International Journal of Bullying Prevention (2019) 1:136–146
https://doi.org/10.1007/s42380-018-0001-2

ORIGINAL ARTICLE

Cognitive Predictors of Relational and Social Bullying, Overt Aggression, and Interpersonal Maturity in a Late Adolescent Female Sample

Laura M. Crothers[1] · Jered B. Kolbert[1] · Ara J. Schmitt[1] · Daniel S. Wells[1] · Christopher Meidl[1] · Cassandra Berbary[1] · Suzannah Chatlos[1] · Latitia Lattanzio[1] · Rachel Simonds[1] · Meredith Zebrowski[1] · Jacob Wadsworth[1] · Angela Fidazzo[1] · John Lipinski[2]

Published online: 12 September 2018

Abstract

In this study, we wished to examine the potential relationships between the skills measured by an individually administered standardized measure of cognitive ability and a self-report measure of indirect bullying, overt aggression, and prosocial skills. Therefore, a sample of 106 female students were recruited from a private, faith-based university located in an urban setting in the mid-Atlantic region of the USA (US; $M = 19.34$ years; 84.9% White) to investigate the relationships between cognitive variables and interpersonal behavior. Multiple regression analyses revealed that participants' performance on a Verbal Comprehension subtest significantly predicted their self-reported prosocial skills, with their Visual-Auditory Learning–Delayed skills enhancing this prediction. Additionally, in this sample, females' Visual Matching skills were significantly predictive of overt aggression. However, despite the researchers' hypotheses to the contrary, no cognitive skills were found to significantly predict forms of relational and social bullying. Implications of these findings for research and practice are discussed.

Keywords Indirect bullying · Cognitive skills · Relational aggression · Social aggression · Overt aggression

In children, one of the most normative yet damaging experiences of childhood is bullying victimization. According to Thomas et al. (2015), the criteria for behavior to be considered bullying are well established, and include the elements of intentionality, in which the perpetrator(s) evidence instrumental aggression; repetition, in which acts tend to be repeated over time; and a power imbalance between perpetrator(s) and victim(s). Although initially, much research focused upon the direct forms of bullying, such as physical and verbal, in the last two decades, in recognition that an emphasis upon overt bullying artificially suggests that males are more likely to be perpetrators, increasing work has been conducted in investigating indirect forms of bullying, particularly in females (Dailey et al. 2015).

✉ Laura M. Crothers
crothersL@duq.edu

[1] Department of Counseling, Psychology, and Special Education, Duquesne University, 409C Canevin Hall, 600 Forbes Avenue, Pittsburgh, PA 15282, USA

[2] Indiana University of Pennsylvania, Indiana, PA, USA

Indirect bullying (which includes relational and social bullying as subtypes) are behaviors designed to harm a victim's emotional or psychological health through threats or damage to her relationships, social status, or reputation (Dailey et al. 2015). During childhood and adolescence, females appear to be more likely than males to use relational and social bullying instead of overt aggression. Girls may secure and maintain social status by using relational and social bullying, as those who engaged in such behaviors as rumor-spreading and excluding others from the social groups were perceived as having social power and as solidifying their standing within peer groups (Owens et al. 2000). The ability to use relational and social forms of bullying may be predicated on the development of superior language skills, social intelligence, and social networking (Björkqvist et al. 1994). To manipulate peers, one must be able to communicate well, understand the subtle nuances that exist within social relationships, and have a well-developed network of relationships. Girls appear to develop these skills earlier than boys (Razmjoee et al. 2016), which may explain why their use of social and relational bullying outpaces that of boys until adulthood, when it seems to equalize (Bell et al. 2017; Björkqvist et al. 1994).

Some have asserted that relational and social bullying represent a singular concept which has been referred to as indirect bullying (Archer and Coyne 2005; Warren et al. 2011). However, there is research to suggest that relational and social bullying are recognizably different constructs with distinct motivations (Crothers et al. 2009). Crothers et al. (2009) hypothesize that whereas the intent of social bullying is to manipulate and/or damage another's social status or group membership, through either covert or overt means, the purpose of relational bullying is to directly control another's behavior. Social bullying requires the manipulation of a social group as the vehicle of harm, and includes gossiping, spreading rumors, and social isolation. It is likely a more sophisticated form of bullying than relational bullying, because it requires knowledge of social dynamics, and the ability to subtly influence or orchestrate others' behavior to achieve one's own ends. The evidence of the cost of social bullying is a diminishment in an individual's social standing (Galen and Underwood 1997) in the peer group, which damages adolescents' social self-perceptions. Finally, because of the group mentality involved with social bullying (e.g., following a dominant female's lead of disliking a victim), respite from the abusive treatment may be difficult to achieve among one's peers (Bell et al. 2017; Comstock et al. 2013).

Conversely, in perpetrating relational bullying, the actor's primary focus is to influence the behavior of the person within the dyadic relationship and lacks the group context that typifies social bullying. Relational bullying has been characterized as the intent to harm another through the exploitation of a friendship, and include sarcastic comments, speaking to another in a cold or hostile tone of voice, ignoring, staring, eye rolling, and "mean" facial expressions, all of which are intended to damage the target's self-esteem (Archer and Coyne 2005). A perpetrator telling a friend that their friendship will end unless the friend stops talking to a particular boy is a contextual example of relational bullying (Coyne et al. 2004). When a victim is undermined in this way, she often feels socially vulnerable and will increase or decrease particular behaviors to ingratiate herself with the friend, ultimately winning back the security of the friendship.

Cognitive Correlates of Overt Bullying

Some information is definitively known about the cognitive skills of traditional bullies. Investigations of the relations between overt, physical forms of aggression (including traditional, physical, and verbal bullying) with cognitive skills have generally noted positive associations with frontal lobe dysfunction (e.g., inhibition, working memory, global executive functioning, metacognition; Coolidge et al. 2003; Verlinden et al. 2013) and negative associations with intelligence and performance on cognitive and learning tasks (Kaukiainen et al. 2002).

