

The Adaptiveness of Antisocial Personality Traits: Obtaining Reputation, Resources, and
Reproduction Through Bullying

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Abstract

Adolescents may compete with each other for access to adaptive outcomes (e.g., social, material, and sexual resources) that have reliably led to survival and reproduction in the ancestral past. However, adolescents may have varying levels of success in securing adaptive outcomes depending on their personality. For instance, antisocial personality traits may provide adolescents with competitive advantages through the use of antisocial behaviours such as bullying. Therefore, the goal of this study was to investigate if adolescents with certain personality traits may use bullying to express those traits adaptively to gain favourable outcomes. A sample of 231 adolescents (113 males, $M_{\text{age}} = 14.60$, $SD = 1.57$) completed self-report questionnaires on personality, bullying involvement, social dominance, material resources, and sexual behaviour. Mediation analyses were conducted and offered mixed support for hypotheses. Bullying partially mediated the relation of Honesty-Humility and Agreeableness with social outcomes, although both personality factors also had direct effects on material outcomes and indirect effects on sexual outcomes through bullying. Furthermore, there were no significant partial mediations between Emotionality and any of the adaptive outcomes. Results provide support for the adaptive function of bullying and suggest that adolescents with lower Honesty-Humility and lower Agreeableness may increase the willingness to use bullying to obtain social and sexual goals.

Keywords: adolescence; bullying; personality; reputation; resources; reproduction

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Introduction

Adolescence is a developmental period marked by competition for access to highly contested social, material, and sexual resources (Ellis et al., 2012). The dramatic physical (e.g., puberty) and social (e.g., expansion of peer networks to include opposite-sex peers, autonomy from parents) changes that adolescents undergo help to refine their social competencies and improve reproductive potential in order to compete successfully (Geary, 2002). Youth may be driven to obtain resources (e.g., social dominance, food, and mates) because of their adaptive value, which throughout our evolutionary history have reliably led to increasing the chance of survival and passing on genes to future generations (Ellis et al., 2012). However, these resources are scarce (Hawley, 2003), which fosters a competitive environment where there are winners and losers (e.g., not all adolescents can be the most popular). As a result, adolescents may successfully compete with each other by adopting behaviours to match their individual attributes with local conditions (Smith, 1974). Under these environmental circumstances, bullying may be one strategy for competing with other peers for access to fitness-relevant outcomes. Higher levels of bullying behaviour found during adolescence (Volk, Craig, Boyce, & King, 2006) suggest that youth may be competing for access to valuable adaptive benefits and using bullying as a means to do so (Ellis et al., 2012). However, bullying may only provide a competitive advantage for some adolescents. That is, adolescents with certain personality traits may use bullying to express those traits adaptively to gain favourable outcomes. Recently, Provenzano and colleagues (2016) found that adolescents with antisocial personality traits used bullying as an adaptive tool to obtain more sexual partners. However, adolescents may engage in bullying for other goals that are

particularly salient to them, such as social dominance and physical resources (e.g., material possessions), in addition to sexual access (Volk, Camilleri, Dane, & Marini, 2012a; Volk, Dane, & Marini, 2014). Furthermore, unlike previous research (e.g., Provenzano, Farrell, Dane, Marini, & Volk, 2016), a broader measure of reproductive success was used to include dyadic dating and being in committed relationships—contexts where sexual behaviour is likely to occur (Collins, Welsh, & Furman, 2009; Zimmer-Gembeck & Helfand, 2008)—due to the relatively younger sample of adolescents. Therefore, the goals of this thesis were to focus on a wider range of adaptive outcomes that have not been explored in previous research and to consider indirect effects in which youth with antisocial personality traits may be more willing to use bullying as a potentially adaptive strategy.

