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# "Speak Up!" An Examination of the Language Abilities of Children Displaying Various Forms of Social Withdrawal and Aggression

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"Speak Up!" An Examination of the Language Abilities of Children Displaying  
Various Forms of Social Withdrawal and Aggression

Brandon Neil Clifford

A thesis submitted to the faculty of  
Brigham Young University  
in partial fulfillment of the requirements for the degree of  
Master of Science

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## ABSTRACT

### "Speak Up!" An Examination of the Language Abilities of Children Displaying Various Forms of Social Withdrawal and Aggression

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Language serves as a mechanism through which children are able to interact and communicate with their others. Thus, when children do not produce language at a typical pace, there may be cause for concern. The primary purpose of the current study was to examine the language abilities of children displaying various forms of social withdrawal and children engaging in subtypes of aggression. Participants came from the Brigham Young University Child Laboratory ( $N = 141$ ;  $Mage = 4.57$ ; 53% female) and were observed and teachers and parents completed reports on children's behaviors and demographics. Results revealed reticent and solitary-passive children to produce less language compared to their non-withdrawn peers and comorbid aggressive children to produce more language compared to their non-aggressive, physically aggressive and relationally aggressive peers. I then discuss contextual and conceptual factors that may play a role in understanding the relation between language production, social withdrawal and aggression.

Keywords: language production, social withdrawal, aggression

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## “Speak up!”: An Examination of the Language Capacities of Children Displaying Various Forms of Social Withdrawal and Aggression

Language is a fundamental facet of human development as it serves as the mechanism by and through which we communicate our knowledge, perceptions, experiences, and needs. Thus, when children experience delays or setbacks in their development of language, there is cause for concern. For example, children lacking in language skills may engage in a more maladaptive strategy when navigating interactions with peers such as social withdrawal (Hart, et al., 2004) or aggression (Estrem, 2005). In fact, research has found language to be associated with both of these maladaptive behaviors. For instance, the lack of language production is one of the most common characteristics of socially withdrawn children (Evans, 2010). Additionally, some children may use aggressive strategies instead of language to respond to their peers (Bonica, et al., 2003; Estrem, 2005). Thus, given that the variance in how language is (or is not) used has been found to be an indicator for maladaptive behaviors in childhood, the purpose of this study is to examine the language differences of subtypes of socially withdrawn and aggressive children.

### **Aspects of Language**

Language development is a key component of children’s socio-emotional competence (Hart, Olsen, Robinson, & Mandelco, 1997). For instance, language is important when entering play groups, resolving conflicts (McConnell & Odom, 1999) and is a precursor to self-regulation skills in preschool (Bohlmann, Maier, & Palacios, 2015). Although these studies highlight the importance of language as a whole, it is unclear whether certain aspects of language are more important than others in predicting positive or negative outcomes in children. Indeed, it is important to note that language is a multi-dimensional construct with several dimensions (e.g., vocabulary, syntax, pragmatics) all being developed simultaneously



albeit at various rates. The early school years in particular are a time during which children are making strides in numerous aspects of language. In fact, it is during this period that they are rapidly acquiring new words (e.g., Houston-Price, Plunkett, & Price, 2005), extending the length of their sentences (e.g., Brown, 1973), and becoming more skilled in how they use language in conversations and other social situations (e.g., Ninio & Snow, 1999).

Children's language production is a commonly measured aspect of children's language development. Researchers have captured this construct in a number of ways including: a count of how many times a child speaks (i.e., utterances), how many unique words a child speaks (i.e., types), how many total words a child speaks (i.e., tokens) and the average length of children's utterances (mean-length-of-utterance). While the latter captures children's syntactic development or syntactic complexity (Brown, 1973), types and tokens are common ways to account for children's semantic or vocabulary development.

In sum, there are a number of ways to account for children's language production. However, there is a need to examine multiple aspect of language production in relation to variables such as social withdrawal and aggression. For example, children lacking in language production may speak less because of a variety of factors. For example, a child experiencing fear or anxiety may be more likely to withdraw from social situations (Hart, et al., 2004). Further, an emotionally dysregulated child may choose a more maladaptive strategy when navigating interactions with peers such as aggression (Bonica et al., 2003). As noted previously, language is uniquely linked to both of these maladaptive behaviors. However, just as there are multiple ways to account for language production, there are also multiple forms of social withdrawal and aggression. Hence, it is important to understand the multiple forms of social withdrawal and aggression in order to begin to understand the ways in which language

production may play a role in the peer interactions of socially withdrawn and aggressive children in early childhood.

### **Social Withdrawal**

Rubin and Asendorpf (1993) defined social withdrawal as the consistent display of *all* forms of solitary behavior when encountering familiar and/or unfamiliar peers across situations and over time. As emphasized, social withdrawal encompasses a wide range of solitary behaviors, which researchers have divided into distinct subtypes with unique links to numerous outcomes (e.g., Coplan, Prakash, & Armer, 1994; Rubin, 1982). Within the broad construct of social withdrawal, researchers have identified different forms of solitary behavior with each one carrying different motivations, origins, correlates, and outcomes. Specifically, during the preschool years (four to five years of age), researchers have identified three types of observed solitary behavior, including reticence (onlooking and unoccupied behaviors), solitary-passive behavior (solitary constructive and exploratory behaviors), and solitary-active behavior (sensorimotor and/or dramatic activity acted out by oneself despite being in social company; Coplan, Rubin, Fox, Calkins, & Stewart, 1994).

**Reticence.** Reticence is defined as frequent onlooking or unoccupied behaviors in both familiar and unfamiliar social settings (Coplan, et al., 1994) and is the behavior that best reflects conflicted shyness (Coplan, Findlay, et al., 2004; Coplan, Prakash, et al., 2004). In other words, reticent, or shy, children have an internal conflict in that they want to interact but are simultaneously fearful of doing so which often results in them watching others play or simply not doing anything. This form of withdrawal has been linked with numerous negative outcomes including peer rejection, negative emotion regulation, internalizing problems and anxious-fearful or hovering behaviors (e.g., Coplan & Rubin, 1998; Hart, DeWolf, & Burts, 1993; Rubin, et al.,

1993; Sette, et al., 2017).

**Solitary-passive withdrawal.** Another form of observed solitary behavior is termed solitary-passive withdrawal, which takes the form of solitary-constructive (e.g., building blocks), solitary-exploratory (e.g., examining a toy) and solitary-functional (e.g., swinging on a swing) activities in the presence of peers (Coplan, et al, 1994; Nelson, Hart, & Evans, 2008). In early childhood, this form of withdrawal is believed to be rather benign as research has largely found solitary-passive behavior to have little to no association with indices of socio-emotional functioning (Coplan, Ooi, Rose-Krasnor, & Nocita, 2014; Coplan, et al., 2004). Further, past research has linked solitary-passive behavior to greater persistence in completing tasks (Coplan & Rubin, 1998), higher attention spans (Coplan, et al., 1994). Additionally, Jennings (1975) suggested that these children’s “preferences for activities with objects provide opportunities for more learning about the physical environment” (p. 516).

**Solitary-active behavior.** Another observed form of social withdrawal in early childhood is solitary-active behavior, generally illustrated by children who frequently engage in solitary-dramatic play (e.g., pretend play) while in the company of peers (Nelson, Hart, & Evans, 2008). There is a large amount of evidence that children who frequently engage in this behavior may be at risk for maladaptive outcomes. For example, past research, has found solitary-active behavior to be linked to impulsivity (Coplan, et al., 1994), social maladjustment (Coplan, Wichmann, & Lagace-Seguin, 2001), emotion dysregulation and maladaptive social information-processing patterns (Harrist, Zaia, Bates, Dodge, & Petit, 1997), peer rejection (Rubin, 1982), and poorer academic achievement (Rubin, et al., 1995). Additionally, Nelson and colleagues (2008) found solitary-active behavior to be linked to aggression, distractibility, venting and peer problems (i.e., victimization and rejection).

