

PEER VICTIMIZATION IN ADOLESCENTS WITH DOWN SYNDROME:  
THE IMPACT OF COMMUNICATION AND EMOTION REGULATION

by

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## ABSTRACT

Research shows that typically developing (TD) individuals who have lower expressive communication and emotion regulation skills are much more likely to be victimized by peers. However, little research has been done to investigate predictors of victimization in adolescents with DS. Research demonstrates that individuals with Down Syndrome (DS) tend to have significant difficulties with communication, especially expressive communication. In addition, individuals with DS have higher incidents of behavior and emotion regulation problems than their TD peers. The current study investigated if problems with communication predict peer victimization in adolescents with DS and if emotion regulation accounts for this association. A total of 23 participants between the ages of 11 and 18 with DS and their parent/guardian completed tasks and measures to investigate the main variables of interest; communication ability, victimization experience, and emotion regulation, as well as exploratory variables (aggression, self-esteem, social motivation, and friendship quality). Results demonstrated the expected relation between communication and victimization in that each communication measure was significantly negatively related to victimization. Additionally, pragmatic judgement (a communication skill) and emotion regulation were significantly related to each other, in that higher pragmatic judgement was associated with better emotion regulation. However, contrary to what was expected, emotion regulation did not significantly relate to victimization. The relation between communication and victimization could be used as a potential intervention point to decrease victimization in adolescents with DS.

Key Terms: Down Syndrome, communication, peer victimization, emotional regulation

## DEDICATION

This thesis is dedicated to everyone who supported, guided, and believed in me throughout the course of its completion. I especially want to thank a few people. First my mentors for giving me the opportunity and guidance to pursue and succeed on this path. Second, my friends who have advised and listened through this process. Third, the families who welcomed me into their homes and so willingly shared their experiences with me. Finally, I want to thank my family for always supporting me and raising me to believe that I could do anything I wanted to do with enough hard work!

#### LIST OF ABBREVIATIONS AND SYMBOLS

- $\alpha$  Cronbach's index of internal consistency
- > Greater than
- < Less than
- SD Standard Deviation
- $r$  Pearson product-moment correlation
- $p$  Probability associated with the occurrence under the null hypothesis of a value as extreme as or more extreme than the observed value
- $t$  Computed value of  $t$  test
- DS Down Syndrome
- TD Typically Developing
- WS William's Syndrome
- ID Intellectual Disability
- ASD Autism Spectrum Disorder

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## INTRODUCTION

Down syndrome (DS) is the most common known genetic cause of intellectual disability, resulting from full or partial duplication of the 21<sup>st</sup> chromosome (Newton, Puri, & Marder, 2015). Each year around 6,000 babies in the United States are born with DS, meaning that there are over 400,000 people living with DS in the United States today (Parker, Mai, Canfield, Rickard ,Wang, & Meyer, 2010; Presson, Partyka, Jensen, Devine, Rasmussen, McCabe , & McCabe). In addition to intellectual disability, characteristics of DS include low muscle tone, delayed physical development, and an increased risk for many medical conditions (Newton, Puri, & Marder, 2015). The sheer number of individuals with DS demonstrates the importance and relevance of learning as much as possible about their respective developmental trajectories. The majority of current literature in DS research focuses on more cognitive and biomedical domains and though there is still much to discover in all aspects of development in those with DS, literature detailing their social experience is severely lacking.

One important aspect of social experience, especially for adolescents, is victimization, or the experience of “being the target of others’ harassment, ridicule, and aggression” (Troop-Gordon & Unhjem, 2018). Research demonstrates that children and adolescents with disabilities are at a significantly higher risk to experience victimization (Fink, Deighton, Humphrey, & Wolpert, 2015) and those in special education settings are at an even higher risk (Reiter & Lapidot-Lefler, 2007). Among typically developing (TD) individuals, adolescence is a time that is especially vulnerable to victimization experiences (Troop-Gordon, 2017). Yet, little is known about the social experience of adolescents with DS, specifically how they relate to and fit in with

their peers. Therefore, it is imperative to investigate and gain a deeper understanding of the social experiences of adolescents with DS. The current study examined the experience of victimization in adolescents with DS and how such experiences are related to challenges in communication and emotion regulation.

## PEER VICTIMIZATION

In addition to having a disability and often being in special education settings, individuals with DS are likely to have many factors that converge to put them at an especially high risk to experience victimization. In comparison to those with Williams Syndrome (WS) and Autism Spectrum Disorder (ASD), individuals with DS are, as reported by their caregivers, significantly less aware of their social surroundings and perceived by peers to be much more vulnerable (Fisher, Moskowitz, & Hodapp, 2013). One novel aspect of the current study is the examination of the frequency in which adolescents with DS report being victimized by peers. It is expected that adolescents with DS will report victimization experiences because individuals with DS tend to have poor communication and emotion regulation skills, which are often risk factors for peer victimization in TD children and adolescents (Godleski, Kamper, Ostrov, Hart, & Blakely-McClure, 2015; Murphy, Faulkner, & Reynolds, 2014).

## EXPRESSIVE COMMUNICATION

Communication is largely the basis of social interaction (Redmond, 2011). When this construct is disrupted individuals are often unable to make their needs, desires, thoughts, and feelings known. Research demonstrates that among individuals with DS several aspects of expressive communication, including speech intelligibility, are particularly challenging (Roberts, et. al., 2007; Kent & Vorperian, 2013; Colozzo, McKeil, Peterson, & Szabo, 2016).

Speech articulation difficulties in DS lead to compromised intelligibility. Intelligibility refers to the ease of the listener in readily understanding an individual's speech (Weismer, 2008).

In TD children, intelligibility often improves with time and, when needed, with treatment; however the trajectory is different for individuals with DS (Kent & Vorperian, 2013). Among those with DS, it is common for the intelligibility of speech to be significantly lower than it is in TD peers (Rondal & Edwards, 1997). Past research has demonstrated that this is one of the major obstacles for those with DS in regard to expressive communication (Cleland, Wood, Hardcastle, Wishart, & Timmins, 2010). Kumin & Coll (1994) reported that nearly 95% of individuals with DS struggle to be understood by the general population. Thus, it may be that youth with DS who have more trouble being understood, or are less intelligible, are subsequently more likely to be victimized by peers.

In support of this hypothesis, past research has shown that children and adolescents who have speech problems impacting fluency and intelligibility but are otherwise TD tend to have poorer social experiences than their peers who have typical communication abilities (Murphy, et al., 2014). These individuals could have speech difficulties ranging from minor disfluency (stuttering) to severe speech impediments resulting in significant intelligibility issues. Furthermore, 11-year-olds with a specific language impairment (SLI), defined as abnormal speech and language development, reported more victimization experiences and demonstrated lower social competence (Conti-Ramsden & Bottling, 2004). Additionally, Hugh-Jones (1999) reported that children who stutter tended to be more likely to experience victimization as well as have lower peer acceptance compared to their peers with typical language abilities. Altogether, evidence from TD youth suggests that lower communication skills may be a risk factor for negative peer experiences like victimization.

Whereas intelligibility is vital to successful social interaction, it is not the only important aspect of expressive communication. On a social level, one of the most important aspects of language is pragmatics. Pragmatics is commonly understood as the social appropriateness of

language, or a knowledge of the regulations that guide social communication (McWhorter, 2018). A common example of pragmatic language use is following appropriate conversational rules, such as taking turns. It is important to note that pragmatic abilities are not exclusively verbal, and include non-verbal behaviors like eye contact, affect, and personal space (Rom & Bliss, 1983). Research has demonstrated that among TD kindergarteners there is a significant relation between language skills, like pragmatics, and victimization experiences (Gulay, 2011). Further research supports that this trend continues into adolescence (Conti-Ramsden & Botting, 2004). Conti-Ramsden and Botting (2004) demonstrated that those with pragmatic difficulties were the most likely to have poor social outcomes and experience victimization. It has been shown that, along with higher victimization and lower peer acceptance, those with poor pragmatic skills tend to have poorer emotion regulation skills, and lower self-esteem (Lindsay, Dockrell, & Mackie, 2008). All three of these factors independently have been shown to also increase victimization experiences (Redmond, 2011).

Among individuals with DS pragmatic language skill is especially variant. While some aspects of pragmatics development, like conversation maintenance skills and the extent of conversational contribution, are on par with cognitive age match TD peers (Johnston & Stansfield, 1997), other pragmatics skills fall behind. A particular pragmatic challenge for those with DS is following appropriate conversation rules. Individuals with DS tend to have a more difficult time knowing the appropriate length of a story, as well as appropriate turn taking within a conversation (Laws & Bishop, 2004). Another area of challenge is in providing appropriate context to their audience. For instance, an individual may assume that their listeners are aware that they were in the school's cafeteria without providing that information (Zampini, Fasolo, Spinelli, Zanchi, Suttori, & Salerni, 2015). Non-verbal pragmatic skills can also be a variant, in that some individuals with DS do not have difficulties, while others do (Rom & Bliss, 1983). For

example, anecdotally, one common struggle for those with DS seems to be understanding personal space. It is fairly common for those with DS to hug before knowing someone or sit closer than is socially appropriate. Pragmatic ability is incredibly important to successful conversations and appropriate social interactions; therefore the level of difficulty that youth with DS have with pragmatic communication may also put them at greater risk to be victimized by their peers.

## EMOTION REGULATION

Emotion regulation, or the ability to modify and control the intensity and expression of emotional response, is a key factor in the foundation of social relations (Godleski, et al., 2015). Overall, poor emotion regulation among TD children and adolescents has been significantly correlated with more bully and bully-victim behavior as well as higher incidents of victimization (Godleski, et al., 2015). Commonly, lower emotion regulation seems to lead to lower success in following the social norms in their respective social contexts (Garner & Hinton, 2010). This behavior of acting outside of the norm is often strongly related to an increase of victimization.

Children who have lower communication skills tend to have lower emotion regulation skills, thus further increasing their chances of poor social experiences (Eggers, et al., 2010). Research suggests this could be a result of either stunted self-verbalization skills which heavily contribute to regulatory skill, or a frustration with the inability to effectively communicate one's needs and desires (Cole, Armstrong, & Pemberton, 2010). Additionally, research has demonstrated that TD adolescents who have poor emotion regulation skills tend to have poor social experiences (e.g., lower quality friendships more frequent exclusion) and are more often the target of peer victimization (Godleski et al., 2015).