Personality and Adaptive Outcomes

During adolescence, the motivation for peer status (Espelage, 2002) and the level of intrasexual competition intensifies (Weisfeld & Coleman, 2005). Significant changes to the brain and body function to increase adolescents' social and reproductive capabilities, which prepare them for negotiating status in social hierarchies, extracting material resources from others, and pursuing members of the opposite-sex (Ellis et al., 2012). Competition over these adaptive outcomes results in fitness gains for some youth and not others (Ellis et al., 2012). Varying levels of success as a competitor during adolescence may be due to a number of individual differences, one of which may be personality. Personality traits that allow individuals to compete with rivals and survive may have been acted upon by natural selection (Jonason, Li, Webster, & Schmitt, 2009) to solve adaptive problems today just as they had done so in the ancestral past (Buss,

2009; Michalski & Shackelford, 2010). Furthermore, personality traits may interact with the environment in order to produce behaviours that are tailored to meet one's needs in that particular context—a condition known as a facultative adaptation (Denissen & Penke, 2008). In the case of adolescents, the environment reflects fierce competition for access to limited resources. Personality traits predictive of antisocial tendencies may be adaptive in the short-term insofar as individuals who display such tendencies get what they want at the expense of others (e.g., Jonason et al., 2009; Lee et al., 2013).

Honesty-Humility, Emotionality, and Agreeableness are a set of personality dimensions that may predispose individuals toward altruistic versus antisocial tendencies (Ashton & Lee, 2001) and are derived from the recently developed six-factor HEXACO model of personality (Ashton & Lee, 2007). The other three dimensions, eXtraversion, Conscientiousness, and Openness to Experience, may predispose individuals toward engagement versus avoidance of social, task, and idea-related endeavors (Ashton & Lee, 2007). The contents of Extraversion, Conscientiousness and Openness to Experience are broadly similar to those same factors in the Big Five (e.g., Goldberg, 1990), whereas the contents of Emotionality and Agreeableness slightly differ from Neuroticism and Agreeableness in the Big Five (see Ashton & Lee, 2008a). The higher poles of Honesty-Humility, Emotionality, and Agreeableness broadly represent an altruistic tendency, whereas the lower poles broadly represent an antisocial tendency (Ashton & Lee, 2001). However, each of these three personality dimensions describes distinct forms of antisociality. Lower Honesty-Humility includes a tendency to exploit and manipulate others for personal gain, lower Emotionality includes a tendency to feel a lack of empathy and fear, and lower Agreeableness includes a tendency to get angry and be unforgiving

when mistreated (Ashton & Lee, 2007). Although the antisocial qualities associated with these three personality dimensions may be harmful towards others, they hold some adaptive value (e.g., Ashton & Lee, 2007), and therefore may be implicated in securing social, material, and sexual goals that are important to adolescents.

Social Dominance. Only a few studies have examined the relations between Honesty-Humility and the desire for social dominance (Lee, Ashton, Ogunfowora, Bourdage, & Shin, 2010). Previously, studies using the Big Five have found a negative association between Big Five Agreeableness and Social Dominance Orientation (SDO; Akrami, Ekehammar, 2006; Sibley & Duckitt, 2008; Lee et al., 2010). SDO assesses an individual's preference or desire for social hierarchy in which some groups have higher status or more power than other groups (Pratto, Sidanius, Stallworth, and Malle, 1994). Although SDO is defined at the group level, Lee and colleagues (2013) suggest that SDO can also be applied at individual level insofar as having a strong desire for interpersonal dominance over others. Traits found in the HEXACO's Honesty-Humility may provide a clearer relevance to SDO than the Big Five's Agreeableness (Lee et al., 2010).

Individuals who are driven to obtain status and feel they that they deserve to have power may have a preference for an anti-egalitarian society where some groups have status over others (Lee et al., 2010). Extending this idea, Sibley and colleagues (2010) suggest that lower levels of Honesty-Humility might lead individuals to perceive the world as ruthlessly competitive where if there is power to be gained at the expense of others who are weaker or disadvantaged, then one should exploit others to get that power. Consistent with the theoretical interpretation, previous findings suggest that Honesty-Humility was negatively associated with SDO (Lee et al., 2010). Taken together,

Honesty-Humility may be a personality factor that underlies SDO as an index of wanting group dominance (Lee et al., 2010). However, there may be other HEXACO personality factors that are also related to social dominance (e.g., Emotionality and Agreeableness; Lee et al., 2010).¹