Taken together, within the broad construct of social withdrawal, there are a number of subtypes of solitary behaviors. Further, each of these forms of social withdrawal are uniquely linked to their own correlates and outcomes. Though much work has been done to distinguish between these various forms of social withdrawal, little research has examined how different forms of withdrawal may be linked to aspects of language.

### **Aspects of Language and Social Withdrawal**

One of the central questions surrounding social withdrawal and language is whether withdrawn children simply demonstrate or produce less language because they are withdrawn or if they in actuality lack the competence to use language during their interactions with peers, which in turn results in how much language they produce. Conceptually, one would expect differences depending on the reasons for why children engage in nonsocial behaviors.

Unfortunately, with only a few exceptions, most of the work examining the link between language and social withdrawal has not looked at various subtypes of withdrawal. Most of the limited existing work has employed children diagnosed with language impairments (e.g. Brinton & Fujiki, 1999) so there is a need to examine non-clinical populations. Hence, it is important to review the work that has been done examining social withdrawal, generally, but it is important to acknowledge from the outset that most of the work has concentrated on the “shyness” subtype of social withdrawal as there is little work examining subtypes of withdrawal among normative populations of children in early childhood.

Research has found numerous indications of a link between language and shyness (e.g., Coplan & Evans, 2009; Evans, 2010). Indeed, a past review of the literature concluded that the most consistent marker of shyness is that shy children tend to speak less (Evans, 2010). More specifically, research has found shy children to spend less time conversing (Asendorpf &

Meier, 1993), to be more silent in their conversations (Crozier & Badawood, 2009; Daly 1978) and have longer latencies to speak in their conversations (Evans, 1987). Further, Stewart and Rubin (1995) posited that shy children tend to speak less because when their initial communicative attempts fail, they are less likely than their peers to make a second attempt. Thus, this “dynamic interplay” between constructs of language and shyness may result in shy children being at risk in developing their language skills because of the significantly less amount of time they spend practicing language (Cazden, 1972; Evans, 2010; Gleason & Weintraub, 1978; Hoff-Ginsberg, 1991).

In addition to speaking less, there are numerous studies indicating that shy children struggle in other aspects of language as well. Research has found evidence of a link between shyness and receptive language or language comprehension through assessments such as the Peabody Picture Vocabulary Test. For example, research has found shy children to score lower on vocabulary tests in comparison to non-shy children (Lloyd & Howe, 2003; Spere, et al, 2004; Ting, 2008). However, there is also evidence from other studies suggesting no association (Bzdrya, Evans, & Spooner, 2002; Kemple, et al, 1996) and even a positive association (Coplan & Armer, 2005) between shyness and receptive language (e.g., vocabulary, language comprehension). Therefore, it is unclear if and how receptive language is related to shyness.

In addition to speaking less and receptive language, shyness has repeatedly been found to be modestly and negatively associated with language production (Prior, et al., 2008), reinforcing the notion that shy children tend to speak less (Evans, 2010). Further, other studies have found shy children to have less developed syntax when telling narratives during free play (Crozier & Badawood, 2009; Crozier & Perkins, 2002). Although these studies provide evidence of a negative relationship between shyness and aspects of language, others studies

provide another perspective.

In contrast to the above studies, others have found no difference between shy and non-shy children in some aspects of language. For example, Reynolds and Evans (2009) found that when shy children narrated stories in the home with their mothers, their syntax abilities did not differ from non-shy children. Further, Rudasill and colleagues (2006) found a positive association between shyness and syntax development when children played with a researcher.

In sum, shyness has a number of associations with language with the most consistent being that shy children tend to speak less than their peers (Evans, 2010). Further, shyness has been linked both positively (Coplan & Armer, 2005) and negatively (e.g., Spere, et al., 2004) to receptive language with a few studies indicating no association (e.g., Bzdrya, Evans, & Spooner, 2002). Lastly, depending on context, shyness has been negatively (Crozier & Perkins, 2002) and positively (Rudasill, et al., 2006) linked to syntax.

**Limitations.** Taken together, there have been numerous studies indicating links between shyness and language. Despite the important work that has done in this body of research, there are a number of limitations to the existing work. Most notably that these studies have treated shyness as a global construct of social withdrawal when in fact, as discussed previously, there are multiple forms, motivations and types of solitary behavior (e.g., Coplan, Prakash, & Armer, 1994). In other words, relatively fewer studies have examined the relation between language and other forms of social withdrawal.

However, it is important to note the exceptions. Past research has found children demonstrating solitary-passive behavior to interact with their peers less frequently (Harrist, et al, 1997), engage in less conversation with their peers (Asendorpf & Meier, 1993; Rubin, 1982) and be more object-oriented instead of person-oriented (Coplan, et al., 1994). In sum,

precluding these few exceptions, there is little work examining the relation between language and solitary-passive behavior.

Similar to the research concerning solitary-passive behavior and language, there are only a few studies investigating the link between solitary-active behavior and language. In one exception, Lloyd and Howe (2003) compared the associations between reticent, solitary-passive, solitary-active behavior and vocabulary development and found a non-significant difference between solitary-active and solitary-passive behavior, but both of these observed subtypes were significantly different from reticent behavior, which had lower vocabulary scores. Additionally, Rubin (1982) found solitary-active behavior to be negatively associated with the number of conversations with peers and to have less positive interactions when accounting for receptive language. Thus, similar to the research concerning solitary-passive behavior and language, there are few studies establishing links between solitary-active behavior and language.

Taken together, with the exception of just a handful of studies, much of the work regarding social withdrawal and language has investigated shyness, treating it as a global construct instead of accounting for other reasons that children may withdraw from social situations. Thus, this lack of research points to the need to examine the relation between language and other forms of social withdrawal as they may each be uniquely related to aspects of language.

Not only has most of the existing work failed to examine multiple forms of withdrawal, another limitation to this work is that researchers have likewise typically only examined a single aspect of language to account for language as a whole. As previously stated, language is a multi-faceted construct where different aspects may be uniquely related to subtypes of social

withdrawal. Thus, in addition to the few aspects already studied (i.e., receptive language, number of conversations, etc.), there is still much to be learned about other aspects of withdrawn children's language production.

Lastly, a limitation of existing work is that it has failed to give significant attention to the role of context in which children may or may not be displaying language in a normative sample. Indeed, the context in which children are studied may be an important factor to consider when attempting to understand the associations between language development and withdrawn behaviors. For example, existing work has found that shy children were more likely to demonstrate more developed syntax with parents in a home setting (Reynolds & Evans, 2009) or in the lab with a researcher (Rudasill, et al., 2006) compared to a play setting with their peers (Crozier & Badawood, 2009; Crozier & Perkins, 2002; Prior, et al., 2008). This work, albeit limited, seems to suggest that the social milieu may influence the amount of language produced and the aspects of language displayed by withdrawn children. In fact, it stands to reason that, given social withdrawal is largely influenced by the presence of peers, unfamiliar peers in particular, children's solitary behaviors may be more accurately captured in a setting where children have the opportunity to interact with peers rather than at home or with a researcher. Further, much of the previous work capturing language comprehension or vocabulary development utilized tasks to be completed with the researcher (e.g., Peabody Picture Vocabulary Test) requiring little to no interaction between the child and his or her peers. As social withdrawal is fundamentally related to children's peer contexts, these tasks conducted in non-peer settings with adults have little ecological validity to explain how language is actually used by socially withdrawn children in peer contexts. Thus, with the exception of work completed in special populations (e.g. Brinton & Fujiki, 1999), this study is the first to examine both language and social withdrawal observationally in a peer setting,



thereby addressing this gap in the research literature and providing a unique perspective on children's social development.

