDER

Zentall, S.R. (2009). *Early parent-child relationship and type of parental praise and criticism as predictors of toddler motivation on an unsolvable task*. (Unpublished doctoral dissertation). Notre Dame, Indiana.

Zentall, S.R. & Morris, B.J. (2010). “Good job, you’re so smart”: The effects of inconsistency of praise type of young children’s motivation. *Journal of Experimental Child Psychology*, *107*, 155-163. doi: 10.1016/j.jecp.2010.04.015

Zentall, S.R. & Morris, B.J. (2012). A critical eye: Praise directed toward traits increases children’s eye fixations on errors and decreases motivation. *Psychonomic Bulletin and Review*, *19*, 1073-1077. doi: 10.3758/s13423-012-0294-y

VITA

BIOGRAPHICAL DATA

Birthdate: August 17, 2015
Birthplace: Fort Worth, Texas
Citizenship: USA

EDUCATION

Texas Christian University, Fort Worth, TX
B.S. in Psychology
May 2013

AWARDS

STARS Award
STARS Program, Texas Christian University
2013 – 2016

International Meeting for Autism Research
Student Travel Award
2014

Society for Research in Child Development
Student Travel Award
2015

PUBLICATIONS

Ekas, N.V., Keylon, L., Pruitt, M.M., Ghilain, C., & Alessandri, M. (2015). The power of positivity: Predictors of relationship satisfaction for parents of children with autism spectrum disorder.

PRESENTATIONS

Pruitt, M.M., Keylon, L., & Ekas, N. (2014, March). The impact of raising a child with autism on parents' mental health and marital satisfaction. Poster presented at the Society for Research in Human Development Conference, Austin, TX.

Pruitt, M.M., Keylon, L., & Ekas, N. (2014, May). The relationship between child behaviors and parent feedback during a problem-solving task. Poster presented at the International Meeting for Autism Research, Atlanta, GA.

Pruitt, M.M., Timmons, L., & Ekas, N. (2015, March). The impact of parenting stress on the daily parenting experiences of mothers of children with autism spectrum disorder. Poster presented at the Society for Research in Child Development, Philadelphia, PA.

Pruitt, M.M., Timmons, L., & Ekas, N. (2015, March). The relationship between child motivation and parent feedback during a challenging task for children with autism spectrum disorder. Poster presented at the Society for Research in Child Development, Philadelphia, PA.

ABSTRACT

GOOD WORK!: EXAMINING THE USE AND IMPACT OF PARENT FEEDBACK WITHIN THE CONTEXT OF AUTISM

by Megan Michelle Pruitt, B.S., 2013
Department of Psychology
Texas Christian University

Thesis Advisor: Dr. Naomi Ekas, Assistant Professor of Psychology

Sensitive parenting is important for children's development. Parent feedback, a component of sensitive parenting, plays an instrumental role in children's motivation. In certain populations, such as autism spectrum disorder (ASD), motivation is a key issue that could be influenced by parent feedback. However, few studies have examined the presence of the naturalistic use of parent feedback or its impact on motivation for children with ASD. The current study included 53 parents and their child (ages 3-6) who completed a challenging puzzle task to assess which parent and child characteristics predicted parent feedback and how the parent feedback impacted child motivation. I found that parents of children with ASD reported more depressive symptoms and greater child symptom severity. Further, parents of children with ASD used more encouragement and their children showed less motivation. Parent depression and child restricted/repetitive behaviors predicted process feedback. Further, process and ambiguous feedback were both related to motivation.