While Honesty-Humility has been found to be a significant predictor of desiring power over others (e.g., Lee et al., 2010; 2013), other HEXACO factors such as Emotionality may also be related to social dominance. Sidanius and Pratto (1999; see also Pratto et al., 1994) suggest that traits related to empathy and the concern for others (or lack thereof) would be most predictive of SDO. In line with this, previous research found that individuals with lower levels of empathy and compassion for others had higher levels of SDO (Sidanius et al., 2013). As mentioned previously, Big Five Agreeableness has been found to be negatively associated with SDO (Sibley & Duckitt, 2008), which is reasonable considering that some facets of Agreeableness are related to empathy and compassion (Pratto et al., 1994). However, when using the HEXACO, the relation to SDO may shift from Big Five Agreeableness to Emotionality (Sibley, Harding, Perry, Asbrock, & Duckitt, 2010). This is logical considering that aspects related to sentimentality and empathy are associated with Emotionality rather than Big Five Agreeableness (Sibley et al., 2010). As such, lower Emotionality was a significant predictor of SDO (Sibley et al., 2010). These findings suggest that individuals lower in Emotionality may not be inhibited by any feelings of concern for wanting dominance or

¹ It can be assumed that personality factors without “Big Five” preceding the name of the factor are referring to factors from the HEXACO; otherwise they are factors from the Big Five.

power over weaker people (Sibley et al., 2010).

Along similar lines, the antisocial tendencies associated with Agreeableness may translate into a preference for superiority over others. Individuals higher in SDO may be characterized by traits found in the lower pole of Agreeableness (e.g., reactivity, intolerance of others; Duckitt, 2006). Previous studies have found the SDO scale predicts negative behaviours (e.g., intolerance) toward groups with lower status (e.g., out-group members; Levin & Sidanius, 1993; Sidanius, Pratto, & Mitchell, 1994). Considering that tolerance is the opposite of discrimination, it is reasonable to expect tolerance to be negatively associated with a desire for dominance over people that do not reflect the in-group (Pratto et al., 1994). As such, SDO was negatively correlated with a general measure of tolerance (Pratto et al., 1994). Furthermore, Crocker and Luhtanen (1990) found that in-group members who felt that their status was being threatened, retaliated by denigrating out-group members. Thus, the desire for group dominance as indicated by SDO appears to, in part, stem from traits defined by lower Agreeableness (e.g., Lee et al., 2013). When considering the data, the lower poles of Honesty-Humility, Emotionality, and Agreeableness appear to be a set of personality factors underlying the desire for power (Lee et al., 2013). However, the antisocial nature associated with these three factors may also be linked to acquiring material possessions.

Materialism. In addition to the desire to obtain social dominance, an insatiable appetite for money and material goods is likely to be an indicator of individuals lower in Honesty-Humility (Lee et al., 2013). Measures of materialistic tendencies assess an individual's preference or desire to possess and display wealth and luxuries (Richins & Dawson, 1992), and have been found to be negatively correlated with Honesty-Humility

(Lee et al., 2013). This finding is logical considering that greed and similar characteristics are found in the lower pole of Honesty-Humility (Ashton & Lee, 2008b). And for reasons similar to the inverse relation between Honesty-Humility and social dominance, individuals who desire wealth and feel that they deserve to be financially ahead of everyone else even by exploiting them (i.e., lower Honesty-Humility), may prefer a society hierarchical in nature in order to facilitate more opportunities to exploit others to gain wealth (Lee et al., 2010). However, it is worth noting that lower Honesty-Humility can be manifested in behaviors that are also likely to lead to financial gains, such as making unethical business decisions (Ashton & Lee, 2008a; Lee, Ashton, Morrison, Cordery, & Dunlop, 2008), engaging in major physical risk-taking behaviour in order to acquire financial gains (Ashton, Lee, Pozzebon, Visser, & Worth, 2010), and displaying selfish behaviours in economic experiments such as ultimatum or dictator games (Hilbig & Zettler, 2009; Hilbig, Zettler, & Heydasch, 2012). Although the data on materialism suggests strong theoretical and empirical links to the exploitive nature of Honesty-Humility, the other antisocial personality factors, Emotionality and Agreeableness, may also be involved in securing material possessions.