While the link between communication and emotional regulation among adolescents with DS in particular has not been sufficiently investigated, it is known that emotion regulation can be

a challenge at least in younger children with DS (Jahromi, Gulsrud, & Kasari, 2008). For those with DS it has been shown that regulation of negative emotions, like frustration and anger, is often lower than in developmentally matched TD peers. Jahromi, Gulsrud, and Kasari (2008) found that children with DS were more likely to become frustrated and give up on a task than cognitively matched TD children. These authors hypothesized this to be a result of limited coping abilities, potentially stemming from lower cognitive abilities. Additionally, individuals with DS have more frequent negative emotional outbursts than TD peers (Bieberich, & Morgan, 2004). While not directly investigating DS, Reiter and Lapidot-Lefler (2007) also demonstrated that among students with ID victimization was significantly correlated with . Each of these studies potentially suggested that emotion regulation could help to explain or predict the relation between communication difficulties and victimization experiences.

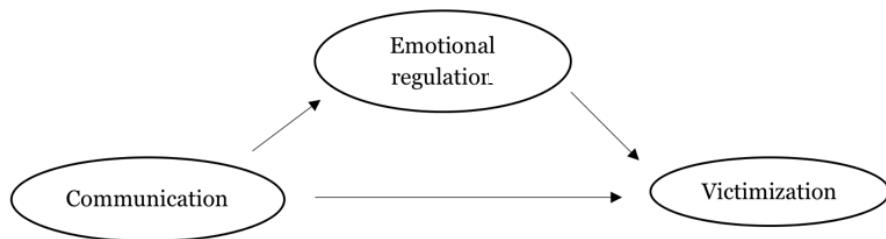
Poorer expressive communication and emotion regulation skills are likely factors that increase victimization of adolescents with DS. Yet, little research has investigated the impact of these risk factors in those with DS. Research reviews have found relatively few studies examining the peer relations of those with ID, and very few focusing specifically on individuals with DS (see Fisher, Baird, Currey, & Hodapp, 2015; Maiano, Aime, Salvas, Morin, & Normand, 2015). The current study aimed to help fill in this large gap in the literature.

## HYPOTHESES

It was hypothesized that lower communicative abilities among adolescents with DS, specifically in the areas of intelligibility and pragmatics, would be related to higher experiences of peer victimization. Further, it was hypothesized that emotion regulation would mediate this relation (see Figure 1). Specifically, lower communicative abilities and conversational appropriateness would correspond to lower emotion regulation skills which would correspond to

higher victimization. To examine these hypotheses, adolescents with DS and their parent/caregiver completed a set of questionnaires and assessments measuring the constructs of communication, victimization, and emotion regulation.

Figure 1. Basic Mediation Model



## METHODS

### PARTICIPANTS

In order to gather demographic information parents were asked to complete a questionnaire. This questionnaire asked about their child's past medical history, current health, behavioral habits, and basic information about the child's family.

Participants in this study were 23 adolescents with DS and their parent/caregiver. Adolescents ranged in age from 11 to 18 years ( $M = 14.13$ ;  $SD = 2.46$ ), the majority were Caucasian as identified by parents (91.3%) and were split fairly evenly by boys and girls (female: 56.5%). On the Peabody Picture Vocabulary Test, Fourth Edition (PPVT-4; Dunn & Dunn, 2007), age equivalent scores ranged from 3.1 – 8.2 years ( $M = 5.29$ ,  $SD = 1.49$ ). Adolescents primarily attended public school settings (91.3%) and ranged from spending no time in mainstream classrooms to spending full time in mainstream classrooms ( $M = 36.87\%$ ;  $SD = 26.29\%$ ).

To be included in the study, adolescents had to 1) attend public or private school (i.e., not be homeschooled), 2) not have an Autism Spectrum Disorder (ASD) diagnosis as reported by parent/caregiver, and 3) use English speech as their primary form of communication. Adolescents who are homeschooled were excluded as this study investigates peer interactions, primarily in a school setting, and homeschooled adolescents would be significantly less likely have enough of these experiences. An ASD diagnosis excluded adolescents from participating as ASD likely alters their social experiences. Finally, adolescents who are nonverbal were excluded as the communication portion of the study examined verbal communication skills. Informed

consent was given by the parent or caregiver and assent was given by the participant. Both parental consent and child assent were presented in a manner appropriate for the developmental level, and were approved by the IRB. Participants were recruited through the University of Alabama's Intellectual Disability Participant Registry, Down Syndrome Alabama, and word of mouth.

## MEASURES

Each of the main constructs in the study, communication, emotion regulation, and victimization, was measured using child self-report as well as parent report. For questionnaires, wording and response format were modified for adolescents with DS to make them age and ability appropriate (see Victimization section for detail). Additionally, self-report measures were modified to become parents/caregiver report measures by changing "I" to "my child" as appropriate.

**VICTIMIZATION.** In order to measure victimization experiences of adolescents with DS, both parents and adolescents completed the Children's Social Experience Questionnaire (CSEQ; Crick & Grotpeter, 1996). This test had internal reliability scores of at least .89 (range: .89-.91) in early elementary children (Crick & Grotpeter, 1996). In the present study this scale had an internal reliability of .78 for the child report and a reliability of .72 for parent report. It includes 15 questions such as "How often do you get hit by another kid at school?" and "How often does another kid yell at you and call you mean names?" TD children are asked to answer on a 5 point Likert scale, from 1 ("never") to 5 ("all the time"), however to simplify reporting, in this study, adolescents were asked to report on a 4 point scale as described below.

As other measures in this study that used a Likert scale, the CESQ was modified for use with participants with DS. A researcher first explained the scale to the child and practiced the scale with 2-4 sample questions for each measure. Then each question was read aloud to the

child. After each question the researcher elicited a Yes/No answer by asking the child “was that like you?” or “does that happen to you?” If the child responded “yes” they were then asked if it was “a lot” or “a little” like them or if it happened “a lot” or “sometimes.” If the child responds “no” they were then asked if it is “really different” or “a little different” from them or if it happens “almost never” or “never ever.” The researcher then gave the child the numerical rating (1-4). Responses of “yes” and “a lot” received a score of “4” through responses of “no” and “really different” received a score of “1” (Haynes, Gilmore, Shochet, Campbell, & Roberts, 2013).

For example, the CSEQ question “How often do you get hit by another kid at school?” became “Have you gotten hit by another kid at school?” Should the participant answer “yes,” the researcher asked if it happens “sometimes” or “a lot.” Should the participant answer “no,” the researcher asked if it “almost never happens” or “never ever happens.” The researcher then assigned the correct numerical score to the set of answers. Thus, a participant’s answer of “yes” and “a lot” was assigned a ‘4’ according to the CSEQ scale. The rating from each item was averaged, which was used in data analysis. Higher victimization scores reflected greater victimization by peers. The full adaptation for child-report can be found in Appendix A and the adaptation for parent report found in Appendix B.

**INTELLIGIBILITY.** To measure speech intelligibility, adolescents completed the Narrative Language Task (Abbeduto, Benson, Short, & Dolish, 1995) and a conversation measure loosely based on the ADOS-2 question format which was later coded for intelligibility (Lord, Rutter, DiLavore, Risi, Gotham, & Bishop, 2012). In the Narrative Language Task children were shown the picture book *Frog on His own* (Mayer, 1973). This book was illustrated to tell a story and does not include any words. After looking through each page, children were then asked to explain the story in a page-by-page format. The responses were audio recorded.

The wordless picture book task has been successfully used with DS populations in the past to measure multiple aspects of expressive language.

In addition to the Narrative Language Task, participants completed a structured conversation based loosely on the ADOS-2 prompts. In this procedure the researcher starts talking with the participant about a broad topic, like pets or movies. After the participant contributes to the conversation the researcher responds with a broad statement. For example, if the child said they had a pet dog, the researcher responded with something like “I have pets too.” This was done in order to see if the participant would respond with appropriate turn-taking in the conversation. This conversation was audio recorded.

Typically, formal language analysis software is used to analyze the language samples, which requires highly trained transcribers. In the present study, we were interested in measuring intelligibility of speech by untrained listeners. Thus, two undergraduate research assistants listened to the two recordings for each participant and provided an estimated percentage of the words spoken and overall message they understood. To replicate the interactions participants have with their peers, research assistants only listened to each recording one time and had minimal training. Participant scores used in data analysis were the averaged percentages understood by each of the two raters. This procedure yielded an interrater reliability of at least .85; more details can be found in the procedure section. Higher intelligibility scores indicated that adolescents’ speech was easier to understand.

To measure intelligibility from the parental perception, parents or caregivers completed three questions as a part of a demographics questionnaire. The questions were as follows; “How well do you understand what your child is saying?,” “How well do others understand what your child is saying?,” and “Does your child respond appropriately in conversation?” Parents or caregivers were asked to rate their answers on a 1-4 Likert style scale ranging from “with great

difficulty” (1) to “very easily” (4). This parent/caregiver report of communication, similar to that used by Kumin and Coll (1994), had an alpha reliability of .593. Higher scores indicated that adolescents’ speech is easier to understand, in the parent/caregivers’ view.

**PRAGMATICS.** Participants completed the Pragmatic Judgment subsection of the Comprehensive Assessment of Spoken Language, Second Edition (CASL-2; Carrow-Woolfolk, 2017). This measure was designed for TD individuals ages 3 through 21 years, thus it covered both the expected cognitive and chronological age range of the participants in the present study and minimizes the chance of floor effect. For this test, the examiner reads the examinee up to 60 everyday scenarios and asks the examinee how they would respond. The exact number of scenarios is dependent upon the examinee’s performance, as testing stops once five incorrect responses are given in a row. The examinee’s response is then scored based on social appropriateness. An example item is “Suppose the telephone rings. You pick it up. What do you say?” Questions intended for younger-aged participants are accompanied by an illustration. For example, the previously stated question is shown with an illustration of a telephone. The raw score was used in data analysis. Higher raw scores indicate better pragmatic judgment. Past research indicates that this subsection of the CASL-2 has a test-retest reliability score of .77 - .92, dependent on age group (Carrow-Woolfolk, 2017).