Cognitive Correlates of Indirect Bullying

In comparison to what is known about the relationship between cognitive skills and traditional bullying, less is known regarding the cognitive correlates of indirect bullying. Most investigators studying the cognitive contributions to relational and social bullying have focused upon cognitive processing skills, and more specifically, social information processing. The most prominent framework used to understand aggressive behavior exhibited by youth is Crick and Dodge's (1994) social information processing (SIP) model. Like other general information processing models, the SIP model characterizes the processing of social interactions as a recursive, sequential cognitive process that influences the behavioral response to interpersonal events. In a sample of Greek fourth through sixth grade students, Andreou (2006) found a significant positive correlation between relational bullying and SIP processing in girls. In another study, children in fourth through sixth grades who used relational bullying became fixated when viewing the type of bullying that they themselves exhibited, suggesting that such children devote greater processing resources to situations in which they are likely to engage in relational bullying (Arsenault and Foster 2012).

Executive functioning reflects a set of higher order cognitive processes that underlie flexible goal-directed behaviors (e.g., Garon et al. 2008). Better executive functioning (e.g., flexible thinking, planning, goal setting) was associated with the use of relational bullying in a sample of 8- to 12-year-old US children (McQuade et al. 2017). Furthermore, planning and working memory skills (cool executive functioning skills) were predictive of proactive relational bullying in a British sample of young children (ages 3–6 years; Poland et al. 2016). Conversely, weaker executive functioning in a high-risk sample of preschool-age children was predictive of various forms of bullying and aggression, including relational bullying, when they reached middle childhood (Waller et al. 2017). This finding was supported by another investigation in which poor central executive working memory was associated with specific social impairments, including relational bullying, in typically developing fourth and fifth grade US students (McQuade et al. 2013). Overall, the findings have been mixed regarding the relationship between executive functioning and the use of relational bullying.

In a sample of socioeconomically at-risk US preschool students, relational bullying was found to be positively related to scores on expressive vocabulary (being able to communicate the knowledge of words either through speaking or gesturing) and receptive vocabulary measures (the ability to understand words presented; Bonica et al. 2003), negatively related with expressive language skills among US preschool students, particularly for girls (Estrem 2005), and negatively related to US elementary school children's language ability (Park et al. 2005). Consequently, the role of

language facility in predicting relational and social bullying is, at present, unclear.

Research perhaps more pertinent to the sample used in this study is an investigation examining the relationship between college students' learning styles and their use of social and relational bullying. Researchers found that two dimensions of reflective processing, deep and elaborative processing, were found to be related to the use of both relational and social bullying among US college students (Crothers et al. 2014). According to the authors of the Inventory of Learning Processes—Revised, which was used to measure students' learning styles, deep processing is "primarily integrative in nature, deriving conclusions by dialectically contrasting opposing perspectives" (Schmeck et al. 1991, p. 394). Deep processing appears to embody aspects of formal operational thought, as described by Piaget (1961). Elaborative processing "involves self-reference, essentially encoding new information in terms of personal metaphor and personal vocabulary" (Schmeck et al. 1991, p. 394). Both deep and elaborative processing have been found to relate positively with academic achievement (Schmeck et al. 1991).

The findings that both relational and social bullying were related to deep and elaborative processing is consistent with the research literature on the topic that generally indicates that relational and social forms of bullying require higher levels of social intelligence and social skills than do verbal and physical aggression (e.g., Björkqvist et al. 2000; Crothers et al. 2014). Indeed, in other investigations, relational bullying has been positively correlated with social information processing and social awareness among Greek elementary school children (Andreou 2006), and social intelligence among early elementary Spanish students (Carreras et al. 2014) and 10 to 14-year-old Finnish students (Kaukiainen et al. 1999). Relational bullying has been found to be more strongly related to social intelligence than verbal and physical aggression for 10 to 14-year-old Finish students (Björkqvist et al. 2000). Finally, empathy, a critical and arguably necessary component of prosocial skills, correlates negatively with every type of aggression except relational bullying in a young adolescent sample of Finnish schoolchildren (Kaukiainen et al. 1999).

In another investigation, when researchers examined the associations between verbal IQ and performance IQ on the Wechsler Abbreviated Scale of Intelligence (WASI) and relational bullying in a sample of late elementary-age students, there were no significant relationships found (Risser 2013). Gomez-Garibello and Talwar (2015) noted that the association between theory of mind and relational bullying was significant and positive only for younger participants in a sample of Canadian boys between 6- and 9-years-of-age, revealing that younger boys who were able to perform proficiently in representing others' mental states, motivations, and beliefs were also more apt to use relational bullying.

In reviewing all of the most pertinent literature that could be found, we believe that we do not yet fully understand the relationship between cognitive variables and relational and social bullying. There has not been a cohesive line of research that has adequately clarified the connection between cognitive skills and relational and social bullying, and no studies that we could identify that ascertain the relations between the cognitive skills measured through an individually administered, core-standardized battery of intellectual functioning and forms of relational and social bullying.

Application of Cattell-Horn-Carol (CHC) Theory of Cognitive Abilities

Considered together, studies have suggested that there are relationships among cognitive variables and the use of relational and social bullying, although the direction of the associations differed depending upon the investigation. Nevertheless, no identifiable studies have investigated the predictive capability of an individually administered standardized measure of intelligence in relationship to relational and social bullying, overt aggression, and prosocial skills, except for one study in which a brief measure of intelligence was given (Risser 2013). Consequently, we decided that it would be valuable to attempt to understand the relationships between the cognitive skills assessed on a theory-based measure of intellectual functioning and relational and social bullying, overt aggression, and prosocial skills.

Accordingly, the Woodcock Johnson III Normative Update Tests of Cognitive Abilities (WJ-III-NU; Woodcock, McGrew, & Mather, 2007) was selected for use for this study, as it relies upon the Cattell-Horn-Carroll (CHC) theory of intelligence as its theoretical underpinning. Modern Cattell-Horn-Carroll theory conceptualizes cognitive abilities within a three stratum, hierarchical framework (Schneider and McGrew 2018). CHC theory has been described as "the most comprehensive and empirically supported psychometric theory of the structure of cognitive and academic abilities to date" (Alfonso et al. 2005, p. 185) and provides a nomenclature to communicate the results of studies (Schneider and McGrew 2018).

The Current Study

For the purposes of this inquiry, we focused on four subtests of the WJ-III-NU with theoretical implications for the study of relational and social bullying, overt aggression, and interpersonal maturity (which is used interchangeably with the concept of prosocial skills in this study). First, Verbal Comprehension was selected as a measure of the broad ability of comprehension-knowledge (Gc) and the narrow abilities of language development and lexical knowledge, in particular.