In sum, numerous studies have linked shyness, a specific type of social withdrawal, to language, yet, we know little about the relation between language production and other forms of withdrawal. Next, past research has investigated some aspects of language production in relation to shyness (e.g., Prior, et al., 2008), yet, there are others that have not been examined. Lastly, previous work has examined either language or social withdrawal in various contexts but no studies have examined both of these constructs in an observational setting as children interacted with their peers. Thus, given the limitations of previous research, the first purpose of the current study is to examine the links between multiple aspects of language production and social withdrawal in a peer context in a normative sample.

### **Aggression**

Unlike some children who withdraw from social situations (Prizant & Meyer, 1993), some children resort to using aggression as a strategy while interacting with peers (Dodge et al., 1986; Guralnick et al., 1996). Aggression is defined as the intent to hurt, harm or injure another person (Dodge, Coie, & Lynam, 2006) and is common in most children by 17 months of age (Tremblay, et al., 2004). Aggression has been linked to a number of maladaptive outcomes in childhood. For instance, numerous studies have found aggression to be linked to delinquency (e.g., Linn, Nochajski, & Wiczorek, 2016), negative social interactions (Ostrov & Crick, 2007), lower self-esteem (Nelson, 2009), and relationship problems (Hoeve, et al., 2015). Thus, aggression, like social withdrawal, is generally found to be linked to negative outcomes in childhood. In addition to this similarity between aggression and social withdrawal, there are also a number of subtypes of

aggression.

**Physical aggression.** Physical aggression is a form of aggression in which children aggress by causing harm or threatening to cause harm via physical force (e.g., punching, pushing, hitting, kicking; Dodge et al., 2006). Children tend to demonstrate the most aggressive behaviors between the ages of 2-5 (Crick, Ostrov, Burr, et al., 2006), with this behavior then declining thereafter (Tremblay, 2000). This form of aggression can be particularly problematic in childhood as it has been linked to a number of maladaptive outcomes such as negative peer relations (Coie, Dodge, Terry, & Wright, 1991), emotion dysregulation (Robertson, Daffern, & Bucks, 2012), externalizing problems (Luster & McAdoo, 1996), and negative academic achievement (Hinshaw, 1992).

**Relational aggression.** Relational aggression is a form of aggression in which the intent of the action is to harm or damage relationships (Crick, Casas, & Mosher, 1997) and can occur in verbal (e.g., “you can’t play with me”) or nonverbal ways (e.g., placing hands on a chair as to prevent a child from sitting by them). This form of aggression has been found in early childhood and, unlike physical aggression, tends to continue as children transition to middle childhood (Crick, Ostrov, & Kawabata, 2007). Further, relationally aggressive children tend to experience depression, loneliness, peer rejection and negative self-perceptions (Crick & Grotpeter, 1995; Grotpeter & Crick, 1996) and are more likely to be victims of relational aggression (Crick, Casas, & Ku, 1999; McNeilly-Choque, Hart, Robinson, Nelson, & Olsen, 1996).

It is also important to note the links between physical and relational aggression. Previous work in early childhood has suggested a strong correlation between children’s physical and relational aggression (Gower, et al., 2014; Nelson, Cramer, Coyne, & Olson, 2017) suggesting that children who frequently engage in one of these behaviors are likely to engage in the other. Some

work has described children who frequently engage in *both* of these harmful behaviors as “comorbid aggression” (e.g., Crick, 1995). Though there is often a high correlation between these two forms of aggression, little work has examined the characteristics and correlates of children who often engage in both of these forms of aggression. Specifically, in addition to the very little we know about comorbid aggression generally, no research has investigated the link between language and comorbid aggression.

### **Aspects of Language and Aggression**

The relation between language and aggression has received some attention in existing literature. In fact, unlike most of the work examining links between language and social withdrawal, research has examined subtypes of aggression when examining language. However, there are still a number of limitations to the extant literature. I will now review the existing work and then point out the weaknesses and limitations present in the research examining language and aggression.

**Physical aggression.** There have been numerous studies providing evidence of links between language and aggression. Indeed, research has generally found physical aggression to be negatively associated with language ability (Adams, Snowling, Hennesy, & Kind, 1999; Arnold, 1997; Stevenson, Richman & Graham, 1985). Specifically, Estrem (2005) found both receptive (i.e., language comprehension) and expressive language (i.e., language production) to be negatively associated with physical aggression. Further, longitudinal studies have linked lower language abilities to higher levels of aggression over time (Ayduk, Rodriguez, Mischel, Shoda, & Wright, 2006; Park, et al, 2005).

In explaining this negative association between language and physical aggression, researchers have posited that children who have problems expressing themselves (Guralnick et

al., 1996; Prizant & Meyer, 1993) tend to become frustrated and either cease their communicative interactions (Black & Hazen, 1990) or act out aggressively, thereby compromising the number and quality of their future interactions with their peers. Further, children who have difficulty understanding or comprehending others (i.e., receptive language) may have difficulty identifying and interpreting social cues (Canfield & Saudino, 2016; Dodge, Pettit, McClaskey, & Brown, 1986) which may lead to fewer appropriate responses to their peers such as physical aggression.

**Relational aggression.** In contrast to physical aggression's more straightforward relationship to language, relational aggression presents a more complex picture. The intricacy of the relation between language and relational aggression may be because of the necessity of language in order to aggress relationally in verbal ways (e.g., "you can't play with me"). Indeed, in contrast to the negative relations between language and physical aggression, studies have revealed conflicting findings in regard to aspects of language and relational aggression. For example, some studies (Bonica, et al., 2003; Crick, Werner, et al., 1999) have found relational aggression to be positively related to expressive vocabulary, receptive vocabulary and expressive language. Conversely, Estrem and colleagues (2005) found relational aggression to be negatively associated with receptive and expressive language abilities. Lastly, another study (Park, et al., 2005) found children's receptive language abilities to negatively predict future relational aggression in middle childhood with the opposite being true for expressive language abilities. Taken together, the studies investigating the link between relational aggression and language development present varied results concerning this complex phenomenon.

**Limitations.** Though much of the past research has done well to investigate various forms of aggression (i.e., physical and relational) and investigated a number of aspects of

language, there is still much to be learned about the relation between aspects of language production and physical and relational aggression. First, existing work has examined a limited number of aspects of language production in relation to aggression; thus, there is still a need to explore other aspects of language production in this relation. Second, much of the work has been conducted in non-peer settings (e.g., Estrem, et al., 2005). As a result, it would be beneficial to capture these constructs (e.g., language and aggression) in a peer context thereby allowing us to compare the findings with previous work. For example, past research has examined the link between aggression and expressive language, however, no previous work has accounted for both language and aggression in a peer setting. Third, no previous work has specifically examined language and its relation to comorbid aggression. Thus, the second purpose of the current study was to examine the links between multiple aspects of language production and aggression (physical, relational, comorbid) in a peer context.

### **The Current Study**

As children interact and communicate with their peers, there are a number of possible behaviors with some being more maladaptive than others. Social withdrawal and aggression are among the maladaptive behaviors that have been linked to numerous negative outcomes in early childhood. Given that language has been linked to both social withdrawal and aggression in children (e.g., Coplan & Armer, 2005; Estrem, 2005), the current study aimed to investigate how social withdrawal (i.e., reticence, solitary-passive behavior, solitary-active behavior) and aggressive behaviors (i.e., physical, relational, comorbid) relate to aspects of language production and whether children who often participate in these behaviors differ from their peers in regard to aspects of language production including how many times (i.e., utterances) children speak in a given context, how many unique words children produce (i.e., types), and how many

total words (i.e. tokens) children produce.