In addition to the CASL-2 Pragmatics Judgment subtest, a more conversationally-based pragmatics measure was used. In order to measure conversational pragmatic ability, the researcher recorded a conversation with the participant, the same conversation that was previously described in the intelligibility section. During this conversation the researcher loosely followed the procedure outlined in the ADOS-2 (Lord, et al., 2012). Throughout this structured conversation, the researcher rated the participant on a 1-4 Likert scale measuring social appropriateness in three categories; eye contact, affect, and personal space, as well as an overall

rating for general appropriateness in interaction. Eye contact was rated a 1 if participants either avoided eye contact or did not break eye contact appropriately and was rated a 4 if participants maintained and broke eye contact at appropriate times. Affect was rated a 1 if it was flat when discussing exciting events; it was rated a 4 if the participant's affect matched the conversational topic. Inappropriate personal space was rated a 1 if the participant sat too close or too far away; it was rated a 4 if participants maintained an appropriate distance throughout the conversation. Overall appropriateness was rated separately by the researcher in order to establish the general appropriateness of the participant. This was rated in addition to the other three specific behaviors. Overall appropriateness was rated a "4" if the participant followed social norms, and a "1" if they completely violated them. For example, a participant that received a "1" may discuss inappropriate topics or questions or leave the room during the conversation without warning. The four items on this scale had an internal reliability of  $\alpha = .72$  and scores were approximately normally distributed. The rating from each of the four categories was averaged for a score used in data analysis. Higher scores indicated more appropriate conversational behavior.

Finally, in order to measure everyday pragmatic ability, parents were asked 11 questions as a part of the demographic questionnaire. These questions assessed things like eye contact, school context, following conversational rules, and overall social appropriateness. Parents responded on a 1-4 Likert scale ranging from "never" to "always." Sample items included, "My child makes eye contact with the person he/she is speaking to" and "When my child initiates conversation it is done in a socially appropriate way." These questions allowed a broader understanding of everyday pragmatic ability. This set of questions had good internal reliability,  $\alpha = .84$ , and was approximately normally distributed. The ratings from the 11 questions were averaged for an overall parent report of pragmatic ability that was used in data analysis. Higher

scores indicated higher parent/guardian assessment of their adolescent's everyday pragmatic language skills.

**EMOTION REGULATION.** To assess emotion regulation, adolescents with DS completed the Emotional Control and Emotional Self Awareness sections of the Emotion Regulation Index for Children and Adolescents (ERICA; MacDermott, Gullone, Allen, King, & Tonge, 2010). This scale asks adolescents to rate how like them each behavior or feeling is. These questions are measured on a 4-point Likert style scale, ranging from "not at all like me" (1) to "a lot like me" (4) with higher scores reflecting poorer emotion regulation skills. Sample items include "I have trouble waiting for something I want" and from the emotional self-awareness subset, "When I get upset, I can get over it quickly." Questions were modified to make the language understandable and more appropriate for participants with DS (see Victimization subsection above for modification details). This measure has been shown to have an internal reliability of at least  $\alpha = .75$  for the self-report version in TD children and adolescents (MacDermott, et al., 2010). However, in the present study, internal reliability was low,  $\alpha = .42$ . It is likely that this low reliability is related to either an unsuccessful modification of the measure for adolescents with DS or a difficulty in reporting on these types of items in this population. Due to this low internal reliability this measure was not used in analyses. The adapted measure can be found in Appendix C.

In addition to the adolescent self-report (ERICA), parents completed the Emotion Regulation scale of the Behavior Rating Inventory of Executive Function- Second Edition (BRIEF-2; Gioia, Isquith, Guy, & Kenworthy, 2015) to measure emotion regulation of the child. This 10-item scale asks parents to rate how often each behavior was a problem in the last six months. These questions are measured on a "Never, Sometimes, Often" or "N, S, O" scale. An example of these questions is "[My child] Overreacts to small problems." This emotion

regulation subscale of this measure has been shown to have an internal reliability over  $\alpha = .86$  for the parent report form in TD children and adolescents ages five through 18 years (Gioia, et al., 2015). In the present study, internal subscale reliability was also high,  $\alpha = .91$  and raw scores were approximately normally distributed. Raw scores were used in data analysis. Higher scores indicate more difficulty with emotion regulation.

## ADDITIONAL MEASURES

In order to gather as much of a holistic picture as possible, parents or caregivers were asked to complete five additional measures and children completed one additional measure.

**LEVEL OF FUNCTIONING.** In order to measure level of functioning the *Peabody Picture Vocabulary Test, Fourth Edition* was used (Dunn & Dunn, 2007). This measure is commonly used to efficiently establish approximate level of function in individuals with DS. It is favored due to the low floor and nonverbal response requirements. It is a task that measures receptive vocabulary by asking the participant to point to the picture that best represents the word stated by the researcher. Each section consists of 12 items and participants continue until they make eight mistakes in one section. This test has been normed to for participants ages 2.5 years and older and covers nouns, verbs, and adjectives. This measure has good split half reliability ( $\alpha = .94 - .95$ ; Dunn & Dunn, 2007).

**SELF-ESTEEM.** To measure self-esteem of adolescents with DS, parents or caregivers and children both completed the *Rosenberg Self-esteem Measure* modified by Dagnan & Sandhu (1999) for people with an intellectual disability. This measure includes 6 questions answered on a 5-point Likert scale ranging from 1 (“never true”) to 5 (“always true”). In this study, the questions were modified to be on a 4 point Likert scale ranging from 1 (“a lot different from me”) to 4 (“a lot like me”). The total of ratings across 6 questions was used in data analysis. Higher scores correspond with higher self-esteem. Past research with individuals with ID has

found that this measure has an internal reliability of  $\alpha = .66$  (Paterson, McKenzie, & Lindsay, 2012). Though the reliability is not high, this measure was chosen because it has been previously used with ID populations, and it has the highest reliability of self-esteem measures that are available for the population. In this study, reliability for parent report on the adolescent's self-esteem was similar to past studies ( $\alpha = .62$ ). It is important to note that in order to improve internal reliability, the third ("My child is able to do things as well as most other people") item was removed. This item did not appear to be a vital question to retain and not strongly correlate with the total score. Unlike the parent-completed measure, the child report of their own self-esteem was less reliable ( $\alpha = .47$ ). This lower reliability in self-reported self-esteem is likely due to the negative skew and subsequent lack of normality of the data. Nearly all adolescents with DS reported very high self-esteem.

AGGRESSION. To assess aggression, caregivers completed a modified version of the *Aggression Measure* detailed in Little, Henrich, Jones and Hawley (2003). This is a 36-item questionnaire modified for parents that asked them to assess their children on overt and relational aggression. Sample items include "*My child is the kind of person who often fights with others*" (overt aggression) and "*My child is the kind of person who ignores others or stops talking to them*" (relational aggression). A four-point Likert scale ranging from "not at all true" to "always true" is used. Traditionally, the ratings from the 36 items are averaged in order to get a final score; however in the present study the item "*My child is able to do things as well as most other people*" was removed in order to improve scale reliability. This item did not appear to be a vital question to retain and did not strongly correlate with the complete measure. Due to the removal of one item, only 35 items were averaged in order to create the total score for this study. Higher scores indicate higher levels of aggression. This measure has been shown to be internally reliable

and valid (Little et al., 2003). In the present study, the measure had an internal reliability of  $\alpha = .70$

FRIENDSHIP QUALITY. Friendship quality was measured through parent report using a modified version of the *Friendship Quality Questionnaire* (FQQ, Parker & Asher, 1993). The FQQ includes 40 items and was assessed on a Likert scale ranging from 1 ("Not at all true") to 4 ("Really True"). Traditionally the FQQ is a self-report measure, however in the present study, it was completed by the parent/caregiver. Parents were asked to think of their child's best friend at school and answer the questions based on this friendship. Additionally, parents were asked to briefly describe their child's closest friend by completing questions about the friend's age, gender, how they met, if there was a familial relation, and the friend's first name. FQQ sample questions include "*My child's friend cares about his/her feelings*" and "*My child and his/her friend make up easily when they have a fight.*" Scores were averaged for analyses, with a higher score relating to a higher quality friendship. This measure has been shown to be reliable and valid with TD children (Parker & Asher, 1993). The FQQ demonstrated high overall reliability in the present sample ( $\alpha = .95$ ).

SOCIAL MOTIVATION. Finally, social motivation was investigated. This was assessed using a modified version of the *Fundamental Social Motivations Inventory* (FSMI; Neel, Kenrick, White, & Neuberg, 2016). Parents completed the Affiliation (Independence, Exclusion Concern, and Group) and Status subsections to report their child's social motivations. Sample questions included "*Being part of a group is important to my child* (group subscale), "*My child worries about being rejected*" (exclusion concern subscale), and "*My child would prefer to spend time alone than to be surrounded by other people*" (independence subscale). This scale has 23-items and asks parents to rate their answer on a 1-7 Likert scale, from strongly disagree to strongly agree with overall scores resulting from a summed total. Each subscale has shown

internal reliabilities between  $\alpha = .79$  and  $\alpha = .88$  in an adolescent and emerging adult sample (Neel, et al., 2016). In the present study the FSMI resulted in an overall internal reliability of  $\alpha = .79$ . Note that in order to increase internal reliability the fourth item (“*My child thinks that working in a group is usually more trouble than it's worth*”) was removed. This item did not appear to be a vital question to retain and did not strongly correlate with the total score.

## PROCEDURE

After appropriate assent and consent were provided, each participant completed measures for each of the constructs of interest in the following order: level of functioning (PPVT-4), emotion regulation (ERICA), pragmatic ability (conversation sample and CASL-2 Pragmatic Judgment subtest), victimization (CSEQ), intelligibility (narrative task), and self-esteem (Rosenberg ID modification). Adolescents took between 35 and 70 minutes to complete the measures and only the researcher present during this time, as parents/guardians were asked to be in a different room.