Visual Matching was chosen as a measure of the ability to complete simple cognitive tasks quickly and without much thought, or the broad ability of processing speed (Gs) and narrow ability of perceptual speed. Auditory Working Memory was selected as a measure of the working memory (Gwm) broad ability, or the ability to mentally manipulate information within short-term memory. Finally, Visual-Auditory Learning–Delayed was chosen as a measure of the ability to store, consolidate, and retrieve information over time, or the broad ability of long-term storage and retrieval (Glr). The task demands of these subtests are described in the "Method" section of this manuscript.

Accordingly, we hypothesized that participants' verbal comprehension ability would be predictive of their use of relational and social bullying and their prosocial skills. Participants' speed of processing was also hypothesized to contribute to the prediction of relational and social bullying and prosocial skills. Finally, we speculated that individuals' working memories would predict the use of relational and social bullying and prosocial skills, albeit to a lesser degree. In the prediction of overt aggression, we first anticipated that participants' processing speed would significantly contribute to the use of this type of behavior, followed by their verbal comprehension and working memory.

Method

Participants

Participants for this study were recruited from a private, faith-based university with a total undergraduate population of 5961 located in an urban setting in the mid-Atlantic region of the USA. A convenience sample of 106 freshmen and sophomore female students was gathered and assessed to provide data for this study ($M = 19.34$ years; SD = .56; range = 18.08–20.58), from a total number of freshman and sophomore females of 1758 (e.g., 6% of the population). Females were specifically selected for this investigation because of the research suggesting they use relational and social bullying more so than males, who are more likely to exhibit overt aggression, until adulthood, when the differences seem to equalize. Of the 106 female students who participated in this research investigation, 84.9% identified as White, 6.6% as African-American, 4.7% as Asian, .9% as Hispanic, and 2.8% endorsing Other. Of the sample, 52.8% were freshmen, 45.2% were sophomores, and 1.8% were juniors. No participants chose not to continue with the study; thus, there is a 0% dropout rate.

Procedure

From the spring 2016 to the spring 2017, fliers advertising the study were posted in common areas around the university to attract participants. The fliers provided instructions regarding how to contact members of the research team and indicated that any 18- or 19-year-old female student was eligible to participate. The fliers also advertised that participants would be paid $50.00 for their time. All eligible students who contacted the research team were accepted as participants.

Students interested in participating first contacted a member of the research team to schedule an appointment. Appointments were described as lasting for roughly a 1.5 h-long block of time. To complete the necessary assessments, participants met one-on-one with an evaluator who had experience in the administration of the WJ-III-NU. Participants and the evaluator met in a small assessment room, where the evaluator obtained informed consent, established rapport, and gave participants a brief statement regarding the study's purpose. The students were asked to read the statement and to provide their written consent to participate. Initially, participants were administered the self-report measures developed for this study. While each participant completed these scales, the evaluator left the room to attempt to reduce any activation of a social desirability bias that can be inherent in social research (Grimm 2010). Immediately following the completion of the self-report scales, the evaluator administered the WJ-III-NU according to standardization guidelines for the assessment. After completing the WJ-III-NU, participants completed a separate form that asked for a mailing address whereby payment for participation could be sent. Participants' responses on the self-report measures and WJ-III-NU were coded and kept separately from personally identifiable paperwork.

Participants administered the study assessments consecutively, and all participants completed the assessments in less than 2 h. The consent and payment information forms were immediately separated from student assessment protocols and each stored in a secure location to assure participant anonymity.

Instrumentation

Woodcock Johnson III Normative Update Tests of Cognitive Abilities (WJ-III-NU) The WJ-III-NU (Woodcock, McGrew, & Mather, 2007) is a set of individually administered assessments that measure different cognitive skills thought to be related to an individual's level of overall intelligence. The standard battery of this instrument was used for the purposes of this study, and four subtests, in particular, were deemed to be of theoretical utility by the researchers: Verbal Comprehension, Visual Matching, Auditory Working Memory, and Visual-Auditory Learning–Delayed. Verbal Comprehension measures Gc and the narrow abilities of language development and lexical knowledge by requiring examinees to produce synonyms and then antonyms of words provided to them, and complete verbal analogies. Verbal

Comprehension is the only subtest present within the standard test battery intended to measure verbal facility. Visual Matching measures the broad ability of processing speed (Gs) and the narrow ability of perceptual speed by requiring examinees to circle two identical numbers among a row of six numbers under timed conditions. Auditory Working Memory is the most lexically complex subtest on the standard battery that measures working memory (Gwm), as examinees must listen to an assorted series of numbers and words and then rearrange them by first saying the words in the order presented and then the numbers in the order presented. Finally, Visual-Auditory Learning–Delayed is the only measure of long-term storage and retrieval (Glr) on the standard test battery. It measures the narrow ability of associate memory as examinees must recall after long-term delay the verbal labels associated with symbols.

Young Adult Social Behavior Scale-Expanded (YASB-E) The YASB-E is a scale used for measuring self-reported relational and social bullying, overt aggression, and behaviors of interpersonal maturity in adolescents and young adults. Confirmatory factor analyses of the original instrument provide evidence that the original YASB measures three internally consistent constructs: relational bullying behaviors (five items), social bullying behaviors (four items), and interpersonally mature behaviors (four items) in managing relational conflict. Internal consistency measures are above .70, indicating sufficient reliability levels (Crothers et al. 2009). For this study, an adapted version of the YASB was used, which included an additional four items that assessed overt aggression (e.g., the YASB-E).

In other investigations using the YASB or YASB-E, means were reported as or ranging from $M = 17.50–21.26$ (SD = 2.48–3.55) for the relational bullying scale, $M = 20.05–22.76$ (SD = 1.72–3.30) for the social bullying scale, $M = 14.25$ (SD = 4.45) for the interpersonal maturity scale, and $M =$ 6.36–9.17 (SD = 2.16–3.19) for the overt aggression factor of the YASB-E (Bell et al. 2018; Clinton et al. 2014; Comstock et al. 2013). Sample items from the YASB-E include: "When I am frustrated with my partner/colleague/friend, I give that person the silent treatment" and "I criticize people who are close to me"—from the relational bullying factor; "I confront people in public to achieve maximum damage" and "I contribute to the rumor mill at school/work or with my friends/family"—from the social bullying factor; "I respect my friend's opinions, even when they are quite different from my own" and "I deal with interpersonal conflict in an honest, straightforward manner"—from the interpersonal maturity factor; and "when I am mad at someone, I call them mean names" and "it is okay to hit a friend when you are angry at them"—from the overt aggression factor.