Thus, the first purpose of the current study was to a) examine the relations between reticent, solitary-passive and solitary-active behaviors and aspects of language production (i.e., utterances, types, tokens) and b) investigate how children exhibiting non-withdrawn and withdrawn behaviors (i.e., reticence, solitary-passive, solitary-active) differed from each other in regard to the number of utterances produced, types produced and tokens produced. First, I expected that the reticent group would struggle the most in regard to language (i.e., utterances, types, tokens) largely because of their fear in social situations which would keep them from producing language (Coplan & Weeks, 2009; Evans, 2008). The second hypothesis was that the solitary-passive group would be similar to the non-withdrawn comparison group (Lloyd & Howe, 2003) in how many types they produced but be similar to the reticent group in regard to the amount of utterances and tokens produced. As discussed, solitary-passive children tend to prefer solitude (Coplan, Prakash, & Armer, 1994) so these children may speak less compared to their non-withdrawn peers. However, given the findings regarding their higher attention spans (Coplan, et al., 1994), greater persistence (Coplan & Rubin, 1998), similar socio-cognitive abilities to non-withdrawn peers (Harrist, et al., 1997) and time learning about their physical environment (Jennings, 1975), I expected that they would produce more types compared to reticent children. Third, I hypothesized that the solitary-active group would score lower than the comparison non-withdrawn group in regard to the number of types produced, but score similar to their non-withdrawn peers in regard to number of utterances and tokens produced due to their impulsivity (Harrist, Zaia, Bates, Dodge, & Petit, 1997). In other words, I expected these children to produce the same amount of language as their non-withdrawn peers, but because of their impulsivity and lower academic achievement (Rubin, et al., 1995), I expected

their utterances to be less diverse.

The second purpose of the current study was to a) examine the relations between physically and relationally aggressive behavior, respectively, and aspects of language production and b) to investigate how children exhibiting non-aggressive and aggressive behaviors differed in regard to utterances, types, and tokens produced. First, I expected the physically aggressive children to struggle with their language, producing less language than non-aggressive children because a) previous research has generally found a negative association between language and physical aggression (e.g., Estrem, 2005) and b) physically aggressive children have been found to act out in frustration (e.g., Black & Hazen, 1990) partly because of their inability to communicate effectively with others. Second, I expected relationally aggressive children would excel in their language compared to non-aggressive children because many of the behaviors used to enact relational aggression necessitate not only having the language skills, but also the ability to strategically produce language in aggressive ways. Third, I expected children who frequently participated in both physical and relational aggression (i.e., comorbid children) to produce similar amounts of language in relation to non-aggressive children. In other words, I expected no difference between comorbid aggressive children and non-aggressive children in regard to their language abilities because though they may need language to aggress in relational ways, their frequent participation in physical aggression would reduce the amount of time these children spend speaking.

## **Method**

### **Participants and Procedure**

Participants were recruited from the Brigham Young University Child Laboratory where children regularly attended. Children were not screened for disorders or impairments upon

enrolling in the preschool or kindergarten. Data collection occurred during two visits to the Child Lab. Parental consent was obtained for all children in the sample ( $N = 141$ ;  $Mage = 4.57$ ; 53% female) and parents were asked to complete questionnaires regarding demographic information. Four same-sex unfamiliar peers were placed into groups, introduced into a small playroom with age-appropriate toys, and observed in a laboratory setting during unstructured free play for two 15-minute unstructured play sessions separated by a 15-minute structured play session. The free play sessions were video recorded and the children's play behaviors were coded using Rubin's (2001) Play Observation Scale (POS). The frequency of children's play behaviors were coded by trained research assistants for each second that the child participated in a specific behavior.

Children's language was transcribed from the same video-recordings and coded by trained research assistants (all reliability estimates were above  $\alpha = .90$ ) to create the language variables. These transcriptions were then converted into .txt files and the number of utterances (how many times children spoke), types (i.e., how many unique words children produced), and tokens (i.e., how many total words children produced) were scored using a script/code in the software Python 27. Although the language variables (and withdrawal variables) were assessed observationally, aggression was not. Because of the very few instances in which children engaged in aggressive behaviors during the video-recorded free-play sessions, teacher reports of aggression were employed to create the aggression variables.

## Measures

**Utterances.** Following conventional guidelines for utterance division (Brinton & Fujiki, 1984), the number of utterances produced was computed by counting the number of times a child spoke or how many utterances they produced during the play sessions. The script/code used Python to count the total number of utterances present in each child's transcription ( $M = 60.88$ ;



$SD = 37.64$ ).

**Types and tokens.** Types and tokens scores were computed by counting the total number of unique words ( $M = 107.71$ ;  $SD = 54.79$ ) and then separately counting total number of words ( $M = 290.55$ ;  $SD = 191.63$ ). For instance, each word produced by the child would add to the count of total number of words, but this same word would not add to the total count of unique words unless it had never been produced by the child previously (Biber, Conrad, & Leech, 2002).

**Social withdrawal.** Children's socially withdrawn behaviors (i.e., reticence, solitary-passive, solitary-active) were coded using the POS. Trained research assistants achieved and maintained reliability coding the POS with the lowest inter-rater reliability rating between coders being  $\alpha = .80$ . First, *reticent* behavior was coded when children participated in onlooking, hovering (e.g., watching other children play without joining in), or unoccupied behavior (e.g., appears to be do nothing). Second, *solitary-passive behavior* was coded when children participated in solitary-constructive (e.g., building blocks), solitary-exploratory (e.g., examining a toy), and solitary-functional (e.g., swinging their arms) behaviors. Finally, *solitary-active behavior* was coded when children participated in solitary-dramatic play (e.g., make believe play by oneself).

To examine language differences between reticent, solitary-passive and solitary-active children, groups were formed by employing the following criteria (Coplan & Weeks, 2010; Nelson, 2013).

Children who scored one standard deviation above the mean in reticence formed the reticent group ( $n = 8$ ). Children who scored one standard deviation above the mean in solitary-passive behavior comprised the solitary-passive group ( $n = 17$ ). Children who scored one standard deviation above the mean in solitary-active behavior formed the solitary-active group ( $n = 4$ ). For children who did not score one standard deviation above the mean any of three forms of withdrawal, these children formed the comparison non-withdrawn group ( $n = 104$ ). Finally,

children who scored one standard deviation above the mean in two or all of the forms of withdrawal, these children were placed in the unclassified-withdrawal group ( $n = 1$ ).

**Aggression.** Children's physical and relational aggression behaviors, respectively, were measured using select items from the 50-item teacher report version of the Child Behavior Questionnaire. Teachers were asked to select how much an item applies or does not apply to their child on a 5-point scale. Physical (eight items, e.g., "Kicks, bites, or hits other children";  $\alpha = .94$ ) and relational aggression (seven items, e.g., "Says 'you can't play with me'";  $\alpha = .94$ ) items were respectively combined to create a mean score. Similar to the criteria utilized to create the social withdrawal groups, children scoring exclusively one standard deviation above the mean in physical aggression comprised of the physically aggressive group ( $n = 5$ ). Children who scored one standard deviation above the mean in relational aggression comprised of the relationally aggressive group ( $n = 14$ ). Next, children who scored one standard deviation above the mean in both types of aggression formed the comorbid-aggressive group ( $n = 15$ ). Finally, children who did not score one standard deviation above the mean in either physical or relational aggression comprised the comparison non-aggressive group ( $n = 107$ ).

### **Control Variables**

A number of control variables were included in the study given their presence in previous work and given their potential impact conceptually on the analyses. Age was included in my analyses to account for any language variation that may be due to development. Next, gender was included in my analyses to account for differences between boys and girls given that some work has suggested that girls develop language faster than boys. Lastly, socioeconomic status (SES) was accounted for by including family income and maternal education as controls in the analyses given the large body of work indicating language development differs between children in

different categories of SES. See Table 1 for descriptive statistics of all study variables.