After providing consent, parents or caregivers completed a questionnaire that included basic demographics (age, race, and gender) along with basic medical and behavioral history, and communication ability assessment. The parent or caregiver of the participant then completed measures for each of the constructs in the following order: victimization (CSEQ), emotion regulation (BRIEF-2 Emotion Regulation subscale), self-esteem (Rosenberg ID modification), social motivation (FSMI), friendship quality (FQQ), and aggression (Little, et al. 2003 measure). These measures took parents/caregivers approximately 45 minutes to complete.

## RESULTS

All analyses were done using the statistical software SPSS. In order to ensure accuracy of the data entry, data of participants 1- 15 were entered by two different people and assessed for consistency. After no major issues were found, data of the remaining participants were entered once. For all significance tests, and alpha level of .05 was used.

### PRELIMINARY ANALYSES

All distributions were examined for gross deviations from a normal distribution and the majority of the measures showed no gross deviations. However, child-reported self-esteem was negatively skewed, with most participants reporting a high level of self-esteem.

**DESCRIPTIVE STATISTICS.** Means, standard deviations, and ranges for the measures of the primary constructs appear in Table 1. Both parents and children reported victimization scores suggesting these events happened between “almost never” and “sometimes.” This is comparable to a large TD sample ( $n = 474$ ; Crick & Grotjeter, 1996),  $t(22) = .919$ ;  $p > .05$ . However, it is interesting to note that when divided into the three subscales, overt victimization, relational victimization, and receiving prosocial behavior, some differences emerged. Although the present study’s participants with DS were similar in relational victimization to the Crick and Grotjeter (1996) TD sample, TD  $M = 2.27$ ; DS  $M = 2.17$ ;  $t(22) = .818$ ;  $p > .05$ , they were lower in overt victimization, like kicking, hitting, or name calling, TD  $M = 2.23$ ; DS  $M = 1.88$ ;  $t(22) = -2.40$ ;  $p < .05$ , and lower in receiving of prosocial behavior, TD  $M = 3.32$ ; DS  $M = 2.42$ ;  $t(22) = -5.88$ ;  $p < .05$ . It is important to remember that the range of victimization scores was fairly large, with

some children reporting events happening between “sometimes” and “a lot.” Thus, just as in the TD population, there are individual differences in reports of victimization.

Intelligibility ratings showed that participants were able to be understood at an average rate of about 50%, suggesting that when communicating with peers, for many of these adolescents only about half of what they say is understood. However, the range was extremely wide (6% - 99%), suggesting large individual differences. The pragmatic judgment measure from the CASL-2 revealed that participants often do not respond in line with pragmatic rules. Participants scored, on average, below a kindergarten level of pragmatic ability. Some participants did score up to the equivalent of a 3<sup>rd</sup> grader, however, the majority of participants scored in the “pre-kindergarten” category of functional pragmatics. This demonstrates that pragmatic ability, at least measured by the CASL-2, was a relative weakness for this sample, which had an average age equivalent of 5.29 years in receptive vocabulary (PPVT-4). In addition to these two communication measures, researcher rated conversational appropriateness averaged just over 11 out of a possible 16 points, with a range of 8-16. It is important to note that this measure captured completely non-verbal behaviors within a conversation.

The measures of emotion regulation demonstrated that this does not seem to be a primary problem area for some of the participants, but may be so for others. While the child self-report emotion regulation measure (ERICA) was not reliable and thus not analyzed further, the parent report (BRIEF Emotion Regulation subscale) demonstrated a fairly high mean in relation to age norms (high scores correspond to lower emotion regulation on the BRIEF). Parent reported scores revealed a mean T score of about 61, which is above the age norm of 50, but below the “clinically elevated” score of 65. The T-score range of 41-76 suggests a range from better than age-norm to clinically elevated.

Table 1

*Descriptive Statistics: Measures of Victimization, Communication, and Emotion Regulation*

Scale	Mean	SD	Range
Victimization- Child	2.16	.49	19-46
Victimization- Parent	2.33	.35	26-45
Intelligibility (%)	57.21	22.80	6.25 – 99.25
Pragmatic Judgment	9.91	9.48	2 – 25
Pragmatic Judgment Grade Equivalent	.544	1.19	0 – 3 <sup>rd</sup>
Conversational Appropriateness	2.85	.67	8-16
Emotion Regulation- Child	2.61	.23	26-37
Emotion Regulation- Parent	1.32	.28	9-22
Emotion Regulation- Parent T-score	61.48	10.18	41 - 76
PPVT-4 GSV Scores	131.33	18.54	102 - 163
PPVT-4 Age Equivalent (years)	5.29	1.49	3.1 – 8.2

Note. All scores are average scores on the respective measures aside from intelligibility which is a percentage, and Pragmatic judgement which is a sum. GSV is a growth value score that represents equal-interval scales instead of a raw score.

**RELIABILITIES.** Each of the main measures showed good reliability except the child-report of emotion regulation, which yielded an alpha reliability of .419. Therefore, all further analyses involving emotion regulation utilized the parent report measure. Interrater reliability for coding the two intelligibility measures, conversation and narrative language task, were calculated in two phases. In the first phase, the first ten participants' recordings (two each) were triple coded, meaning the main researcher and two research assistants each coded the recordings for each participant, providing a single rating for each task. In order to establish reliability between three coders, each coder's scores were correlated with scores of the other two; for example,

coder 1 scores were correlated separately to coder 2 scores and coder 3 scores. After these were shown to have a high reliability (narrative task: at least  $r = .85$ ; conversation sample: at least  $r = .87$ ), the remaining 13 participants were double coded by the research assistants, resulting in an overall interrater reliability of at least  $r = .90$  (Narrative task:  $r = .94$ ; conversation sample:  $r = .90$ ). A single intelligibility score was computed for each participant by averaging the ratings from each researcher on each task.

PARENT-CHILD CORRELATIONS. The relations between measures that parents and children both completed - emotion regulation, victimization, and self-esteem - were examined (see Table 2). None of the parent measures correlated significantly with the corresponding child measures. For emotion regulation and self-esteem this may be due to the low reliability for child-reported measures (see Table 4 for reliability of child-reported self-esteem). As a result of this lack of reliability, conclusions as to the agreement between parent and child reports on these constructs cannot be drawn. Parent-reported and child-reported victimization measures did not correlate with each other in spite of adequate reliability of both measures. While parent and child reports did not correlate with each other, parent-reported emotion regulation and parent reported self-esteem did correlate significantly,  $r(23) = -.448$ ,  $p < .05$ . Specifically, parents who reported that their adolescents had more difficulty with emotion regulation also reported that their adolescent had lower self-esteem.

Table 2

*Parent – Child Correlations*

Scale	ER - P	V - P	V - C	SE - P	SE - C
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Emotion Regulation – Parent	1				
Victimization – Parent	-.004	1			
Victimization – Child	-.022	-.132	1		
Self-Esteem – Parent	-.449*	.038	.178	1	

*Note.* \* denotes  $p < .05$

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**RELATION WITH AGE AND SEX.** Age significantly correlated with two variables, parent- reported emotion regulation,  $r(23) = -.433, p < .05$ , and pragmatic judgment,  $r(23) = .467, p < .05$ . The relation between emotion regulation and age demonstrates that as adolescents age they tend to have fewer emotion regulation difficulties. Similarly, the correlation between pragmatic judgment and age demonstrates that participants who are older tended to have better pragmatic ability as measured by the CASL-2. Each of these correlations are what would be expected based on TD populations. Age did not correlate significantly with victimization, intelligibility, or conversational appropriateness. Additionally, only victimization was significantly different based on gender,  $F(9) = 5.23, p < .05$ , with male participants ( $M = 34.28; SD = 8.66$ ) reporting significantly higher victimization rates than female participants ( $M = 30.67; SD = 5.71$ ).

## MAIN ANALYSIS

**COMMUNICATION AND VICTIMIZATION.** The primary hypothesized relation of interest in this study, between communication and victimization, was shown to be significant. First, all communication measures were negatively related to the adolescent's report of victimization, suggesting that weaker communication skills corresponded to higher reported victimization ( $r$ 's ranging from  $-.455$  to  $-.580$ ). See Table 3 for correlations. Pragmatics and communication composites were created by first standardizing participant scores and then

summing the standardized scores. These composites also correlated significantly with victimization ( $r$ 's = -.570 and -.579, respectively) even when controlled for PPVT-4 GSV ( $r$ 's = -.470 and -.471, respectively). Thus, those who were harder to understand (i.e., less intelligible), had poorer pragmatic abilities, and had less appropriate conversational behaviors reported higher levels of peer victimization. These relations demonstrate that there seems to be a fairly strong correspondence between adolescent's communication ability and their self -reported victimization experience.

It is important to note that each of the communication measures were also strongly positively correlated with PPVT-4 scores, which are often used as a benchmark for general functioning level in Down syndrome. This is not surprising, as the PPVT-4 measures receptive vocabulary, another possible subset of communication ability. Due to these correlations, partial correlations in which PPVT-4 GSV scores were controlled were also conducted. Partial correlations revealed that the completely non-verbal measure of conversational appropriateness remained significantly related to peer victimization,  $r(23) = -.563, p < .05$ . Additionally, both the composites of pragmatic communication ( $r(23) = -.470, p < .05$ ) and total communication ( $r(23) = -.441, p < .05$ ) remained significantly related to victimization. Bivariate and partial correlations can be found in Table 3.