Questions are answered using a 5-point Likert scale in which participants may choose from a range of responses from 5 "never" to 1 "always." Consequently, a score of five or four on the relational bullying and social bullying factors, respectively, would suggest that individual was demonstrating high levels of relational and social victimization of peers. A score of four on the interpersonal maturity factor would suggest that an individual was engaging in prosocial behavior almost all of the time. Finally, a score of four on the overt aggression factor would indicate that individual was highly overtly aggressive.

Ethical Considerations

Written consent was obtained from the participants. Participants were informed that the study involved minimal risk and they had the right to withdraw at any point. To maintain the confidentiality of participants' responses, each participant was assigned a unique number so that the instruments that corresponded to individuals could be linked. Names were not linked in any way to the participants' assigned numbers. Furthermore, all protocols from the study were maintained in a locked filing cabinet in the first author's office.

Results

Preliminary analyses were conducted to identify outliers and establish that the assumptions of correlational and multiple regression analyses, including normality and homoscedasticity, were upheld. It was ensured that all variance inflation factors (i.e., values below 10; Hair et al. 1998) and tolerances (i.e., values above 0.10; Tabachnick and Fidell 2001) were within acceptable limits and multicollinearity was not present.

Table 1 presents the means and standard deviations regarding all predictor and criterion variables and the Pearson correlation coefficients between the study's variables.

While the standard deviations for the different factors (relational bullying SD = 2.52; social bullying SD = 2.28; overt aggression SD = 1.71) suggest that there is little variance within the different types of bullying or aggression in this sample, the bullying standard deviations fall within the ranges reported in other investigations (e.g., Bell et al. 2018; Clinton et al. 2014; Comstock et al. 2013) and are presented for the readers' reference earlier in the Methods section. However, the standard deviation for the overt aggression factor (SD = 1.71) is smaller than what has been noted in previous studies (e.g., SD = 2.16–3.19), and thus, may present a limitation to the investigation of the hypotheses presented in this study.

Cohen's conventions (1988) were used to determine the strength of the significant associations. Regarding the first research question, three significant associations resulted between cognitive performance and YASB-E indicators. Small, but significant, correlations resulted between Verbal Comprehension and YASB-E Interpersonal Maturity ($r = .22$), Visual-Auditory Learning–Delayed and YASB-E Interpersonal Maturity ($r = .25$), and Visual Matching and

Table 1 Pearson correlations among cognitive and social behavior measures

Measure (M/SD)	1	2	3	4	5	6	7	8
Verbal Comp 102.87 (9.73)	1							
Visual Match 105.70 (13.39)	0.20*	1						
Auditory WM 110.17 (10.34)	0.01	0.17	1					
VA Learning D 102.75 (15.97)	0.13	0.14	0.26**	1				
YASB-E RA 19.68 (2.52)	− 0.00	0.10	− 0.05	− 0.03	1			
YASB-E SA 21.34 (2.28)	0.02	0.11	− 0.09	0.06	0.41**	1		
YASB-E IM 16.49 (2.02)	0.22*	0.15	0.06	.25*	0.33**	0.23*	1	
YASB-E OA 18.42 (1.71)	− 0.11	.20*	0.01	0.13	0.31**	0.30**	0.24*	1

Verbal Comp, Verbal Comprehension; *Visual Match*, Visual Matching; *Auditory WM*, Auditory Working Memory; *VA Learning D*, Visual-Auditory Learning–Delayed; *YASB-E RA*, Young Adult Social Behavior Scale-Expanded Relational Aggression; *YASB-E SA*, Young Adult Social Behavior Scale-Expanded Social Aggression; *YASB-E IM*, Young Adult Social Behavior Scale-Expanded Interpersonal Maturity; *YASB-E OA*, Young Adult Social Behavior Scale-Expanded Overt Aggression. Mean value has been provided by scale with standard deviation in parentheses

**Correlation is significant at the 0.01 level

*Correlation is significant at the 0.05 level

YASB-E Overt Aggression ($r = .20$). Small to moderate significant correlations were found between each of the YASB-E factors of relational bullying, social bullying, interpersonal maturity, and overt aggression.

To address the second research question, four sets of multiple regression analyses were conducted to establish which cognitive indicators accounted for significant variance in relational bullying, social bullying, interpersonal maturity, and overt aggression as distinct criterion variables. Preliminary analyses were conducted prior to each multiple regression analysis to verify that all variance inflation factors (i.e., values below 10; Hair et al. 1998) and tolerances (i.e., values above .10; Tabachnick and Fidell 2001) were within acceptable limits and multicollinearity concerns were not present. Consistent with the hypotheses of the study, the four predictor variables were entered into each respective regression analysis one at a time in the order of Verbal Comprehension, Visual Matching, Auditory Working Memory, and Visual-Auditory Learning–Delayed for the YASB-E relational bullying, social bullying, and interpersonal maturity factors. Regarding the overt aggression factor, the four predictor variables were entered into the regression analysis one at a time in the order of Visual Matching, Verbal Comprehension, Auditory Working Memory, and Visual-Auditory Learning–Delayed.

Consistent with stated hypotheses, Verbal Comprehension predicated a significant 5% of the variance in interpersonal maturity, $F(1, 104) = 5.29$, $p = .02$ (Table 2). The insertion of Visual Matching and Auditory Working Memory did not account for additional significant variance. However, the inclusion of Visual-Auditory Learning–Delayed predicted a significant additional 4% of variance in interpersonal maturity, $F(1, 101) = 4.22$, $p = .04$. As hypothesized, Visual Matching accounted for a significant 4% of variance in YASB-E overt aggression, $F(1, 104) = 4.37$, $p = .04$, but the incremental inclusion of the other cognitive indicators did not account for additional significant variance (Table 3). No cognitive indicator accounted for significant variance in the YASB-E relational or social bullying factors.