## Results

### Analysis Plan

To test the hypotheses, I first utilized correlational analyses to examine the relations between the variables. According to the criteria described previously and upon examining the frequencies of children in each group of social withdrawal and aggression, I concluded that there were not enough children comprising the solitary-active ( $n = 4$ ) and unclassified-withdrawn ( $n = 1$ ) groups to obtain estimates. Therefore, I proceeded with the analyses retaining the non-withdrawn ( $n = 104$ ), reticent ( $n = 8$ ) and solitary-passive ( $n = 17$ ) groups for the social withdrawal regressions, and the non-aggressive ( $n = 107$ ), physical ( $n = 5$ ), relational ( $n = 14$ ) and comorbid-aggression ( $n = 15$ ) groups for the aggression regressions. See Table 2 for group sizes and proportions of each social withdrawal and aggression group. However, because multiple regression requires the presence of data for each variable entered into the model (e.g., withdrawal group, controls variables, dependent variable), my sample sizes were reduced from the sample used in my correlational analyses as some data was missing from children's control variables (i.e., age, family income, maternal education, gender). Next, upon creating the groups for my person-centered approach, I utilized multiple regression models to examine differences in language among subtypes of social withdrawal and aggression. My rationale for using multiple regression stems from it being more robust to assumptions such as equality of covariance matrices (i.e., estimates) and equality of variance (i.e., standard errors) amongst the groups compared to group-comparison analyses (e.g., ANOVA). Given the nature of the data (i.e., language variables having different scoring systems and unequal standard deviations; see descriptive statistics in Table 1), regression analyses offer a better option to address my research

questions, especially, given its ability to compare groups through multinomial variables (i.e., comparing the results of the regression equation between other groups and the reference group simultaneously).

### **Correlational Analyses**

Correlational analyses revealed numerous associations among the dependent, independent and control variables. Notably, reticence was negatively associated with number of utterances ( $r = -.38; p < .001$ ), types ( $r = -.42; p < .001$ ) and tokens produced ( $r = -.38; p < .001$ ). Solitary-passive behavior was likewise negatively associated with number of utterances ( $r = -.31; p < .001$ ), types ( $r = -.37; p < .001$ ) and tokens produced ( $r = -.36; p < .001$ ). Next, solitary-active behavior was positively associated with family income ( $r = .11; p < .05$ ) and had no significant associations with the language variables. Additionally, results revealed physical aggression to be positively associated with relational aggression ( $r = .79; p < .001$ ) and no associations between the aggression and language variables. Lastly, it should be noted that each of the language variables were highly correlated with each other (e.g.,  $r = .89; p < .001$ ), however, because these measures of language production are conceptually different from each other, as demonstrated in previous work (e.g. Evans, 2010), I kept them separate in the analyses. Further, it should be noted that four children did not produce any language at all in the play sessions. Full results of the correlational analyses and descriptive statistics can be found in Table 1.

### **Regression Analyses**

The regression analyses were completed in two steps. To examine the language differences among the withdrawn and aggressive groups, I utilized STATA's "i." command. This command permits the user to examine differences between categories or groups of multinomial variables as categorical predictors alongside other variables in a regression model. Thus, in my

first step, to examine language production differences between children who demonstrated various forms of social withdrawal, I performed three separate regressions, one for each language production variable (i.e., utterances, types, tokens) as the dependent variable. In addition to the control variables, I then entered the multinomial social withdrawal group variable into the model with the non-withdrawn group as the comparison or reference group (see Table 2 for social withdrawal groups).

For the regression analysis employing utterances as the dependent variable, results revealed that, both solitary-passive ( $B = -40.96; p < .001$ ) and reticent children ( $B = -50.63; p < .001$ ) produced fewer utterances than the non-withdrawn children. As an example to aid in interpretation, the coefficient for solitary-passive behavior indicates that accounting for the other variables in the model (i.e., child age, gender, family income, maternal education) solitary-passive children speak at least 40.96 fewer utterances compared to non-withdrawn children. Similarly, for the regression analysis employing types as the dependent variable, results revealed that both solitary-passive ( $B = -63.41; p < .001$ ), and reticent ( $B = -79.62; p < .001$ ) children produced fewer types compared to non-withdrawn children. Lastly, for the regression analysis employing tokens as the dependent variable, results revealed that solitary-passive ( $B = -208.15; p < .001$ ), and reticent ( $B = -251.90; p < .001$ ) children produced fewer tokens compared to non-withdrawn children. See Table 3 for complete regression results for social withdrawal subtypes and language production. In the second step of analysis, subsequent F tests were then performed to examine whether the coefficients for the solitary-passive and reticent children differed from each other for each of the three language production variables. Results revealed that although the solitary-passive and reticent groups did differ from the comparison non-withdrawn group on all of the language variables, they did not differ from each other.

We used this same process to examine language production differences between various forms of aggression. First, I conducted three separate regression analyses, one for each language production variable (i.e., utterances, types, tokens) as the dependent variable. In addition to the control variables, I then entered the multinomial aggression group variable into the model with the non-aggressive group as the comparison or reference group (see Table 2 for aggression groups).

In regard to aggression, results revealed a number of differences among the non-aggressive and comorbid aggressive children in regard to language production. For the regression analysis employing types as the dependent variable, results revealed that comorbid aggressive children produced more types ( $B = 38.35; p < .05$ ) than non-aggressive children. Further, for the regression analysis employing tokens as the dependent variable, results revealed that the comorbid aggressive children produced more tokens ( $B = 98.54; p < .10$ ) than non-aggressive children. See Table 4 for complete regression results for aggression subtypes and language production. In the second step of the analysis for aggression, I used F tests to examine if the coefficients for physically aggressive, relationally aggressive and the comorbid-aggressive children differed from each other. When examining differences in utterances between subtypes of aggression, results revealed physically aggressive children to produce fewer utterances compared to the comorbid aggressive children ( $B = -39.51; p < .10$ ). When examining differences in types between subtypes of aggression, results revealed the comorbid aggressive children to produce more types compared to physically aggressive ( $B = -73.03; p < .05$ ), and relationally aggressive children ( $B = -43.45; p < .10$ ). Lastly, when examining differences in tokens between subtypes of aggression, results revealed the comorbid aggressive children to produce more tokens in relation to physically aggressive ( $B = -220.37; p < .05$ ), and relationally aggressive children ( $B = -141.80; p < .10$ ).

**Post-hoc analyses.** Because I found no differences between physically aggressive,

relationally aggressive, and non-aggressive children in regard to their language production, it was determined that additional analyses might help to explore possible reasons why. As a reminder, previous work has consistently suggested a negative association between language and physical aggression and mixed findings for language and relational aggression. However, to our knowledge, previous work has not distinguished between verbal and non-verbal relational aggression when examining language. Given the conceptual link (i.e., both often necessitate speaking) between verbal relational aggression and language, it may be important to examine these subtypes specifically. Thus, I decided to investigate if this would have an impact on children's language production. Therefore, to examine whether verbal and non-verbal relational aggression have unique relations with any of the three aspects of language production (i.e., utterances, types, and tokens), I separated relational aggression into verbal (5 items; e.g., "Calls other peers names just to be mean") and non-verbal (2 items; e.g., "Walks away or turns his/her back when he/she is mad at another peer") subtypes. Upon creating these variables, I entered both of these forms of relational aggression (i.e., verbal and non-verbal) into three separate regression models with each having a different aspect of language production as the dependent variable (i.e., utterances, types, and tokens). Thus, in addition to the other control variables (i.e., child age, gender, maternal education, family income), each verbal and non-verbal relational aggression controlled for each other in each regression. Results revealed verbal relational aggression to positively predict the number of types ( $b = 22.94.72; p < .05$ ) and tokens produced ( $b = 70.86; p < .05$ ). Additionally, non-verbal relational aggression negatively predicted the number of tokens produced ( $b = -47.54; p < .06$ ). These results provide evidence that verbal relational aggression is positively associated with language production, while non-verbal relational aggression is negatively associated with language production.