Table 3

*Correlations and partial correlations between language measures, victimization, and emotion regulation*

Scale	INT	PRAGJ	CONV	ER-P	VIC-C	PC	CC
Intelligibility	1	.297	.407	.002	-.181	.396	.681**
Pragmatic Judgment (CASL-2)	.621**	1	.636*	-.368	-.251	.879**	.809**
Conversational Appropriateness	.568**	.715**	1	-.250	-.563*	.927**	.888**
Emotion Regulation - Parent	-.185	-.427*	-.320	1	-.093	-.333	-.265
Victimization - Child	-.455*	-.467*	-.580**	-.022	1	-.470*	-.441*
Pragmatic Composite	.642**	.926**	.926	-.422*	-.570**	1	.942**
Communication Composite	.839**	.895**	.875	-.371	-.579**	.956	1
PPVT-4 GSV	.655**	.712**	.445*	-.284	-.655**	.624**	.690**

Note. \* denotes  $p < .05$ ; correlations above diagonal (shaded) control for PPVT-4 GSV

**COMMUNICATION AND EMOTION REGULATION.** As a result of the poor reliability for child reported emotion regulation, the parent report was utilized in data analysis. Emotion regulation significantly correlated only with the pragmatic judgment subtest of the CASL-2,  $r(23) = -.427, p < .05$ . Adolescents who were higher in pragmatic judgment were rated as having better emotion regulation by their parents. Emotion regulation also correlated with the pragmatic composite,  $r(23) = -.422, p < .05$ . However, these relations did not remain significant when PPVT-4 GSV score was controlled. Full and partial correlations among each of the measures can be found in Table 3.

**EMOTION REGULATION AND VICTIMIZATION.** Surprisingly, correlations revealed that, unlike in TD samples, emotion regulation was not significantly related to victimization in the present sample of adolescents with DS,  $r(23) = -.022, p > .05$ . Therefore, the planned mediation analysis was not run. While not a mediation analysis, pragmatic judgment from the CASL-2 related significantly to emotion regulation. However, the hypothesized relation between emotion regulation and victimization was not found. As a result, it cannot be said that emotion regulation mediates the relation between communication and victimization, at least in this sample of adolescents with DS.

## **EXPLORATORY VARIABLES**

A few constructs were measured for exploratory analysis, including, self-esteem (reported by both the parent and child), as well as aggression, social motivation, and friendship quality all reported by parents only. All of these exploratory variables had acceptable reliability, except for child-reported self-esteem, which had a reliability of .467 (see Table 4 for descriptives and reliabilities). Histograms demonstrated no gross deviations from normal distribution for each variable, aside from child reported self-esteem which was negatively skewed, with nearly all

adolescents reporting high self-esteem. Due to low reliability, child-reported self-esteem was not further analyzed.

Table 4

*Descriptive between self-esteem, aggression, friendship quality, and social motivation*

	Mean	Standard Deviation	Range	Alpha
				Reliability
Self-Esteem – Parent	3.07	.32	17 – 23	.616
Self-Esteem – Child	3.61	.28	18 – 24	.467
Aggression – Parent	1.18	.17	35 – 57	.818
Friendship Quality – Parent	2.42	.54	67 – 136	.950
Social Motivation - Parent	3.84	.76	45 - 118	.786

Note. All scores are an average of points earned on the respective measures

To better understand the primary constructs of the study (peer victimization, communication, and emotion regulation) correlations between these measures and the exploratory measures were examined (see Table 5). The majority of the exploratory variables did not yield significant correlations, however some did demonstrate significant relations. Parent-reported aggression correlated significantly with parent-reported emotion regulation,  $r(22) = .466, p > .05$ , in that parents who reported their child being more aggressive also reported poorer emotion regulation abilities for their child. In addition, parent-reported self-esteem significantly negatively related to parent-reported emotion regulation,  $r(22) = -.449, p < .05$ . This correlation suggests that parents who reported more emotion regulation problems also reported lower self-esteem for their child. Finally, friendship quality, as reported by parents, correlated with both pragmatic measures, the Pragmatic Judgment subtest of the CASL-2,  $r(22) = .555, p < .05$  and conversational appropriateness,  $r(22) = .473, p < .05$ .



Table 5.

*Correlations of exploratory measures with primary constructs*

	Victimization - Child	Victimization - Parent	Emotion Regulation - Parent	Pragmatic Judgement (CASL-2)	Conversational Appropriateness	PPVT- 4	Intelligibility
Aggression - P	.042	-.176	.466*	-.346	-.185	-.188	-.094
Self-Esteem - P	.178	.038	-.449*	.061	.057	.264	-.106
Social Mot - P	-.355	.007	-.129	.300	.266	.027	.029
Friendship Q- P	-.231	-.071	-.150	.555*	.473*	.431	.351

Note. \* denotes p < .05. P = Parent-reported. C = Child-reported

## DISCUSSION

Anecdotally, it seems victimization of youth with DS is a problem of great concern for their parents. One goal of the present study was to understand the prevalence of peer victimization among youth with DS. Comparing the reports of adolescents with DS to those of TD adolescents previously reported (Crick & Grotpeier, 1996), results indicated that adolescents with DS were less likely to be overtly victimized by peers, but were similar in their reports of relational victimization. Further, adolescents with DS reported receiving less prosocial treatment from peers than did TD youth. Thus, it seems that adolescents with DS may be less likely to be treated in an overtly mean way by peers (i.e., be a victim of physical or verbal aggression) but they are similarly likely to be victims of relational aggression and they are less likely to be treated nicely by peers. These results lead to the preliminary conclusion that among those with DS, victimization, especially relational aggression is a problem and does deserve to be studied. Thus, it is important that more research is done that directly compares adolescents with DS to TD adolescents in specific social arenas, like victimization.

The main goal of the study was to examine individual differences in the victimization experiences of adolescents with DS, focusing on how communication skills and emotion regulation may predict these negative peer experiences. Research among TD children and adolescents has shown various individual differences that seem to increase the likelihood of being victimized by peers. Commonly, poor expressive communication abilities and emotion regulation are shown to be two of these factors (Murphy, et al., 2014; Godleski, et al., 2015). Specifically, research has demonstrated a link between those with disfluent or less intelligible

speech and higher victimization (Murphy, et al., 2014). Similarly, children and adolescents who are less socially appropriate in conversation, or have lower pragmatic skills, tend to have lower quality peer relationships and be more victimized than their socially appropriate peers (Conti-Ramsden & Botting, 2004). Additionally, children and adolescents with lower communication abilities, tend to have more emotion regulation issues (Eggers, et al., 2010). Finally, lower emotion regulation skills have been linked to more frequent victimization experiences in TD adolescents (Eggers, et al., 2010). These separate relationships seem to suggest that lower communication skills may lead to lower emotion regulation skills, which subsequently may lead to higher rates of victimization. As youth with DS tend to struggle with expressive communication, including intelligibility, as well as with emotion regulation (Kent & Vorperian, 2013; Bieberich & Morgan, 2004), it was hypothesized that among adolescents with DS, lower communication and social appropriateness would be linked with higher victimization. Additionally, it was hypothesized that emotion regulation ability would mediate this relation. Overall, the findings from this study suggest a partial support of the hypothesis in that communication was significantly correlated with both victimization and emotion regulation. However, victimization and emotion regulation were not significantly correlated.

Regarding these hypotheses, expressive communication was negatively related to victimization. Specifically, those with lower communication abilities, including both pragmatics and intelligibility, tended to also report higher victimization rates than those with better communication abilities. When broken down, both pragmatic skill and intelligibility significantly related to reported victimization. This suggests that those with DS who have comparatively low communication abilities are more victimized than those with DS who have higher communication abilities. It is also interesting to note that when functioning level, as measured by

the PPVT-4, was controlled, the majority of these relations became nonsignificant. It is possible that the PPVT-4, a measure in which a participant's receptive vocabulary is measured, is simply reflecting another aspect of communication. Thus, it is not surprising that it correlated so strongly with both intelligibility and pragmatic ability.

However, it is also possible that the PPVT-4, as intended, reflected approximate level of functioning. The PPVT-4, is a fairly common tool to efficiently gather an approximate cognitive age and functioning level for participants with DS. Therefore, it is possible that there is a significant relation between intellectual functioning level and victimization in addition to that between communication ability and victimization. Additionally, this would suggest that functioning level has its own unique relation with victimization, beyond receptive language. Using this view of PPVT-4, victimization and verbal-based communication may be related only because they are both related to functioning level. Those who are higher functioning have fewer communication difficulties and report less victimization. Past research has shown that, at least in elementary school children, those with higher intelligence are less likely to be victimized (Verlinden, et al., 2014).

It is important to note that past research has largely demonstrated that the PPVT is a measure that correlates with more traditional IQ testing. Specifically, in young children, those with ASD, and low to average intelligence college students (Vance, West, & Kutsick, 1989; Bell, Lassiter, Matthews, & Hutchinson, 2001; Krasileva, Sanders, & Bal, 2017). However, in order to establish the impact of the PPVT-4, further research should be conducted to evaluate the influence of level of functioning or intelligence on victimization in those with DS using measures that are less related to communication. Specifically, this research should involve a non-verbal measure of approximate IQ or cognitive functioning in order to investigate the impact that functioning level may independently have on victimization.

However, one communication measure did remain significantly related to victimization with PPVT-4 scores controlled: conversational appropriateness. This is of particular interest as conversational appropriateness was the only communication measure that was entirely non-verbal. This measure included things like eye contact, affect, personal space, and an overall rating of conversational appropriateness. These items are key components of the non-verbal aspect of pragmatic language and likely detected conversational awkwardness. As previously discussed, children who break social norms or act in an “awkward” manner are less socially successful (Garner & Hinton, 2010). Additionally, it is possible that this measure was identifying non-verbal social skills. Research has suggested that aspects of social skills, like identifying inappropriate behaviors, may be lower in those with DS than a cognitive age match (Hippolyte, Iglesias, Van der Linden, & Barisnikov, 2010). Future research should investigate the individual differences in social skills in those with DS and how these differences impact social outcomes like victimization and peer relations.

It is important to note that the conversational appropriateness measure is rather basic in nature, utilizing only four questions, and thus before any conclusions can be made, more research with more detailed measures needs to be done. Additionally, the preliminary nature of this measure should be taken into consideration. Since these judgements were made by a single researcher it is impossible to address inter-rater reliability, leaving a potential for bias. Furthermore, the constructs rated in this measure are rather subjective and difficult to operationalize. Therefore, future research should include more detailed ratings of these constructs that are coded by multiple researchers both in person and through video recording. While these results are primary they do begin to suggest that there may be a link between non-verbal conversational appropriateness and victimization, which is not explained by verbal ability

alone. Thus, it seems that verbal abilities, as indexed by the PPVT-4, and non-verbal communication abilities both predict to peer victimization for adolescents with DS.