Discussion

The purpose of the current study was to understand the associations among relational and social bullying, overt

Table 2 Summary of regression analyses for variables predicting YASB-E interpersonal maturity

	B	SE B	*B*	*t*	*p*	R^2	ΔR^2
Model 1						.048	.048*
Verbal Comp	.05	.02	.22	2.30	.02		
Model 2						.061	.012
Verbal Comp	.04	.02	.20	2.03	.05		
Visual Match	.02	.02	.11	1.16	.25		
Model 3						.061	.000
Verbal Comp	.04	.02	.20	1.98	.05		
Visual Match	.02	.02	.11	1.13	.27		
Auditory WM	.00	.02	.01	.10	.92		
Model 4						.098	.038*
Verbal Comp	.03	.02	.16	1.61	.11		
Visual Match	.02	.02	.10	.99	.32		
Auditory WM	− .01	.02	− .03	− .34	.73		
VA Learning D	.03	.01	.21	2.05	.04		

Verbal Comp, Verbal Comprehension; *Visual Match*, Visual Matching; *Auditory WM*, Auditory Working Memory; *VA Learning D*, Visual-Auditory Learning–Delayed

*Significant at the 0.05 level

Table 3 Summary of regression analyses for variables predicting YASB-E overt aggression

	B	SE B	*B*	*t*	*p*	R^2	ΔR^2
Model 1						.040	.040*
Visual Match	.03	.01	.20	2.09	.04		
Model 2						.064	.024
Visual Match	.03	.01	.23	2.39	.02		
Verbal Comp	− .03	.02	− .16	− 1.63	.11		
Model 3						.064	.000
Visual Match	.03	.01	.23	2.35	.02		
Verbal Comp	− .03	.02	− .16	− 1.60	.11		
Auditory WM	.00	.02	.00	.03	.97		
Model 4						.084	.020
Visual Match	.03	.01	.22	2.25	.03		
Verbal Comp	− .03	.02	− .19	− 1.85	.07		
Auditory WM	− .01	.02	− .03	− .28	.78		
VA Learning D	.02	.01	.15	1.48	.14		

Verbal Comp, Verbal Comprehension; *Visual Match*, Visual Matching; *Auditory WM*, Auditory Working Memory; *VA Learning D*, Visual-Auditory Learning–Delayed

*Significant at the 0.05 level

aggression, interpersonal maturity and cognitive skills in a late adolescent female sample. Historically, researchers investigated overt, physical forms of aggression that are more associated with males, and relational and social bullying, which are more likely to be used by females, received less attention. The research literature indicates that overt, physical forms of aggression are negatively associated with intelligence and performance on cognitive tasks. For example, studies have revealed that bullying perpetration is associated with deficits in inhibition, working memory, global executive functioning among US elementary students (Verlinden et al. 2013), and deficits in metacognition, social judgment, and decision-making among US middle school students (Coolidge et al. 2003).

The failure to identify a relationship between relational and social bullying and intelligence and the selected specific cognitive tasks, including Verbal Comprehension, Visual Matching, Auditory Working Memory, and Visual-Auditory Learning–Delayed was unexpected. Previous research has generally indicated that relational and social bullying is associated with advanced social intelligence and that individuals who are more likely to use relational and social bullying process social cues differently than those who are less likely to use indirect aggression. One interpretation of this finding is that the social information processing skills of those engaging in relational and social bullying is more robustly related to this type of bullying than are other cognitive skills. With regard to cognitive tasks, advanced forms of information processing in those more likely to use indirect aggression may only be activated in the presence of social interactions.

In contrast to younger children, it is possible that intelligence is not a predictor of relational and social bullying among late adolescents. Nearly all the previous studies that have identified a positive or negative association between relational and social bullying and intelligence and cognitive processing have involved children in preschool (e.g., Poland et al. 2016), elementary school (e.g., Andreou 2006), or middle school (e.g., Kaukiainen et al. 1999). The use of relational and social bullying may change in the context of the college environment. Verona et al. (2008) found that US college students were less likely to report the use of physical aggression but are more likely to report the use of indirect aggression, including highly subtle forms, such as passive aggression and rational-appearing aggression. Rational-appearing aggression involves behavior intended to disrupt a target's ability to succeed while appearing rationally motivated, such as "publicly questioning [his/her] sense of judgement" and "reducing [his/her] opportunities to express opinions" (Kaukiainen et al. 2001, p. 363). If it is accurate that college students are transitioning toward the use of increasingly subtle forms of aggression, it is possible that with greater intelligence comes a keener awareness of an environmental discouragement of the overt forms of relational and social bullying measured in this study.

Implication for Intervention

Those who are seeking to use the data from this study to inform intervention practices for college students must first recognize that relational and social bullying appear to be evenly distributed among the population vs. being limited to less or more intellectually accorded students. Consequently, a broad-based approach focusing on the psychoeducation of all students seems to be indicated. Those planning interventions at the collegiate level should also strive to increase students' awareness of the potential increase of subtle forms of bullying. Among US college witnesses of relational bullying, it has been found that peer influence, exposure to relational aggression, and stronger beliefs about the acceptability of relational bullying are associated with more assisting and reinforcing of relational bullying, and less defending behaviors of victims (You and Bellmore 2014).

In using such a finding, colleges may seek to implement education programs that challenge beliefs that social and relational bullying are normal and acceptable. College students may benefit from direct instruction regarding managing conflict and tension within academic settings in a socially acceptable manner. The finding that, in this sample, overt aggression was positively related to females' performance on the Visual Matching subtest, an indicator of processing speed, may suggest that overtly aggressive individuals are more likely to rely upon their facility for quickly responding when interacting with peers. This finding is indirectly supportive of several

researchers' assertions that children may engage in impulsive, automatic, or script-based processing (e.g., Crick and Dodge 1996; Huesmann 1997) in contrast to processing that can be described as deliberate, conscious, or reflective. Automatic processing is characterized by primitive cognitive actions concerning immediate gratification with little or no executive control.

Indeed, research indicates that among British elementary students, aggressive children are more likely to exhibit impulsive behavior for the purposes of short-term gain and an inability to delay gratification (Boldizar et al. 1989). In relation to the SIP model, impulsivity involves the immediate behavioral enactment of a behavior that has been retrieved from memory. In essence, overtly aggressive individuals may continue to use this form of responding to social interactions because they are more capable of using such aggression, and because overt aggression can be advantageous. For example, among US middle school students, use of both physical and relational aggression has been found to predict increases in popularity over time (Ojanen and Findley-van Nostrand 2014). This result appears to support interventions that seek to provide overtly aggressive youth with strategies to delay their responses in interacting with peers. For example, Kendall's (2007) cognitive-behavioral approach to impulsive children provides them with cognitive strategies for response inhibition, including memory strategies, for recalling steps for problem-solving.