Despite the lack of traits related to exploitation, the association between materialism and Emotionality may stem from status-driven risk taking (SDRT). SDRT assesses the propensity to pursue wealth and power at the expense of one's health and well-being (Ashton et al., 2010). Previous findings show the SDRT scale to be negatively correlated with Emotionality (Ashton et al., 2010). This result makes sense when considering that lower Emotionality involves a lack of fear for engaging in risk-taking and harmful behaviour (Ashton et al., 2010), which may help in the pursuit of wealth and

status at any cost. Not surprising, materialism is also positively associated with sensation seeking (Troisi, Christopher, & Marek, 2006). It may be that for materialistic people acquiring possessions creates a sense of thrill or excitement, which provides positive reinforcement to continue increasing the amount of material possessions (Troisi et al., 2006). Similar to status-driven risk taking, sensation seeking is also negatively related to Emotionality (de Vries, de Vries, & Feij, 2009). Traits related to a lack of fear (i.e., lower Emotionality) may be adaptive in the sense that they translate into more material resources at the risk of one's safety.

While status-driven risk taking and sensation seeking may lead to more material possessions, traits related to empathy may also be related to materialism. For instance, Can (2013) found that individuals with materialistic tendencies were less empathetic. This may be due to placing greater emphasis on acquiring possessions and money at the expense of being less concerned with the feelings of others (Kasser, 2003). In support of this, Kasser and Sheldon (2000) found that individuals who were driven to obtain materialistic goals had less of a desire to understand other people's mental states. Individuals lower in Emotionality may not only be more likely to engage in risky behaviours in order to obtain material resources, but their lack of empathy allows them to disregard their relationships with other people and focus on the possessions they desire. Much like Emotionality, individuals lower in Agreeableness also lack traits related to exploitation, nevertheless the antisocial tendencies associated with Agreeableness may allow them to amass material goods.

Individuals who are less agreeable tend to be focused more on the self (Graziano & Eisenberg, 1997). This self-focus may result from feelings of scarcity (Shaver &

Brennan, 1992) that manifest itself as a desire for material possessions and preoccupation with increasing wealth (Hirsh & Dolderman, 2007). In line with this, Agreeableness was negatively associated with materialism (Lee et al., 2013). Traits found in the lower pole of Agreeableness relate to anger (Ashton & Lee, 2007) and individuals with materialistic tendencies may become angry towards others who have more material goods (Watson, 2015). This may be due to materialists making monetary comparisons with others and if there is a discrepancy between what one has and what others have, this may generate feelings of anger if others are perceived to have more (Sirgy, 1998). Conversely, rather than not having as many possessions as others, materialists may become frustrated or angry if they have more possessions but have to constantly worry about staying ahead of others (Saunders, 2000). Overall, the association between materialism and lower Agreeableness appears to be the result of not having as many things as others or always making sure that one has more things than others, which generates anger and frustration that may translate into more material resources. The antisocial tendencies associated with lower Honesty-Humility, Emotionality, and Agreeableness, not only appear to provide social benefits, but material benefits as well. For the last of the adaptive outcomes, the HEXACO's antisocial personality factors may help to improve reproductive success by facilitating access to sexual behaviours.

Sex. Honesty-Humility may be highly influential in explaining the domain of sexual behaviour (Holden, Zeigler-Hill, Pham, & Shackelford, 2014). Individuals lower in Honesty-Humility may not be inhibited from cheating on their partner by any sense of a moral obligation to be loyal (Lee & Ashton, 2012). As such, Bourdage and colleagues (2007) found that individuals lower in Honesty-Humility were more likely to be

unfaithful to their partners and showed a negative association with relationship exclusivity. This association fits with the description of Honesty-Humility as a dimension of the willingness to exploit others in which being unfaithful is an act of deception and sexual exploitation (Bourdage Lee, Ashton, & Perry, 2007). Furthermore, individuals lower in Honesty-Humility may also have many uncommitted, short-term sexual relationships highlighted by the findings that Humility-Humility predicts a faster life-history strategy (i.e., immediate gains, while disregarding long-term consequences; Lee et al., 2013), a short-term mating orientation (Manson, 2015), and an unrestricted sociosexuality (i.e., the willingness to engage in casual sex without emotional attachment; Bourdage et al., 2007). When considering the lack of relationship exclusivity and the adoption of short-term mating tendencies, it is no surprise that individuals lower in Honesty-Humility may find it difficult to establish long-term relationships with others that require reciprocity (Foster, Shrira, & Campbell, 2006) since their selfishness is likely to be viewed unfavorably by potential romantic partners (Jonason et al., 2009). However, having an exploitative interpersonal style may allow individuals to maximize reproductive opportunities.