While there was evidence that communicative abilities and victimization were related in youth with DS, in this study there was not a significant relationship between emotion regulation and victimization. This is in contrast to research with TD youth which has found that those with poorer emotion regulation skills are more victimized by peers (Godleski, et al., 2015; Garner & Hinton, 2010). It is possible that the null findings is a result of unsuccessful measurement. The measure used for self-reported emotion regulation in the present study had not been used with those with DS in the past, and it may be that the modification was not understandable for youth with DS. The modification resulted in a measure that was not adequately reliable. Additionally, although the parent-report measure was reliable, it may be that parents are not accurate reporters of emotion regulation of their children in the school setting. Thus, it will be important for future research to try alternative measures of emotion regulatory abilities with these youth before dismissing emotional regulation as a predictor of peer victimization.

Finally, it may be that for youth with DS, victimization is not predicted by whether or not they can control their negative or positive emotional reactions to events. It may be that the peers of those with DS know that they are different and thus expect, or are not surprised by, atypical emotional behaviors and emotion dysregulation does not trigger victimization by their peers. Instead, peer victimization for these adolescents may be predicted, as our results suggest, more by their ability to successfully relate to and communicate with peers. There may also be additional factors for research to consider, like the larger school culture regarding peer aggression and inclusiveness that also affect how youth with DS are treated by peers (see, for example, Garnett & Brion-Meisels, 2017; Yang, Sharkey, Reed, Chen, & Dowdy, 2018).

There was some evidence, however, that lower communication abilities was related to lower emotion regulation skills, similar to what was found with TD youth (Eggers, et al., 2010). Pragmatic ability was the only aspect of communication that was significantly related to emotion regulation. It is important to note that this relation was largely driven by the link between the CASL-2 Pragmatic Judgment measure and emotion regulation, meaning that conversational appropriateness did not independently relate to emotion regulation. Additionally, when the PPVT-4, the measure intended to assess level of function, was controlled, the relations between both pragmatic ability and emotion regulation became nonsignificant. This suggests that either level of functioning is a stronger predictor of emotion regulation than communication ability or the PPVT-4 is actually measuring another element of communication, receptive vocabulary, which is strongly related to emotion regulation. Regardless, these findings demonstrate that there may be a relation between emotion regulation and communication, however additional research needs to be done in order to assess what may be driving this association.

It is also important to note that no measure that was completed by both children and parents significantly correlated with its matching measure (e.g., child reported victimization did not correlate with parent reported victimization), thus demonstrating a discrepancy between child and parent reports. Research in TD populations suggests that as a child ages and moves into adolescence, parent reports become less related to the child self-report measures (Chan, 2015). While it is possible that the lack of correlation between parent and child report is due simply to poor reliability, it seems likely, or at least possible, that the reasons are similar to those found in TD literature. For example, Lee, Lansford, Pettit, Bates, and Dodge (2012) stated the fact that adolescents spend the most time with peers at school without their parents and may not share each detail of their social experiences could explain the discrepancies. In addition, the majority

of those with DS have significant difficulty with expressive communication (Kumin & Coll, 1994), potentially leading to even less detail about daily social experience being shared with parents. Thus, it is not surprising that children and parents reports did not match up in the constructs measured in this study. This finding demonstrates that, at least in socially focused studies, it is important to include self-report measures and not rely solely on the parent reports.

We also had difficulty measuring self-reported self-esteem. Together with the unreliable measure of emotion regulation, these difficulties with measurement may suggest that adolescents with DS may not yet have the ability to be introspective enough to report on these constructs. These introspective type of questions may be harder for participants to answer as they require a two-step process of thought. First, they must think of a time when the situation was relevant (ex. a time when I was mad), and second how they reacted to that situation (ex. was I mad for a long time?). When answering more straight forward questions participants need only think about one step (ex. does this thing happen to me?). Additionally, it is possible that due to lower language abilities, the meaning of the questions may not have been accurately understood, and thus the reporting was not accurate either.

In our exploratory analyses, it was found that parent report of the quality of their child's closest friendship was related to the child's pragmatic abilities. Children with DS who acted more socially appropriately, or had higher pragmatic abilities, also tended to have higher quality best friendships. Interestingly, intelligibility did not relate to friendship quality, suggesting that it may be more important for a child to act within the social norms than to be understandable in maintaining a quality friendship. However, it is important to remember that this result is very preliminary and much more research, especially that utilizes self-report or observational measures of friendship quality, needs to be done in order to verify and expand on this finding.

Whereas this study introduced many potentially important relations and factors in identifying those with DS who are at the highest risk to be victimized, there are a few more limitations to discuss. The primary limitation of this study was a small sample size. Due to the limitations of working with a rare population, the sample size was small and a result of this ( $n = 23$ ) some correlations were not significant. It is possible that if this study were replicated with a larger sample, more significant correlations would be found. Additionally, and as acknowledged already, several of the measures needed to be modified for this study for the first time. The first-time modifications may not have been optimal, and thus, may have impacted the outcomes for some variables. Additional work is needed to create reliable and valid measures of the constructs in the present study for adolescents with DS.

Although the present study contained a few limitations, this study begins to create a foundation for future research on the social experiences of those with DS. First, this study shows that those with DS actually are experiencing relational victimization at a similar rate to those who are TD. This is important as it demonstrates a need for research to evaluate the reasons behind who is most at risk for victimization in order to minimize potentially adverse outcomes. These findings also support the idea that the “happy go lucky” stereotype of those with DS does not mean that they are exempt from adverse social experiences, and thus the social arena should be studied more extensively in this population. Second, this study suggests that communication, which is often a struggle for those with DS, seems to increase the potential that an adolescent is victimized. It is possible that pragmatic and expressive communication could become a point of intervention in order to decrease victimization experiences in this population. However, it is important to note that these findings are not causal. Therefore, additional research needs to be

done to investigate if enhancing communication skills would actually reduce victimization experiences.

This study is the first to examine how communicative abilities and peer victimization are related in adolescents with DS, yet it is important that more research is done to confirm and expand the findings in this study. Additionally, this study shows that the link between emotion regulation and victimization seen in TD adolescents may not be present in those with DS. Finally, it does seem that there is at least a partial link between communication ability and emotion regulation in adolescents with DS. These results create a starting point for future research and confirm the fact that communication may be a point of interest in determining those with DS who are at the highest risk to be victimized.

This relationship lends many questions for future research, first, it is important to gather direct comparison data with TD adolescents in order to make more reliable conclusions. It is also important to remember that this study done with TD children and adolescents was conducted over 20 years ago, meaning that there likely have been changes to the social context adolescents operate in. Specifically, there has been an increase in attention about and efforts to lessen victimization in schools and the introduction of the cyberworld leading to cyberbullying. Neither of these things impacted the original sample and thus a replication today could yield different results. In order to drawn accurate conclusions with confidence additional, research needs to be done.

In addition to a more comparable TD group, research should focus on the impact and awareness of victimization experiences in those with DS. In TD children and adolescents, those who are more victimized often report more mental health issues, specifically internalizing and externalizing problems, and aggression issues (Nishina, Juvonen, & Witkow, 2005). While the

results from this study do suggest that victimization is occurring to adolescents with DS, it is unknown if victimization would have a similar impact on the well-being of those with DS. In order to investigate this question, research should look at the awareness of victimization and well-being of those with DS.

Additionally, interventions could be targeted towards the peers and classmates of these adolescents with DS in order improve how peers interact with these youth. Interventions could be created in order to familiarize and destigmatize the communication issues that are prevalent in those with DS. This could decrease victimization towards adolescents with DS as their peers would be more familiar with the challenges faced and how to act when they do not understand what is being communicated. Whereas the issue of victimization is immensely complex, these results help in providing a starting point for interventions and research that will ideally assist in lessening victimization experiences and improving the overall social experience of adolescents with DS.

## REFERENCES

- Abbeduto, L., Benson, G., Short, K., & Dolish, J. (1995). Effects of sampling context on the expressive language of children and adolescents with mental retardation. *Mental Retardation*, 33, 279-288.
- Bell, N. L., Lassiter, K. S., Matthews, T. D., & Hutchinson, M. B. (2001). Comparison of the Peabody Picture Vocabulary Test—Third Edition and Wechsler Adult Intelligence Scale—Third Edition with university students. *Journal of Clinical Psychology*, 57(3), 417–422. <https://doi-org.libdata.lib.ua.edu/10.1002/jclp.1024>
- Bieberich, A. A., & Morgan, S. B. (2004). Self-regulation and affective expression during play in children with Autism or Down syndrome: A short-term longitudinal study. *Journal of Autism and Developmental Disorders*, 34, 439-448. doi: 10.1023/B:JADD.0000037420.16169.28
- Carroll-Woolfolk, E. (2017). *Comprehensive Assessment of Spoken Language, Second edition*. [Measurement instrument]. Minnesota: American Guidance Service, Inc.
- Chan, K. L. (2015). Are parents reliable in reporting child victimization? Comparison of parental and adolescent reports in a matched Chinese household sample. *Child Abuse and Neglect*, 44, 170 – 183. doi: 10.1016/j.chabu.2014.11.001
- Cleland, J., Wood, S., Hardcastle, W., Wishart, J., & Timmins, C. (2010). Relationship between speech, oromotor, language, and cognitive abilities in children with Down's syndrome. *International Journal of Language and Communication Disorders*, 45, 83-95. doi: 10.3109/12682820902745453.
- Colozzo, P., McKeil, L., Peterson, J. M., Szabo, A. (2016). An early literacy program for young children with Down syndrome: Changes observed over one year. *Journal of Policy and Practice in Intellectual Disabilities*, 13, 102-110. doi: 10.1111/jppi.12160
- Cole, P. M., Armstrong, L. M., & Pemberton, C. K. (2010). The role of language in the development of emotion regulation. In S. D. Calkins, M. A. Bell (Eds.). *Child development at the intersection of emotion and cognition* (pp.61-63). Washington, DC, US: American Psychological Association. Doi: 10.1037/12059-004
- Conti-Ramsden, G., & Botting, N. (2004). Social difficulties and victimization in children with SLI at 11 years of age. *Journal of Speech, Language, and Hearing Research*, 47, 145-161. doi: 10.1044/1092-4388(2004/013)