The Verbal Comprehension and Visual-Auditory Learning–Delayed cognitive tasks were significant predictors of interpersonal maturity, a measure of prosocial skills on the YASB-E. Verbal facility may increase the likelihood that one can successfully resolve social conflicts, enabling the ability to convey subtle differentiations in thoughts, feelings, and preferences, and comprehend the perspectives of others as indicated through their language. This finding, which may be seen as supportive of Vygotsky's (1978, 2012) theory of social constructivism, may imply that prevention and intervention efforts should seek to promote students' language development with regard to processing social information. According to Vygotsky (1978, 2012), language is the essential tool for organizing and regulating thoughts and actions, particularly when presented with new and challenging situations. Vygotsky recommends that adults promote children's self-regulation by modeling the cognitive and affective aspects of problem-solving. Within the context of learning about peer relationship dynamics, youth can be assisted with developing the language skills to process their thoughts, feelings, and desires, including the tendency to respond aggressively when experiencing tension with individual peers, and within peer group contexts.

Adults can promote youths' language development concerning peer relationships by processing both imagined and real relationship dynamics, speaking aloud the thoughts, feelings, and desires the adult may likely have in such scenarios, and helping youth to use new and more sophisticated language to label their cognitive and affective experiences and wishes. Subsequently, adults can model the behavioral and cognitive aspects of openly discussing negative dynamics with peers and provide youth with the opportunity to role play such discussions with peers, encouraging them to use more assertive and nuanced ways of describing their experiences to peers, and demonstrating to peers an understanding of their peers' cognitive and affective experiences. Such an approach is similar to the social-perspective-taking and problem-solving methods used in Olweus' bullying prevention program (Olweus and Limber 2010), in which students are assigned the role of a character involved in a bullying situation, seeking to identify the thoughts, feelings, and motivations of their character, and then work as a group to develop a solution to a bullying scenario that will likely be acceptable to the various characters.

With respect to the skills measured on the Visual-Auditory Learning–Delayed subtest, retrieval, re-identification, and associative encoding of information, the finding that this was predictive of interpersonal maturity may imply that some youth may benefit from receiving assistance in recalling either previous social experiences in which they perceived themselves to be successful, or instruction regarding managing relationship dynamics. Essentially, in this subtest, individuals' ability to recall previously learned word-to-symbol associations is measured. This skill of recalling previously learned novel information (e.g., as applied to this context, encoding information gleaned from a social encounter with which the individual was previously unfamiliar) may be helpful in better equipping someone with the knowledge necessary to behave prosocially in the future.

Limitations and Future Directions

There are limitations associated with the quasi-experimental design used in this study that may have affected the results. The use of small number of white, female college students, a convenience sample, and a laboratory setting for the data collection limits the generalizability of the results. However, this is an appreciable sample of university students to be administered an individually administered standardized measure of cognitive ability, which was the focus (and unique contribution) of this study. Indeed, we aimed to study the relationships between the CHC theory-supported constructs of verbal reasoning, processing speed, working memory, and long-term memory. The WJ-III-NU was selected as the instrument to measure these constructs; therefore, the relationships among these variables are present given the subtest task demands of this test battery. It is possible that test batteries that measure these constructs using different task demands may produce different results from this investigation.

Additionally, the WJ-III-NU and the other measure used in this investigation, the YASB-E, have limitations to their usefulness in understanding the relationship between cognitive skills and relational and social bullying behaviors. Since the WJ-III-NU uses CHC theory as its theoretical underpinning, it may not measure other cognitive skills that would be assessed by another measure of intellectual ability. Furthermore, the YASB-E is a brief, self-report measure that yields results that may be biased due to participants being influenced by social desirability. Additionally, this was the only measure we used to assess social behavior; having participants respond to hypothetical scenarios in which different forms of bullying and aggression are depicted or gathering participants' history of aggressive behaviors may have been useful. The limited variance in the participants' overtly aggressive behavior may also have curtailed the ability to adequately test our hypotheses.

There are confounding variables (external influences) in this study that may have limited our ability to recognize the true relationships between cognitive skills and relational and social bullying and overt aggression. First, we did not evaluate participants' social skills, through observation, interviews, or rating scales that may have allowed us to group participants based upon their social proficiency and allowed us to control for the influence of pre-existing differences in individuals' social skills. Another influence that we did not control for was participants' victim status. The YASB-E is a self-report measure in which individuals report on their perpetration of relational and social bullying and overt aggression; we did not ask participants about whether they have been bullied by peers. This knowledge may have allowed for separation by victim status into groups, and subsequently, different analytical procedures utilized.

In terms of future directions for research in this area, an emerging trend has been to evaluate the role of aspects of social-information processing (SIP) in youths' responses to hypothetical scenarios of relational and social bullying, in contrast to the self-report approach measure of relational and social bullying used in this study (e.g., Li et al. 2013). It is possible that scenario-based exposure to relational and social bullying more effectively stimulates the specific forms of cognitive processing involved in social and relational bullying, in contrast to the more global measures of intelligence used in this study. A sample with a more varied age range may allow for an examination regarding whether there is an interaction between the use of relational and social bullying and the environmental context; for example, comparing high school vs. college students. Finally, future studies with college students should measure even more subtle forms of non-physical aggression, including passive aggression and rational-appearing aggression (Kaukiainen et al. 2001).

References

Alfonso, V. C., Flanagan, D. P., & Radwan, S. (2005). The impact of the Cattell-Horn-Carroll theory on test development and interpretation of cognitive and academic abilities. In D. P. Flanagan & P. L. Harrison (Eds.), *Contemporary intellectual assessment: theories, tests, and issues* (pp. 185–202). NY: Guilford Press.

Andreou, E. (2006). Social preference, perceived popularity and social intelligence: relations to overt and relational aggression. *School Psychology International, 27*, 339–351. https://doi.org/10.1177/0143034306067286.

Archer, J., & Coyne, S. M. (2005). An integrated review of indirect, relational, and social aggression. *Personality and Social Psychology Review, 9*, 212–230. https://doi.org/10.1207/s15327957pspr0903_2.

Arsenault, D., & Foster, S. L. (2012). Attentional processes in children's over and relational aggression. *Merrill-Palmer Quarterly, 58*, 409–436. https://doi.org/10.1353/mpq.2012.0015.

Bell, R. G., Crothers, L. M., Hughes, T. L., Kanyongo, G. Y., Kolbert, J. B., & Parys, K. M. (2017). Narcissism, callous-unemotional traits, relational and social aggression, and interpersonal maturity in adolescent offenders. *Journal of Applied School Psychology, 34*, 65–85. https://doi.org/10.1080/15377903.2017.1345814.