While aspects of exploitation may improve reproductive success, Emotionality contains content related to fearfulness that may create more opportunities for mating. Previous research by Lee and colleagues (2013) found that Emotionality was inversely related to short-term mating tendencies. This is reasonable considering that lower Emotionality characterizes individuals who are sensation seekers and willing to engage in risky behaviours (e.g., de Vries, de Vries, & Feij, 2009). Studies have consistently found associations between sensation seeking and short-term mating (e.g., Linton & Wiener,

2001; Ripa, Hansen, Mortensen, Sanders, & Reinisch, 2001) and between sensation seeking and risky sexual behaviour (e.g., unprotected or casual sex; Hoyle, Fejfar, & Miller, 2000). One reason for these findings may be that high sensation seekers are not deterred by the fear of engaging in sexual behaviour with multiple partners, instead receiving a thrill or sense of excitement (Hoyle et al., 2000). And similar to the pursuit of material resources, engaging in risky sexual behaviour may be positively reinforcing.

In addition to a lack of fear, individuals lower in Emotionality are also less empathetic towards and emotionally detached from others, which may explain the negative relation between Emotionality and short-term mating tendencies (Lee et al., 2013). That is, these individuals may be able to secure additional sexual opportunities outside of their primary relationship without being discouraged by thoughts of cheating on their partner (Shimberg, Josephs, & Grace, 2016). Consequently, individuals lower in Emotionality may be less afraid to engage in risky sexual behaviours (lower in the fearfulness facet) or be less inhibited by guilt for having extra dyadic affairs (lower in the dependence and sentimentality facets), all of which suggest a somewhat faster life-history strategy (e.g., Manson, 2015) that may facilitate reproductive success. While Emotionality does lack the willingness to exploit others covered by Honesty-Humility, it does still contain antisocial tendencies that appear to result in sexual benefits. And similar to Emotionality, Agreeableness does not contain exploitive traits, but may still be adaptive for securing mating partners.

Most research exploring the link between Agreeableness and sexual behaviour has focused on Big Five Agreeableness, particularly as it relates to short-term mating (e.g., Lee et al., 2013; Schmitt, 2004; Schmitt & Shackelford, 2008). However, along with

Honesty-Humility and Emotionality, HEXACO Agreeableness may also be a predictor of increased mating success. Manson (2015) recently found that Agreeableness was negatively related to a short-term mating orientation as an indicator of a faster life-history strategy. This may not be surprising considering that individuals who are disagreeable may experience more conflict in long-term relationships (Buss, 1991), perhaps because they are argumentative and difficult to get along with (Schmitt, 2005). As a result, this allows them to spend more time single, which may facilitate sexual opportunities with other mates (Schmitt, 2005). Thus, lower Agreeableness may be an adaptive response to avoiding long-term relationships (reduces fitness) in order to setup a short-term mating strategy (maximizes fitness; Buss & Schmitt, 1993). In sum, Agreeableness lacks the exploitive nature that is part of Honesty-Humility, but may still be adaptive in the sense that individuals who are disagreeable can still secure outcomes related to reproduction.