### Discussion

The purposes of the current study were to a) examine the relations between three forms of observed language production and subtypes of social withdrawal and aggression, respectively, and b) examine language production differences among children who demonstrate subtypes of these behaviors. The results indicate that reticence and solitary-passive behavior are not only negatively linked to the number of utterances, types, and tokens produced, but also that children who commonly demonstrate these solitary behaviors speak considerably less than their non-withdrawn peers after accounting for age, gender, and socioeconomic status. Indeed, in line with the hypotheses, the results suggest that both solitary-passive and reticent children produce less language than non-withdrawn children according to the three indicators of language production. However, in contrast to the hypotheses, the findings suggest that solitary-passive and reticent children do not differ from each other in regard to their production of types, or in other words, the diversity of the words they use.

Next, the results indicate a number of differences between non-aggressive and aggressive children. Contrary to hypotheses, I did not detect differences in language production between non-aggressive, physically aggressive, and relationally aggressive children. Additionally, results revealed that the comorbid-aggressive children (i.e., participants who scored high in both physical and relational aggression) produced more utterances than physically aggressive children. Furthermore, results revealed that the comorbid-aggressive children produced more types and tokens than non-aggressive, physically aggressive, and relationally aggressive children, respectively.

Taken together, the results of the study contribute to our understanding of the role of language in the lives of withdrawn and aggressive children in early childhood in peer contexts.



Furthermore, the current study provides a unique perspective to our understanding of the relations between children's language, and socially withdrawn, and aggressive behaviors, respectively, given the use of observational methods to capture the way in which withdrawn and aggressive children use (or do not use) language in a peer context.

### **Social Withdrawal**

**Reticence.** The findings from the current study offer several novel contributions to the language and social withdrawal literature. First, the findings provide further evidence of the lack of social interaction among shy, reticent children (Evans, 2010). Specifically, results revealed that reticent children did not produce as many utterances, types, and tokens as non-withdrawn children. These findings are unique because of the number of aspects of language production (i.e., utterances, types, tokens) that were studied. The current study not only replicates the findings of past work (i.e., reticent children tend to generally speak less than their peers; e.g., Evans, 2010), but also offers a more specific treatment of aspects of language production (i.e., utterances, types, tokens). Thus, the current study extends the findings of previous work by examining how subtypes of social within children differ in regard to numerous aspects of language production.

These findings are particularly novel because of the methods and context employed in the study. Specifically, it is the first study conducted with a non-specialized sample in early childhood to employ observational methods in a peer context to account for both withdrawal and language. These methodological differences (i.e., observations, peer setting) are especially important when examining language and shyness because of how interrelated (Evans, 2010) they are in children's interactions with peers and because it is nearly impossible to capture children's natural interactions with peers from a formal assessment with a researcher or adult. Thus, the

findings of the current study significantly contribute to the research literature because much of the previous work has examined these constructs using either formal assessments or ratings of language and parent or teacher reports of shyness instead of using observational methods for assessing both while children are in a peer setting. For example, past research examining more global constructs of shyness have found associations between shyness and receptive language (Coplan & Armer, 2005), expressive language (Prior, et al., 2008), and vocabulary (Spere, et al, 2004) using structured language assessments by adults or researchers in a lab or classroom. Further, as noted in the introduction, few studies have examined observed forms of withdrawal such as reticence in relation to language (see Lloyd & Howe, 2003 and Rubin, 1982 for exceptions). Additionally, given that there is some evidence that context may play an important role in children's language abilities and withdrawn behaviors (e.g., Crozier & Badawood, 2009; Reynolds & Evans, 2009) children may demonstrate language or behave differently in a peer context versus a non-peer context (e.g., laboratory or office setting with teacher or researcher). Particularly in the context of peers, reticent children may especially struggle to produce language at least in part because of the fear and anxiety they experience when around their peers (Asendorpf, 1993; Coplan, et al., 1994) thus, making observational methods even more necessary to better understand the link between language and shyness. Indeed, evidence shows that instead of interacting with their peers through language, these children frequently end up anxiously watching others play without joining in (e.g., Coplan, et al., 1994). In fact, in the present study, out of all the children that I observed in the sample, four reticent children failed to produce *any* language during the two 15-minute unstructured play sessions. These children not only exemplify the debilitating impact that a child's fear and anxiety can have on their interactions with peers, but capturing the actual behaviors (language and withdrawn behaviors) of these

children would have been much more difficult during an assessment or while interacting with a parent or researcher.

Hence, by assessing observed forms of withdrawn subtypes *and* language observationally in a peer context, this study makes a significant contribution to our understanding of the challenges facing reticent children who, in some cases, failed to produce even one utterance over the span of two 15-minute unstructured play sessions. Accordingly, by building on work that has found a link between reticence and language difficulties (e.g., Lloyd & Howe, 2003; Rubin, 1982), but in a context with more ecological validity (i.e., assessing both reticence and language in the context of peers rather than via parent or teacher reports), we begin to have a better understanding of just how much the social milieu may affect reticent children's abilities to produce language.

**Solitary-passive.** Second, by examining observationally the language production of solitary-passive children, the results provide an important contribution to our understanding of solitary-passive children's language production in the presence of peers. Specifically, results found that solitary-passive children produced fewer utterances, types, and tokens compared to non-withdrawn children and although it was hypothesized that they would produce less language overall because they tend to play by themselves (Coplan & Weeks, 2010), results revealed that they did not produce as many unique words (types) as non-withdrawn children when they did speak.

These findings give us reason to pause because the extant work examining solitary-passive behavior suggests that it is a rather benign form of withdrawal (e.g., Coplan & Weeks, 2010; Rubin, 1982) even in areas of language development (e.g., Lloyd & Howe, 2003). For example, researchers have not generally been concerned about solitary-passive children,

believing that because they are not held back by fear, like their reticence peers, that they would generally be able to produce language as needed (Crozier & Perkins, 2002; Rubin, 1982). However, by assessing language observationally in a peer setting rather than via tests or assessments administered in a classroom or laboratory setting by adults when they may be more compelled to produce language (Lloyd & Howe, 2003), the current study was able to examine how the peer setting may impact both language production and withdrawn behaviors. In observing just how little solitary-passive children speak in a peer setting compared to their non-withdrawn peers, it raises concern about the reduced opportunities of solitary-passive children to converse, interact, and/or speak with peers, which might take a toll over time (Evans, 1996). Indeed, even if solitary-passive children are not afraid, choosing to play by themselves may be problematic for their language production and subsequent development because they do not get to develop skills by actually speaking with peers. This may help provide an avenue of exploration into why previous conceptual (Rubin & Asendorpf, 1993) and empirical work (Coplan & Weeks, 2010) has suggested that children demonstrating solitary-passive behavior in early childhood may experience negative outcomes in middle childhood. Again, it may be that the lack of practice conversing with others, even if not caused by fear, may begin to hinder the development of language skills, which may lead to subsequent problems with peers over time (Coplan, et al., 2007; Nelson, et al., 2005; Rubin, Hymel, & Mills, 1989).

Taken together, the current study offers two main contributions to the language and social withdrawal literature. The findings from the current study replicated previous work linking language to subtypes of social withdrawal (e.g. Lloyd & Howe, 2003), but in an observational peer setting. Next, the current study provides evidence that there may be reason to worry for both reticent and solitary-passive children concerning their language production and subsequent

development.