- Crick, N. R., & Grotpeter, J. K. (1996). Children's treatment by peers: Victims of relational and overt aggression. *Development and Psychopathology*, 8, 367-380.
- Dagnan, D., & Sandhu, S. (1999). Social comparison, self-esteem and depression in people with intellectual disability. *Journal of Intellectual Disability Research*, 43, 372-379. doi: 10.1046/j.1365-2788.1999.043005372
- Eggers, K., De Nil, L. F., & Van den Berg, B. R. H. (2010). Temperament dimensions in stuttering and typically developing children. *Journal of Fluency Disorders*, 35, 355-372. doi: 10.1037/t05151-000
- Fink, E., Deighton, J., Humphrey, N., & Wolpert, M. (2015). Assessing the bullying and victimization experiences of children with special educational needs in mainstream schools: Development and validation of the Bullying Behavior and Experience Scale. *Research in Developmental Disabilities*, 36, 611-619. doi: 10.1016/j.ridd.2014.10.048
- Fisher, M. H., Baird, J. V., Currey, A. D., & Hodapp, R. M. (2015) Victimization and social vulnerability of adults with intellectual disability: A review of research extending beyond Wilson and Brewer. *Australian Psychologist*, 51, 114-127. doi: 10.1111.ap.12180
- Fisher, M. H., Moskowitz, A. L., & Hodapp, R. M. (2013). Differences in social vulnerability among individuals with autism spectrum disorder, Williams syndrome, and Down syndrome. *Research in Autism Spectrum Disorders*, 7, 931-937. doi: 10.1016/j.rasd.2013.04.009
- Garner, P. W., & Hinton, T. S. (2010). Emotional display rules and emotion self-regulation: Associations with bullying and victimization in community-based after school programs. *Journal of Community & Applied Social Psychology*, 20, 480-496. doi: 10.1002/casp.1057
- Garnett, B. R., & Brion-Meisels, G. (2017). Intersections of victimization among middle and high school youth: Associations between polyvictimization and school climate. *Journal Of Child & Adolescent Trauma*, 10(4), 377-384. doi:10.1007/s40653-017-0183-7
- Gioia, G.A., Isquith, P. K., Guy, S. C., & Kenworthy, L. (2015). *Behavior Rating Inventory of Executive Function, Second Edition* [Measurement instrument]. Lutz, Florida: PAR, Inc.
- Godleski, S. A., Kamper, K. E., Ostrov, J. M., Hart, E. J., & Blakely-McClure, S. J. (2015). Peer victimization and peer rejection during early childhood. *Journal of Clinical Child and Adolescent Psychology*, 44, 380-392. doi: 10.1080/15374416.2014.940622
- Gulay, H. (2011). Effects of peer relationships and gender on Turkish children's language skills. *Social Behavior and Personality*, 39 979-992. doi: 10.2224/sbp/2011.39.7.979
- Haynes, A., Gilmore, L., Shochet, I., Campbell, M., & Roberts, C. (2013). Factor analysis of the self-report version of the strengths and difficulties questionnaire in a sample of children with intellectual disability. *Research in Developmental Disabilities*, 34, 847-854. doi: 10.1016/j.ridd.2012.11.008

- Hippolyte, L., Iglesias, K., Van der Linden, M., & Barisnikov, K. (2010). Social reasoning skills in adults with Down syndrome: The role of language, executive functions and socio-emotional behaviour. *Journal Of Intellectual Disability Research*, 54(8), 714-726. doi:10.1111/j.1365-2788.2010.01299.x
- Hugh-Jones, S. (1999). Self-reports of short-and long-term effects of bullying on children who stammer. *British Journal of Educational Psychology*, 69, 141-158. doi: 10.1348/000709999157626
- Jahromi, L. B, Gulsrud, A., & Kasari, C. (2008). Emotional competence in children with Down syndrome: Negativity and regulation. *American Journal on Mental Retardation*, 113, 32-43. doi: 10.1352/0895-8017(2008)113[32:ECICWD]2.0.CO;2
- Johnston, F., & Stansfield, J. (1997). Expressive pragmatic skills in pre-school children with and without Down's syndrome: Parental perceptions. *Journal of Intellectual Disability Research*, 41, 19-29.
- Kent, R. D., & Vorperian, H. K. (2013). Speech impairment in Down syndrome: A review. *Journal of Speech, Language, and Hearing Research*, 56, 178-210. doi: 10.1044/1092-4388(2012/12-0148)
- Krasileva, K. E., Sanders, S. J., & Bal, V. H. (2017). Peabody Picture Vocabulary Test: Proxy for verbal IQ in genetic studies of autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 47(4), 1073–1085. <https://doi.org.libdata.lib.ua.edu/10.1007/s10803-017-3030-7>
- Kumin, L., & Coll, L. (1994). Intelligibility of speech in children with Down syndrome in natural settings: Parents' perspective. *Perceptual and Motor Skills*, 78, 307-313. doi: 10.2466
- Lee, S. J., Lansford, J. E., Pettit, G. S., Bates, J. E., & Dodge, K. (2012). Parental agreement of reporting parent to child aggression using the Conflict Tactics Scales. *Child Abuse & Neglect*, 36, 510 – 510. doi: 10.1016/j.chab.2012.04.005.
- Lord, C., Rutter, R.J., DiLavore, P.C., Risi, S., Gotham, K., & Boshop, S. *Autism Diagnostic Observation Schedule, Second Edition*. Torrance, CA: Western Psychological Services, 2012.
- Laws, G., & Bishop, D. V. M. (2004). Pragmatic language impairment and social deficits in Williams syndrome: A comparison with Down's syndrome and specific language impairment. *International Journal of Language & Communication Disorders*, 39, 45-64. doi: 10.1080/13682820310001615797
- Lindsay, G., Dockrell, J. E., & Mackie, C. (2008) Vulnerability to bullying in children with a history of specific speech and language difficulties. *European Journal of Special Needs Education*, 23, 1-16. doi: 10.1080/08856250701791203

- Little, T. D., Henrich, C. C., Jones, S. M., & Hawley, P. H. (2003). Disentangling the “whys” from the “whats” of aggressive behavior. *International Journal of Behavioral Development*, 27, 122-133. doi: 10.1080/01650250244000128

MacDermott, S. T., Gullone, E., Allen, J. S. King, N. J., & Tonge, B. (2010) The emotional regulation index for children and adolescents (ERICA): A psychometric investigation. *Journal of Psychopathology and Behavioral Assessment*, 32, 301- 314. doi:10.1007/s10862-009-9154-0

Maiano, C., Aime, A., Salvas, M. C., Morin, A. J. S., & Normand, C. L. (2015). Prevalence and correlates of bullying perpetration and victimization among school-aged youth with intellectual disabilities: A systematic review. *Research in Developmental Disabilities*, 49-50, 181-195. doi: 10.1016/j.ridd.11.015

Mayer, M. (1973). *Frog on his own*. New York: Dial Books for Young Readers.

Maxwell, J. K., & Wise, F. (1984). PPVT IQ validity in adults: A measure of vocabulary, not of intelligence. *Journal of Clinical Psychology*, 40(4), 1048–1053. doi: 10.1002/1097-4679(198407)40:4<1048::AID-JCLP2270400431>3.0.CO;2-G

McWhorter, J. (2018). Linguistics and pragmatics. In R. M. Seyfarth, D. L. Cheney, R. M. Seyfarth, D. L. Cheney (Eds.) , *The social origins of language* (pp. 37-45). Princeton, NJ, US: Princeton University Press.

Murphy, S. M., Faulkner, D. M., & Reynolds, L. R. (2014). A randomized controlled trial of a computerized intervention for children with social communication difficulties to support peer collaboration. *Research in Developmental Disabilities*, 35, 2821-2839.

Neel, R., Kenrick, D. T., White, A. E., & Neuberg, S. L. (2016). Individual differences in fundamental social motives. *Journal of Personality and Social Psychology*, 110(6), 887-907. doi: 10.1037/pspp0000068

Newton, R.W., Puri, S., & Marder, L. (20150. *Down syndrome: Current perspectives*. London (England): Mac Keith Press.

Nishina, A., Juvonen, J., & Witkow, M. R. (2005). Sticks and stones may break my bones, but names will make me feel sick: The psychosocial, somatic and scholastic consequences of peer harassment. *Journal of Clinical Child and Adolescent Psychology*, 34, 37–38.

Parker, J. G., & Asher, S.A (1993). Friendship and Friendship Quality in Middle Childhood: Links with peer group acceptance and feelings of loneliness and social dissatisfaction. *Developmental Psychology*, 29, 611-621. doi: 10.1037/0012-1649.29.4.611

Parker S. E., Mai C. T., Canfield M. A., Rickard R., Wang Y., Meyer R. E. et al. (2010) Updated national birth prevalence estimates for selected birth defects in the United States, 2004–2006. *Birth Defects Research. Part A, Clinical and Molecular Teratology* 88, 1008–16. <https://doi.org/10.1002/bdra.21008>

Paterson, L., McKenzie, K., & Lindsay, B. (2012). Stigma, social comparison and self-esteem in adults with an intellectual disability. *Journal of Applied Research in Intellectual Disabilities*, 25, 166-176. doi: 10.1111/j.1368-3148.2011.00651.x

Peabody Picture Vocabulary Test – 4th edition (PPVT-IV) Dunn, L. M., & Dunn, D. M. (2007). Peabody Picture Vocabulary Test – Fourth Edition. Bloomington, MN: Pearson Assessments.

Presson, A. P., Partyka, B. S., Jensen, K. M., Devine, O. J., Rasmussen, S. A., McCabe, L. L., & McCabe, E. R. B. (2013). Current estimate of Down syndrome population prevalence in the United States. *Journal of Pediatrics*, 163:1163-8. doi: 10.1016/j.jpeds.2013.06.013

Redmond, S. M. (2011). Peer victimization among students with specific language impairment, attention-deficit/hyperactivity disorder, and typical development. *Language, Speech, and Hearing Services in Schools*, 42, 520-535. doi: 10.1044/0161-1461(2011/10-0078)

Reiter, S., Lapidot-Lefler, N. (2007). Bullying among special education students with intellectual disabilities: Differences in social adjustment and social skills. *Intellectual and Developmental Disabilities*, 45, 174-181.