Based on the data, an antisocial interpersonal style defined by lower Honesty-Humility, lower Emotionality, and lower Agreeableness, may be geared towards obtaining adaptive outcomes that are likely to improve one's ability to survive and pass on genes to future generations. Antisocial personality traits may be rooted in evolved psychological mechanisms that solved adaptive problems in the ancestral past and continue to do so today (Buss & Greiling, 1999). While the trio of antisocial HEXACO factors each have their own unique set of tendencies toward engaging in behaviours that may result in significant adaptive benefits (as discussed above), Honesty-Humility, Emotionality, and Agreeableness may also converge to predispose some adolescents to engage in bullying behaviour. Similar to personality, bullying may be based on evolved psychological mechanisms that are instrumental in achieving social, material, and sexual

resources (e.g., Volk et al., 2012a; 2014). Before I review the literature on bullying for adaptive outcomes, I will highlight evidence that suggests bullying may be adaptive.

Bullying from an Evolutionary Perspective

Traditionally, bullying has been viewed as maladaptive behaviour associated with normal development that has gone awry (Cook, Williams, Guerra, Kim, & Sadek, 2010; Smokowski & Kopasz, 2005; Sutton, Smith, Swettenham, 1999) involving deficits in processing social information when assessing and responding to social situations (Crick & Dodge, 1994; 1996). However, a growing body of evidence has suggested that some bullying behaviours may be adaptive under the right environmental context (Volk et al., 2012a). Ball and colleagues (2008) conducted a twin study and found that genetic factors accounted for 61% of the variability in bullying perpetration among children.

Furthermore, bullying is significantly correlated with personality and temperament, both of which have a strong genetic component (Lewis & Bates, 2014; Marini, Dane, & Kennedy, 2010; Saudino & Micalizzi, 2015). Taken together, these data suggest that genetic factors may contribute to the likelihood of bullying indirectly and probabilistically through traits, such as personality and temperament among others (e.g., physical strength, size; Gallup et al., 2011), that influence an individual's willingness or ability to successfully perpetrate bullying (Dane, Marini, Volk, & Vaillancourt, in press).

In addition to its genetic relatedness, bullying has been found in industrialized (e.g., Elgar et al., 2013), non-industrialized societies (e.g., hunter-gatherer groups; Turnbull, 1972), and documented in past historical cultures (e.g., Cunningham 2005; as cited in Volk et al., 2012a). In addition, nearly similar rates of bullying perpetration are found across all socioeconomic strata (Tippet & Wolke, 2014). This cross-cultural,

historical, and socioeconomic data suggests that bullying may stem from a genetic predisposition that is partly unrelated to cultural factors (Volk et al., 2012a). The pervasiveness of bullying paired with the behavioural genetics data mentioned earlier suggests genetic factors with enough “traction” for natural and/or sexual selection to have operated on traits related to bullying in past evolutionary environments (Dawkins, 1989). But if bullying is an adaptive behaviour, then bullies should also have some fitness advantages.

Although bullies may be more likely to engage in antisocial behaviours (e.g., Berger, 2007), bullies appear to have on average as good or better physical health (e.g., Wolke, Woods, Bloomfield, & Karstadt, 2001) and mental health (e.g., Juvonen, Graham, & Schuster, 2003) than victims and adolescents not involved in bullying. Moreover, previous findings have suggested that bullies may in fact be highly skilled social manipulators that demonstrate good Theory of Mind abilities, cognitive empathy, leadership, social competence, and self-efficacy (Caravita, Di Blasio, & Salmivalli, 2009; Garandeau & Cillessen, 2006; Vaillancourt, Hymel, & McDougall, 2003). Finally, bullying may be an antisocial strategy for obtaining adaptive outcomes that are likely to aid in survival and reproduction. Bullying is used by a variety of social animals (e.g., fish, chickens, chimpanzees) to gain access to social, physical, and sexual resources (see Ellis et al., 2012), and may have an adaptive function among humans for similar goals. In the next few sections, I will examine evidence that suggests it may be adaptive for adolescents to perpetrate bullying for at least three primary goals: reputation, resources, and reproduction (Volk et al., 2014).