### **Aggression**

The findings of the current study also provide novel contributions to the research literature regarding language and aggression. To recap, results indicated no differences between non-aggressive, physically aggressive, and relationally aggressive children in relation to language production. However, results revealed that the comorbid-aggressive children produced the most language in relation to their peers.

**Physical and relational aggression.** As the first contribution, and contrary to previous work, I found no relations between specific forms of aggression (i.e., physical and relational) and language. The fact that I unexpectedly found no associations between these constructs is surprising for two reasons. First, previous work has repeatedly revealed a negative link between language and physical aggression (e.g., Estrem, 2005), and, second, previous work has revealed mixed results (i.e., positive, negative, and no associations) between language and relational aggression. The results of the present study provide some clarifying evidence to the existent work.

One reason previous work has found mixed results could be explained by the context in which children's language was assessed in the various studies. Indeed, past work has primarily captured language through formal assessments and tests (e.g., Bonica, et al., 2003). In contrast, the current study's use of observational methods to assess language in a peer context illustrates the importance of considering the role of context in the relation between language and aggression. Speaking generally, when children are in the context of peers (e.g., playgroup, recess), their behavior (and as a result their language) may differ considerably compared to a context where children are being assessed by adults (e.g., classroom, laboratory). The results of

the current study further illustrate the need to take context into account when investigating the link between language and aggression.

Although the current study found no evidence of a relation between language production and physical aggression, it may be that the children rated higher in physical aggression via teacher report may only aggress, and thereby diminish their language production, when they are dysregulated. For example, physically aggressive children may interact well (e.g., use language) with their peers to an extent until they become dysregulated for short stints of time. In the current study, there were very few incidences of aggression. Hence, the laboratory setting for the observations may have affected the display of aggression (i.e., less likely to occur) and, as a result, prevented me from seeing what happens to language when dysregulated. However, if we would have been able to observe children in the midst of an aggressive episode, then perhaps we would have been able to see what happens to language during aggressive behavior. In sum, physically aggressive children may produce language at similar rates compared to their peers when interactions are positive and they are well regulated. However, when interactions turn negative, notable differences in language production may be evidenced. Hence, examining actual language production in peer settings while accounting for children's dysregulation may be important in understanding the link between language production and physical aggression. However, future work may be required in settings where aggression occurs more frequently (e.g., playgrounds).

Likewise, results revealed no differences between relationally aggressive children and their non-aggressive peers. However, the explanation for these findings (or lack thereof) may be more complex. In fact, during my initial analyses, I did not discriminate between verbal and non-verbal forms of relational aggression. Conceptually, verbal relational aggression is unique from

other forms (i.e., non-verbal relational, physical), as it requires the use of language in order to aggress, thereby suggesting a positive association between language and relational aggression. This may be important because despite previous work indicating a negative relation between language and relational aggression (e.g., Estrem, 2005), it is feasible that there could be a positive relation between these constructs. In fact, some previous work has suggested relationally aggressive children to excel in language (Bonica, et al., 2003; Crick, Werner, et al., 1999).

Thus, given the mixed findings for previous work and that language may play a particularly important role in relational aggression, post-hoc analyses examined the impact of verbal and non-verbal relational aggression and its impact on various aspects of language production. As a reminder, I found verbal relational aggression to positively predict the number of types (i.e., unique words) and tokens (i.e., total words) produced. Further, I found non-verbal relational aggression to negatively predict the number of tokens produced by children.

According to these results, it appears that distinguishing between verbal and non-verbal relational aggression is important in understanding the link between language production and relational aggression. The results further indicate that it is feasible that some relationally aggressive children may be more talkative and produce more language, as language is an integral part of some aggressive behaviors (e.g., telling others not to play with or be a peer's friend). Thus, the original lack of correspondence between aspects of language production and relational aggression is partially explained by my use of a relational aggression variable which mixed verbal and non-verbal items.

In sum, the current study provides a significant contribution to the research literature examining language and aggression by being one of the first studies to examine language and aggression using a non-specialized sample (i.e., participants were not language impaired, and

were not diagnosed with developmental disorders) to capture language observationally in a peer context. Though the results revealed no relations between language production and specific forms of aggression (i.e., physical, relational), this may be due to other factors (e.g., assessment, environment). Nonetheless, the results suggest that when it comes to how much children actually interact with their peers in play settings, they appear to produce similar amounts of language compared to non-aggressive children. Results did, however, reveal some interesting findings in regard to the comorbid aggression group to which I now turn my attention.

**Comorbid aggression.** Another important contribution of the study stems from the findings related to comorbid aggressive children. Results revealed that comorbid aggressive children not only produced more tokens (i.e., total words) than their peers, but also produced more types (i.e., unique words) while doing so. In addition to discovering evidence that comorbid aggressive children produce more language compared to their peers, this finding is unique because the current study is the first to examine the language production of children who frequently engage in *both* physical and relational aggression. Generally, researchers have seldom examined comorbid aggression, with the exceptions (e.g., Crick, 1995) reporting multiple links between comorbid aggression and indices of maladjustment. For example, children who fit the criteria of being highly aggressive both physically and relationally are described as being socially prominent (Sutton, Smith, & Swettenham, 1999). Further, these aggressive children are perceived as sociable by some peers (Nelson, Robinson, & Hart, 2005) but struggle with others given that they use their social impact or standing to achieve their own interpersonal and social goals (Hawley, 2003) at the expense of others. In sum, though previous work has suggested that children who frequently engage in comorbid aggression are at greater risk for maladjustment (Crick, 1995), the current study is the first to investigate the link between language production



and comorbid aggression.

Notwithstanding the negative outcomes experienced by these comorbid aggressive children (e.g. Hoeve, et al., 2015; Nelson, 2009; Ostrov & Crick, 2007), according to the current study, these children may be more proficient in their language production, making language a possible mechanism through which these children influence others and achieve their own interpersonal and social goals. In other words, these comorbid aggressive children may be more savvy in navigating the social arena. In the current study's observational "arena", I captured the language production of children in a peer context. Specifically, for the comorbid children, the findings reinforce the idea that these children may be perceived by their peers as more sociable (Nelson, Robinson, & Hart, 2005) given that they produced more language. Further, the finding that these comorbid aggressive children produced more diverse vocabulary while producing language suggests that they may be more savvy, albeit not competent or kind, in getting what they want as they can not only use physical aggression but they can also employ language (i.e., verbal relational aggression) during their interactions in order to get what they want. For example, in one situation, a child may respond with diverse language when another child asks about a toy in the room, yet, in another situation, this same child may exert dominance over others through physical aggression (e.g., pushing) or relational aggression (e.g., saying another child has to play by the rules set by himself/herself). In other words, comorbid aggressive children may be able to utilize different tactics, including those that utilize language, in achieving their goals. This may include behaviors such as manipulating peers to get what they want, aggressing towards others personally, and even using language to interact with peers in a positive way (Hawley, 2003). On one hand, these children are seen as sociable (Nelson, Robinson, & Hart, 2005), yet, on the other hand, they experience negative peer outcomes

(Hoeve, et al., 2015). In general, comorbid aggressive children are a unique group as they seem to experience a mix of positives and negatives. However, the results of this study may help explain one reason why in that their language abilities are sufficiently advanced to enable them to engage with others socially but to also hurt others in the process.

Taken together, the current study provides three main contributions to our understanding of the language capacities of aggressive children in early childhood. The findings provide evidence of the need to further examine the role of context in investigating the relation between language and aggression. Next, findings from post-hoc analyses present empirical evidence that discriminating between verbal and non-verbal relational aggression is important when examining language and aggression. Finally, the current study discovered additional information concerning comorbid aggressive children, indicating that they may use their language abilities more often, enabling them to be social but also use their words as weapons to hurt others and/or get what they want.