Roberts, J., Price, J., Barnes, E., Nelson, L., Burchinal, M., Hennon, E. A., Moskowitz, L., Edwards, A., Malkin, C., Anderson, K., Misenheimer, J., & Hooper, S. R. (2007). Receptive vocabulary, expressive vocabulary, and speech production of boys with fragile X syndrome in comparison to boys with Down syndrome. *American Journal on Mental Retardation*, 112, 177-193. doi: 10.1352/0895-8017(2007)112

Rom, A. & Bliss, L. S. (1983). The use of nonverbal pragmatic behaviors by language-impaired and normal-speaking children. *Journal of Communication Disorders*, 16, 251 – 256. doi: 10.0021/9924/83

Rondal, J. A., & Edwards, S. (1997). *Language in mental retardation*. London: Whurr.

Troop-Gordon, W. (2017). Peer victimization in adolescence: The nature, progression and consequences of being bullied within a developmental context. *Journal of Adolescents*, 55, 116-128. doi: 10.1016/j.adolescence.2016.12.012

Troop-Gordon, W. & Unjhjem, L. (2018). Is preventing peer victimization sufficient? The role of prosocial peer group treatment in children's socioemotional development. *Social Development*, 27, 619 – 635. doi: 10.1111/sode.12283

Vance, B., West, R., & Kutsick, K. (1989). Prediction of Wechsler Preschool and Primary Scale of Intelligence IQ scores for preschool children using the Peabody Picture Vocabulary Test—R and the Expressive One Word Picture Vocabulary Test. *Journal of Clinical Psychology*, 45(4), 642–644. doi: /10.1002/1097-4679(198907)45:4<642::AID-JCLP2270450421>3.0.CO;2-Q

Verlinden, M., Veenstra, R., Ghassabian, A., Jansen, P. W., Hofman, A., Jaddoe, V. W. V., ... Tiemeier, H. (2014). Executive functioning and non-verbal intelligence as predictors of

bullying in early elementary school. *Journal of Abnormal Child Psychology*, 42(6), 953–966. <https://doi-org.libdata.lib.ua.edu/10.1007/s10802-013-9832-y>

Weismer, G. (2008). Speech intelligibility. In M. J. Ball, M. R. Perkins, N. Müller, S. Howard, M. O. Ball, M. R. Perkins, ... S. Howard (Eds.) , *The handbook of clinical linguistics* (pp. 568-582). Malden: Blackwell Publishing. doi:10.1002/9781444301007.ch35

Yang, C., Sharkey, J. D., Reed, L. A., Chen, C., & Dowdy, E. (2018). Bullying victimization and student engagement in elementary, middle, and high schools: Moderating role of school climate. *School Psychology Quarterly*, 33(1), 54-64. doi:10.1037/spq0000250

Zampini, L., Fasolo, M., Spinelli, M., Zanchi, P., Suttoro, C., & Salerni, N. (2015). Prosodic skills in children with down syndrome and in typically developing children. *International Journal of Language and Communication Disorders*. doi: 10.1111/1460-6984.12186

## APPENDIX

### A. Children's Social Experience Questionnaire – Child Modification

<b>Original Question</b>	<b>Modified Question</b>
1. How often does another kid give you help when you need it?	If you need it, do other kids help you at school?
2. How often do you get hit by another kid at school?	Do other kids hit you at school?
3. How often do other kids leave you out on purpose when it is time to play or do an activity?	Do other kids leave you out on purpose?
4. How often does another kid yell at you and call you mean names?	Do other kids yell at you and call you names at school?
5. How often does another kid try to cheer you up when you feel sad or upset?	If you're sad, are other kids extra nice to you?
6. How often does a kid who is mad at you try to get back at you by not letting you be in their group anymore?	If another kid is mad at you, do they leave you out?
7. How often do you get pushed or shoved by another kid at school?	Do other kids push you at school?
8. How often does another kid do something that makes you feel happy?	Do other kids do things that make you feel happy?
9. How often does a classmate tell lies about you to make other kids not like you anymore?	Do other kids tell lies about you on purpose?
10. How often does another kid kick you or pull your hair?	Do other kids kick you or pull your hair?
11. How often does another kid say they won't like you unless you do what they want you to do?	Do other kids say they will only like you if you do something?
12. How often does another kid say something nice to you?	Do other kids say nice things to you?
13. How often does a kid try to keep others from liking you by saying mean things about you?	Do other kids say mean things about you?
14. How often does another kid say they will beat you up if you don't do what they want you to do?	Do other kids say they will beat you up?
15. How often do other kids let you know that they care about you?	Do other kids say they care about you?

B. Children's Social Experiences Questionnaire – Parent Modification

<b>Original Question</b>	<b>Modified Question</b>
1. How often does another kid give you help when you need it?	How often does another kid give your child help when he/she needs it?
2. How often do you get hit by another kid at school?	How often does your child get hit by another kid at school?
3. How often do other kids leave you out on purpose when it is time to play or do an activity?	How often do other kids leave your child out on purpose when it is time to play or do an activity?
4. How often does another kid yell at you and call you mean names?	How often does another kid yell at your child and call him/her mean names?
5. How often does another kid try to cheer you up when you feel sad or upset?	How often does another kid try to cheer your child up when they feel sad or upset?
6. How often does a kid who is mad at you try to get back at you by not letting you be in their group anymore?	How often does a kid who is mad at your child try to get back at them by not letting him/her be in their group anymore?
7. How often do you get pushed or shoved by another kid at school?	How often does your child get pushed or shoved by another kid at school?
8. How often does another kid do something that makes you feel happy?	How often does another kid do something that makes your child feel happy?
9. How often does a classmate tell lies about your to make other kids not like you anymore?	How often does a classmate tell lies about your child to make other kids not like him/her anymore?
10. How often does another kid kick you or pull your hair?	How often does another kid kick your child or pull their hair?
11. How often does another kid say they won't like you unless you do what they want you to do?	How often does another kid say they won't like your child unless he/she does what they want them to do?
12. How often does another kid say something nice to you?	How often does another kid say something nice to your child?
13. How often does a kid try to keep others from liking you by saying mean things about you?	How often does a kid try to keep others from liking your child by saying mean things about him/her?
14. How often does another kid say they will beat you up if you don't do what they want you to do?	How often does another kid say they will beat your child up if they don't do what they want him/her to do?
15. How often do other kids let you know that they care about you?	How often do other kids let your child him/her know that they care about you?

C. Emotion Regulation Index for Children and Adolescents – Child Modification

<b>Original Question</b>	<b>Modified Question</b>
1. I have trouble waiting for something I want	When you want something is it hard for you to wait?
2. I am impatient	Are you good at waiting?
3. I annoy others by not minding my own business	Do you bother other people?
4. I have angry outbursts	Do you get really angry a lot?
5. I can be disruptive at the wrong times	Do you interrupt other people?
6. I get angry when adults tell me what I can and cannot do	Does it make you angry if a grown up tells you want to do?
7. I do things without thinking about them first	Do you do things without thinking about them?
8. I am a sad person	Are you sad most of the time?
9. I am a happy person	Are you happy most of the time?
10. When I get upset, I can get over it quickly	Do you stay upset for a long time?
11. I am quiet and shy, and I don't show my feelings	Do you show your emotions to other people?
12. I handle it well when things change or I have to try something new	Are you happy when you try new things?

*Institutional Review Board Approval Letter*



*Office of the Vice President for  
Research & Economic Development  
Office for Research Compliance*

September 11, 2018

Jenna Reardanz  
Psychology  
College of Arts & Sciences  
Box 870348

Re: IRB Application #: 17-003-R1 B “Communication and the Social Experience of Adolescents with Down Syndrome”

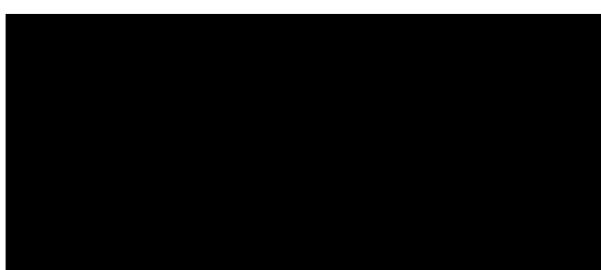
The University of Alabama Institutional Review Board has reviewed the revision to your previously approved full board protocol. The board has approved the minor change in your protocol.

Please remember that your approval period expires one year from the date of your original approval, 2/15/18, not the date of this revision approval.

Should you need to submit any further correspondence regarding this proposal, please include the assigned IRB application number.

Good luck with your research.

Sincerely,



IRB #: 17-003-RIB

UNIVERSITY OF ALABAMA INSTITUTIONAL REVIEW BOARD FOR THE PROTECTION OF HUMAN SUBJECTS  
REQUEST FOR APPROVAL OF RESEARCH INVOLVING HUMAN SUBJECTS

**I. Identifying information**

<b>Principal Investigator</b>		Second Investigator	Third Investigator
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Title of Research Project: Communication and the Social Experience of Adolescents with Down Syndrome

Date Printed: 02/12/2017 Funding Source: Personal Funds

Type of Proposal:	<input type="checkbox"/> New	<input checked="" type="checkbox"/> Revision	<input type="checkbox"/> Renewal	<input type="checkbox"/> Completed	<input type="checkbox"/> Exempt
Attach a renewal application					
Attach a continuing review of studies form					
Please enter the original IRB # at the top of the page					

UA faculty or staff member signature:

**II. NOTIFICATION OF IRB ACTION** (to be completed by IRB):

Type of Review:  Full board  Expedited

**IRB Action:**

Rejected Date: \_\_\_\_\_

Tabled Pending Revisions Date: \_\_\_\_\_

Approved Pending Revisions Date: \_\_\_\_\_

Approved—this proposal complies with University and federal regulations for the protection of human subjects.

Approval is effective until the following date: 2/14/2019

Items approved:  Research protocol: dated

Informed consent: dated

Recruitment materials: dated

Other: dated

Approval

Date

9/11/2018