Reputation (e.g., Social Dominance). Seeking a powerful social reputation, particularly as it relates to having a dominant position in the peer group, has often been suggested as the most common goal of bullying (Pellegrini, 2002; Salmivalli & Peets, 2008; Veenstra et al., 2007). Previous studies investigating status goals have found that bullies are more likely to have attitudes that reflect a strong desire for social dominance and power compared to individuals not involved in bullying (e.g., Caravita & Cillessen, 2012; Ojanen, Gronroos, & Salmivalli, 2005; Sijtsema, Veenstra, Lindenberg, & Salmivalli, 2009). Not only do they endorse status goals, but bullies are also perceived by their peers to be more socially dominant, central, and popular—all indices of a powerful social reputation (e.g., Faris & Femlee, 2011; Reijntjes et al., 2013; Vaillancourt et al., 2003). Adolescents may use bullying to establish a reputation as a tough and dominant individual, which may serve to not only decrease the likelihood of being aggressed against (Garandeanu, Lee, & Salmivalli, 2014, but may also increase resource-holding potential (Hawley, 1999), as a powerful reputation may facilitate access to more concrete goals such as material goods and sexual opportunities (Volk et al., 2012a). Bullying to obtain social dominance may be an individual motive, but it is also very much group-related (Salmivalli, 2010) with males and females using different strategies to achieve it.

Males tend to use more physical forms of bullying (i.e., hitting, pushing, kicking; Monks et al., 2009) that are directed towards members that belong to an out-group (Maccoby, 2004). Bullying together as a group against targets belonging to an out-group fosters in-group cohesiveness and solidarity by strengthening bonds between members because everyone has the common goal to victimize others (Garandeanu & Cillessen, 2006; Salmivalli, 2010). In addition, male peers may want to associate themselves with

bullies of high social status. This may be because of the protective function afforded by cultivating a tough reputation (Juvonen & Galvan, 2008). For example, physically bullying others in front of peers demonstrates strength and toughness, which then may act as a protective factor against aggressive rivals who may avoid those individuals with a tough reputation (Volk et al., 2014). This has been supported by previous research conducted by Archer and Benson (2008) who found that individuals with a tough reputation were less likely to be physically harmed by other adolescents. Thus, peers who join the in-group and form friendships with bullies may be perceived as tough and less likely to be challenged by out-group members (Volk et al., 2012b). Further, bullying groups offer a powerful incentive for peers to join the in-group in order to avoid being perceived as a member of an out-group and victimized (Cillessen & Mayeux, 2007).

While boys may be more likely to use physically bullying to achieve social goals, girls tend to use more relational forms of bullying (i.e., social exclusion, gossiping; Wang, Iannotti, & Luk, 2012) that are directed towards members that belong to their own friendship group (Maccoby, 2004) who may pose a threat to their power (Adler & Adler, 1995). Relational bullying may be used as a strategy to denigrate the reputation of others, which decreases their social standing within the peer group (Archer & Coyne, 2005). For example, girls bullying for social dominance appear to consist of insults or disparaging remarks directed towards a competitor's physical appearance or their promiscuity (Leenaars, Dane, & Marini, 2008). These insults appear to be a way of reducing the attractiveness or appeal of the target, which may lower the status of a competitor, while simultaneously boosting the bully's own relative appeal and status (Pellegrini & Long, 2003). Additionally, female bullies with high social status may be able to utilize their

power and popularity within their peer groups to exercise social control over others (Volk et al., 2012a). This is consistent with the finding that perceived popularity is associated with social dominance insofar as having social influence over others (Parkhurst & Hopmeyer, 1998). However, for both males and females, the quest for social dominance should be conceptualized not as the end goal, but as a means to help individuals to gain access to more tangible resources (Pellegrini & Long, 2003) such as material goods and mating partners (Volk et al., 2012a).

Resources. Besides engaging in bullying to achieve social dominance, perpetrators may use bullying to acquire material resources, such as food, desired objects, and wealth (Volk et al., 2014). As mentioned previously, it has been suggested that the goal of bullying others is to first establish dominance in a peer group (Salmivalli, 2010). In turn, this may then lead to future material resources (Hawley, 1999; 2007). Bullying for material resources can occur at both the individual and group level (Buss & Shackelford, 1997).