### **Limitations and Future Directions**

Despite the contributions of the current study, there are also a number of limitations. First, the infrequency of some behaviors restricted the number of children I had in each group. For example, I was unable to include solitary-active children as a distinct group in the regression analyses because only four children fit the criteria (e.g., Coplan & Weeks, 2010) of being one standard deviation above the mean in exclusively solitary-active behavior. Further, there were not enough instances of aggression to examine aggression observationally, thus for the current study, teacher reports were used. One remedy for problems such as these includes increasing the sample size. Further, other settings such as the playground could be more beneficial in studying these constructs (i.e. instead of a laboratory; Nelson, Hart, & Evans, 2008). Additionally, in

addition to teacher report and observations, peer nominations could be utilized to further clarify the nuances that exist amongst these constructs.

A second limitation of the current study is that it focused primarily on language production to the exclusion of other aspects of language. Future work should account for other aspects such as receptive language, expressive language, language comprehension, and language competence, thus providing a more comprehensive understanding of withdrawn and aggressive children's language development. Additionally, this would be particularly helpful in understanding reticent and solitary-passive children, as it is commonly assumed that they *possess* language abilities, but attribute their lack of speech as a *failure to employ* those language abilities. Additionally, examining other aspects of language production would clarify what other information is contained in the utterances (e.g., complexity, richness, etc.) that children speak when interacting with peers. As another future direction, distinguishing between the language characteristics of children's private and peer directed speech may be beneficial to understanding the language development of these children. For example, since solitary-active children spend much of their time engaging in solitary-dramatic play, the language they use during this behavior may be different from the language they use during interactions with others.

Next, the cross-sectional nature of the data prohibits me from determining whether children's language development is a precursor to children's subsequent behaviors (e.g., withdrawal and aggression) or if children's behaviors drive the development of language. On one hand, the argument could be made that children play alone, interact with their peers less, or aggress physically because they lack language skills. Yet, one could argue that because of children's fear or dysregulation, they end up acting in other ways (e.g., social withdrawal, aggression) instead of communicating with their peers, which impedes the development of

language. Future work should investigate these questions longitudinally as to provide further understanding of the direction of effects in regard to the link between children's language and social/non-social behaviors.

Finally, although the current study adds to our understanding of comorbid aggressive children in regard to their language, there is still much to be learned about this unique group (Crick, 1995). Future work should examine this group beyond their language production, perhaps examining whether these comorbid aggressive children align with what others have labeled "controversial" children (Bukowski, 2003), being both liked and disliked by their peers and using their social capital to manipulate others into getting what they want (Hawley, 2003).

### **Conclusion**

Despite its limitations, the current study offers a number of notable contributions. First, it provides evidence of how reticent children employ (or not) language differently than their more sociable peers. Second, despite previous work classifying solitary-passive behavior as a more benign form of social withdrawal, the findings suggest that these children are less talkative, which could lead to subsequent maladjustment. Third, the current study is one of the first to investigate observationally the relation between various indices of language production and various forms of social withdrawal in the same study. This enabled us to examine these constructs in a peer context rather than through separate assessments or reports helping us better understand the role of context in studying children's language abilities. Fourth, the current study provides intriguing evidence regarding the language production of comorbid-aggressive children, specifically, that they produced more diverse language and language in general compared to their peers. Finally, though I found no meaningful distinctions between non-aggressive, physically aggressive, and relationally aggressive children in regard to language production, post-hoc

analyses highlight the importance of distinguishing between verbal and non-verbal relational aggression when investigating language production. In sum, as language is vital to children expressing themselves appropriately in peer settings, and any delay or setback in language development may cripple these experiences, the current study provides further understanding for identifying and describing socially withdrawn and aggressive children who may struggle with their language.

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## Appendix

Table 1

Correlations, means and standard deviations of control variables, language variables, forms of withdrawal and aggression.

	1	2	3	4	5	6	7	8	9	10	11	12	<i>M</i>	<i>SD</i>
1. Child Age	--												4.57	.67
2. Gender	.04	--											1.47	.50
3. Family Income	.05	-.09	--										7.78	2.17
4. Maternal Education	-.06	-.07	.27***	--									5.11	1.43
5. Utterances	.08	.04	-.16 <sup>+</sup>	-.11	--								60.88	37.64
6. Types	.11	.14	-.11	-.11	.89***	--							107.71	54.79
7. Tokens	.05	.13	-.15 <sup>+</sup>	-.14	.92***	.95***	--						290.55	191.63
8. Reticence	-.18 <sup>+</sup>	-.05	.01	-.09	-.38***	-.42***	-.38***	--					166.16	166.27
9. Solitary- passive	-.04	.09	-.19 <sup>+</sup>	.08	-.31***	-.37***	-.36***	-.10	--				261.47	178.90
10. Solitary-active	.06	-.05	.11*	-.05	-.07	-.07	-.09	-.04	-.07	--			12.85	63.83
11. Physical Aggression	.11	-.06	.03	.06	.10	.16 <sup>+</sup>	.09	-.19*	.05	-.01	--		1.73	.70
12. Relational Aggression	.08	.11	-.02	.05	.05	.16 <sup>+</sup>	.09	-.13	.08	.04	.79***	--	2.08	.89

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$ , <sup>+</sup> $p < .10$



Table 2

## Group Frequencies of Social Withdrawal and Aggression

Groups	<i>N</i>	%
Social Withdrawal	--	--
Non-withdrawn	111	78.72
Reticent	8	5.67
Solitary-passive	17	12.06
Solitary-active	4	2.84
Unclassified/Mix	1	0.71
Withdrawal Total	141	100.00
Aggression	--	--
Non-aggressive	107	75.89
Physically	5	3.50
Aggressive		
Relationally	14	9.99
Aggressive		
Comorbid Aggressive	15	10.64
Aggression Total	141	100.00

Table 3

## Multiple Regressions for Withdrawal Groups

	Utterances	Types	Tokens
Age	.92 (5.08)	2.46 (7.31)	-6.00 (25.40)
Gender	3.03 (7.01)	15.72 (10.09)	54.84 (35.06)
Maternal Education	-3.04 (1.56)	-2.95 (2.25)	-12.71 (7.82)
Family Income	-1.01 (2.41)	-2.42 (3.47)	-10.74 (12.07)
Non-withdrawn	--	--	--
Solitary-passive	-40.96*** (9.75)	-63.41*** (14.03)	-208.15*** (48.77)
Reticent	-50.63*** (12.61)	-79.62*** (18.15)	-251.90*** (63.07)
Constant	87.75** (30.05)	121.22** (43.27)	432.02** (150.33)
<i>N</i>	106	106	106

Standard errors in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Table 4

## Multiple Regression Results for Aggression Groups

	Utterances	Types	Tokens
Age	3.64 (5.43)	6.13 (7.77)	6.13 (26.73)
Gender	-.36 (7.56)	9.52 (10.82)	31.85 (37.22)
Maternal Education	-2.56 (1.64)	-2.26 (2.35)	-10.97 (8.08)
Family Income	-1.32 (2.59)	-2.11 (3.71)	-10.21 (12.74)
Non-aggressive	--	--	--
Physical	-26.11 (19.41)	-34.68 (27.79)	-121.83 (95.55)
Relational	-22.95 (12.39)	-5.10 (17.74)	-43.26 (60.99)
Unclassified/Mixed	13.40 (11.51)	38.35* (16.48)	98.54+ (56.65)
Constant	69.71* (32.10)	89.50+ (45.95)	343.58* (157.99)
<i>N</i>	121	121	121

Standard errors in parentheses

+  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$