Bell, R. G., Crothers, L. M., Hughes, T. L., Kanyongo, G. Y., Kolbert, J. B., & Parys, K. M. (2018). Narcissism, callous-unemotional traits, relational and social aggression, and interpersonal maturity in adolescent offenders. *Journal of Applied School Psychology, 34*, 65–85. https://doi.org/10.1080/15377903.2017.1345814.

Björkqvist, K., Österman, K., & Lagerspetz, K. M. J. (1994). Sex differences in covert aggression among adults. *Aggressive Behavior, 20*, 27–33. https://doi.org/10.1002/1098-2337(1994)20:1<27::AID-AB2480200105>3.0.CO;2-Q.

Björkqvist, K., Österman, K., & Kaukiainen, A. (2000). Social intelligence – empathy = aggression? *Aggression and Violent Behavior, 5*, 191–200. https://doi.org/10.1016/S1359-1789(98)00029-9.

Boldizar, J. P., Perry, D. G., & Perry, L. C. (1989). Outcome values aggression. *Child Development, 60*, 571–579. https://doi.org/10.2307/1130723.

Bonica, C., Arnold, D., Fisher, P., Zeljo, A., & Yershova, K. (2003). Relational aggression, relational victimization, and language development in preschoolers. *Social Development, 12*, 551–562. https://doi.org/10.1111/1467-9507.00248.

Carreras, M. R., Braza, P., Muñoz, J. M., Braza, F., Azurmendi, A., Pascual-Sagastizabal, E., Cardas, J., & Sánchez-Martin, J. R. (2014). Aggression and prosocial behaviors in social conflicts mediating the influence of cold social intelligence and affective empathy on children's social preference. *Scandinavian Journal of Psychology, 55,* 371–379. https://doi.org/10.1111/sjop.12126.

Clinton, A., Crothers, L. M., Kolbert, J. B., Hughes, T. L., Schreiber, J. B., Schmitt, A. J., Lipinski, J., Vázquez, G. R., Bell, G. R., & Field, J. E. (2014). A cross-cultural investigation of relational and social aggression in female college students from Puerto Rico and the United States. *Journal of Aggression, Maltreatment, and Trauma, 23*, 99–115. https://doi.org/10.1080/10926771.2014.872745.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale: Lawrence Erlbaum Associates.

Comstock, L. A., Crothers, L. M., Schreiber, J. B., Schmitt, A. J., Field, J. E., Hughes, T. L., Kolbert, J. B., & Lipinski, J. (2013). Relational, social, and overt aggression among aggressive and nonaggressive female adolescents. *Journal of Child & Adolescent Trauma, 6*, 106–117. https://doi.org/10.1080/19361521.2013.755652.

Coolidge, F. L., DenBoer, J. W., & Segal, D. L. (2003). Personality and neuropsychological correlates of bullying behavior. *Personality and Individual Differences, 36*, 1559–1569. https://doi.org/10.1016/j.paid.2003.06.005.

Coyne, S. M., Archer, J., & Eslea, M. (2004). Cruel intentions on television and in real life: Can viewing indirect aggression increase viewers' subsequent indirect aggression? *Journal of Experimental Child Psychology, 88*, 234–253. https://doi.org/10.1016/j.jecp.2004.03.001.

Crick, N. R., & Dodge, K. A. (1994). A review and reformulation of social information-processing mechanisms in children's social adjustment. *Psychological Bulletin, 115,* 74–101. https://doi.org/10.1037/0033-2909.115.1.74.

Crick, N. R., & Dodge, K. A. (1996). Social information-processing mechanisms in reactive and proactive aggression. *Child Development, 67*, 993–1002. https://doi.org/10.1111/j.1467-8624.1996.tb01778.x.

Crothers, L. M., Schreiber, J. B., Field, J. E., & Kolbert, J. B. (2009). Development and measurement through confirmatory factor analysis of the young adult social behavior scale (YASB): an assessment of relational aggression in adolescence and young adulthood. *Journal of Psychoeducational Assessment, 27*, 17–28. https://doi.org/10.1177/0734282908319664.

Crothers, L. M., Kolbert, J. B., Kanyongo, G. Y., Field, J. E., & Schmitt, A. J. (2014). Relational and social aggression and reflective processing in a university sample. *Journal of Aggression, Maltreatment, and Trauma, 23*, 670–681. https://doi.org/10.1080/10926771.2014.920451.

Dailey, A. L., Frey, A. J., & Walker, H. W. (2015). Relational aggression in school settings: definition, development, strategies, and implications. *Children & Schools, 37*, 79–88. https://doi.org/10.1093/cs/cdv003.

Estrem, T. (2005). Relational and physical aggression among preschoolers: the effect of language skills and gender. *Early Education and Development, 16*, 207–231. https://doi.org/10.1207/s15566935eed1602_6.

Galen, B. R., & Underwood, M. K. (1997). A developmental investigation of social aggression among children. *Developmental Psychology, 33*, 589–600. https://doi.org/10.1037/0012-1649.33.4.589.

Garon, N., Bryson, S. E., & Smith, I. M. (2008). Executive function in preschoolers: a review using an integrative framework. *Psychological Bulletin, 134*, 31–60. https://doi.org/10.1037/0033-2909.134.1.31.

Gomez-Garibello, C., & Talwar, V. (2015). Can you read my mind? Age as a moderator in the relationships between theory of mind and relational aggression. *International Journal of Behavioral Development, 39*, 552–559. https://doi.org/10.1177/0165025415580805.

Grimm, P. (2010). Social desirability bias. In J. N. Sheth & N. Malhotra (Eds.), *Wiley international encyclopedia of marketing*. https://doi.org/10.1002/9781444316568.wiem02057.

Hair, J. F., Tatham, R. L., Anderson, R. E., & Black, W. (1998). *Multivariate data analysis* (5th ed.). Upper Saddle River: Pearson Prentice-Hall.

Huesmann, L. R. (1997). Observational learning of violent behavior: Social and biosocial processes. In A. Raine, D. P. Farrington, P. O. Brennen, & S. A. Mednick (Eds.), *The biosocial basis of violence* (pp. 69–88). NY: Plenum Press.

Kaukiainen, A., Björkqvist, K., Lagerspetz, K., Österman, K., Salmivalli, C., Rothberg, S., & Ahlbom, A. (1999). The relationships between social intelligence, empathy and three types of aggression. *Aggressive Behavior, 25*, 81–89. https://doi.org/10.1002/(SICI)1098-2337(1999)25:2<81::AID-AB1>3.0.CO;2-M.

Kaukiainen, A., Salmivalli, C., Björkqvist, K., Österman, K., Lahtinen, A., Kostamo, A., & Lagerspetz, K. (2001). Overt and covert aggression in work settings in relation to the subjective well-being of employees. *Aggressive Behavior, 27*, 360–371.

Kaukiainen, A., Salmivalli, C., Lagerspetz, K., Tamminen, M., Vauras, M., Mäki, H., & Poskiparta, E. (2002). Learning difficulties, social intelligence, and self–concept: connections to bully–victim problems. *Scandinavian Journal of Psychology, 43*, 269–278. https://doi.org/10.1111/1467-9450.00295.

Kendall, P. C. (2007). *Cognitive-behavioral therapy for impulsive children* (3rd ed.). Ardmore, PA: Workbook Publishing.

Li, J., Fraser, M. W., & Wike, T. L. (2013). Promoting social competence and preventing childhood aggression: a framework for applying social information processing theory in intervention research. *Aggression and Violent Behavior, 18*, 357–364. https://doi.org/10.1016/j.avb.2013.01.001.

McQuade, J. D., Murray-Close, D., Shoulberg, E. K., & Hoza, B. (2013). Working memory and social functioning in children. *Journal of Experimental Child Psychology, 115*, 422–435. https://doi.org/10.1016/j.jecp.2013.03.002.

McQuade, J. D., Breaux, R. P., Miller, R., & Mathias, L. (2017). Executive functioning and engagement in physical and relational aggression among children with ADHD. *Journal of Abnormal Child Psychology, 45*, 899–910. https://doi.org/10.1007/s10802-016-0207-z.

Ojanen, T., & Findley-van Nostrand, D. (2014). Social goals, aggression, peer preference, and popularity: Longitudinal links during middle school. *Developmental Psychology, 50*, 2134–2143. https://doi.org/10.1037/a0037137.

Olweus, D., & Limber, S. P. (2010). Bullying in school: evaluation and dissemination of the Olweus bullying prevention program. *American Journal of Orthopsychiatry, 80*, 124–134. https://doi.org/10.1111/j.1939-0025.2010.01015.x.

Owens, L., Shute, R., & Slee, P. (2000). "Guess what I just heard!": indirect aggression among teenage girls in Australia. *Aggressive Behavior, 26*, 67–83. https://doi.org/10.1002/(SICI)1098-2337(2000)26:1<67::AID-AB6>3.0.CO;2-C.

Park, J., Essex, M., Zahn-Waxler, C., Armstrong, J., Klein, M., & Goldsmith, H. (2005). Relational and overt aggression in middle childhood: early child and family risk factors. *Early Education and Development, 16*, 233–256. https://doi.org/10.1080/10409289.2005.10472869.

Piaget, J. (1961). *Les mécanismes perceptifs: Modèles probabilistes, analyse géné- tique, relations avec l'intelligence [The mechanisms of perception]*. Paris: Presses Universitaires de France.

Poland, S. E., Monks, C. P., & Tsermentseli, S. (2016). Cool and hot executive function as predictors of aggression in early childhood: differentiating between the function and form of aggression. *British Journal of Developmental Psychology, 34*, 181–197. https://doi.org/10.1111/bjdp.12122.

Razmjoee, M., Harnett, P. H., & Shahaeian, A. (2016). Language development mediates the relationship between gender and relational aggression: a study of Iranian preschool children. *Australian Journal of Psychology, 68*, 312–318. https://doi.org/10.1111/ajpy.12109.

Risser, S. D. (2013). Relational aggression and academic performance in elementary school. *Psychology in the Schools, 50*, 13–26. https://doi.org/10.1002/pits.21655.

Schmeck, R. R., Geisler-Brenstein, E., & Cercy, S. P. (1991). Self-concept and learning: the revised inventory of learning processes. *Educational Psychology, 11*, 343–362. https://doi.org/10.1080/0144341910110310.

Schneider, W. J., & McGrew, K. S. (2018). The Cattell-horn-Carroll theory of cognitive abilities. In D. P. Flanagan & P. L. Harrison (Eds.), *Contemporary intellectual assessment: theories, tests, and issues* (4th ed., pp. xx–xx). NY: Guilford Press.

Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics* (4th ed.). Boston: Allyn & Bacon.

Thomas, H. J., Connor, J. P., & Scott, J. G. (2015). Integrating traditional bullying and cyberbullying: challenges of definition and measurement in adolescents – a review. *Educational Psychology Review, 27*, 135–152. https://doi.org/10.1007/s10648-014-9261-7.

Verlinden, M., Veenstra, R., Ringoot, A. P., Jansen, P. W., Raat, H., Hofman, A., Jaddoe, V. W. V., Verhulst, F. C., & Tiemeier, H. (2013). Detecting bullying in early elementary school with a

computerized peer-nomination instrument. *Psychological Assessment, 26*, 628–641. https://doi.org/10.1037/a0035571.

Verona, E., Sadeh, N., Case, S. M., Reed, A., & Bhattacharjee, A. (2008). Self-reported use of different forms of aggression in late adolescence and emerging adulthood. *Assessment, 15*, 493–510. https://doi.org/10.1177/1073191108318250.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge: Harvard University Press.

Vygotsky, L. S. (2012). *Thought and language*. Cambridge: MIT Press.

Waller, R., Hyde, L. W., Baskin-Sommers, A. R., & Olson, S. L. (2017). Interactions between callous unemotional behaviors and executive function in early childhood predict later aggression and lower peer-liking in late-childhood. *Journal of Abnormal Child Psychology, 45*, 597–609. https://doi.org/10.1007/s10802-016-0184-2.

Warren, P., Richardson, D. S., & McQuillin, S. (2011). Distinguishing among nondirect forms of aggression. *Aggressive Behavior, 37*, 291–301. https://doi.org/10.1002/ab.20394.

Woodcock, R. W., McGrew, K. S., & Mather, N. (2007). Woodcock Johnson III Tests of Cognitive Abilities. Rolling Meadows, IL: Riverside.

You, J., & Bellmore, A. (2014). College students' behavioral reactions upon witnessing relational peer aggression. *Aggressive Behavior, 40*, 397–408. https://doi.org/10.1002/ab.21542.