At the individual level, bullying may be used in order to secure resources that belong to others (Buss & Shackelford, 1997) such as bullies who take toys, lunch money, and/or apparel from others (Olweus, 1978). At the group level, individuals may come together to form coalitions to take resources from others (Buss & Shackelford, 1997). For example, in the Yanomamo tribe, male coalitions will invade areas of other tribes and take their food (Chagnon, 1983; as cited in Buss & Shackelford, 1997). Further, the types of resources that are perceived to be most valuable may be context dependent. In ancestral environments where starvation was a pressing issue, bullying may have been used as a strategy to dominate competitors and acquire food resources due to the

evolutionary pressure of food scarcity exerted on people to survive (Volk et al., 2012b). This has been observed in hunter-gatherers (Turnbull, 1972) and prison camps (Harden, 2012) where food is scarce and bullying may be used as a means to acquire food resources for survival (Volk et al., 2014). This function of bullying related to survival may be inclusive of environments with extreme food scarcity, but bullying for resources besides food is still prevalent in contemporary societies (Volk et al., 2014). Within a familial context, there may be an imbalance of power between siblings if one sibling is older, bigger, or stronger than the other (Wolke & Skew, 2012). Therefore, it may be normal for siblings in most contemporary societies to be in constant competition with each other as they compete for resources not related to food, but instead, toys, attention, and money (Kiselica & Morrill-Richards, 2007; Salmon, 2012).

However, bullying for material resources may extend beyond a familial context to include sports teams, academia, and the workplace. Previous research has found that there is competition between adolescent girls in sports and athletics, which has been associated with higher rates of bullying and victimization (Volk & Lagzdins, 2009). Excluding the aggressive behaviour typically found in sports and athletics, athletes may engage in bullying behaviour in order to obtain a scholarship or spot on a team (Volk et al., 2014). Within the context of academia, law students may engage in bullying behaviour when competing with others for scarce resources such as grades, jobs, and summer internships (Flanagan, 2007). Additionally, limited positions for tenure within academic institutions may also encourage faculty members to bully those who already have tenure (Frazier, 2011; Westhues, 2002) into quitting or leaving the institution so that additional spots become available to those competing for job security (Westhues, 2002).

Finally, bullying may involve aggressive behaviours used to compete for job opportunities that facilitate access to future material resources (Volk et al., 2012a). Hunter-gatherer societies were egalitarian so competition for job opportunities was limited (Lee & Daly, 1999), but as civilization progressed, competitive job markets were introduced for a limited number of spots within the workplace (Volk et al., 2012a). Historically, bullying took place in a number of different cultures and civilizations (e.g., Cunningham, 2005; as cited in Volk et al., 2012a), where individuals would compete with each other for limited jobs or apprenticeships (Volk et al., 2012a). The winner of these competitions would go on to gain access to the necessary resources that would help facilitate survival and reproduction (Volk et al., 2012a). And as mentioned previously, bullying for limited job opportunities is still prevalent in contemporary society such as when students compete for enrolment spots in law schools (Flanagan, 2007). Bullying for contemporary material resources may involve competing for them directly (e.g., bullying among siblings), or competing for the opportunity to acquire resources in the future (e.g., bullying for job or school positions). While social dominance may facilitate access to future material resources, high status may also allow individuals to obtain sexual partners (Hawley, 1999; 2007).

Reproduction. In addition to reputation and resources as proposed adaptive goals, bullying may also be used as an effective strategy to secure sexual partners (Volk et al., 2014). From an evolutionary perspective, the overarching goal of any organism is to reproduce and pass on genes to future generations (Dawkins, 1989). Thus, if bullying is part of an evolutionary adaptation that results in adaptive goals, then reproduction, at the very least, should be a goal of bullying (Volk et al., 2014). Indeed, young adolescent

bullies begin dating at an earlier age, engage in more advanced forms of dating, and spend more time with opposite-sex peers compared to adolescents not involved in bullying (Connolly, Craig, Pepler, & Taradash, 2000). In addition, Volk and colleagues (2015) recently found that bullying was positively associated with number of sexual partners and likelihood of engaging in sexual intercourse. It is worth noting that dating and sexual partners may be contemporary indicators of evolutionary reproductive success (Nettle, 2005). But to have more dating and sexual partners may depend on one's ability to appear most desirable to opposite-sex peers by either increasing one's own appeal and/or diminishing a rival's appeal (Buss & Dedden, 1990) through bullying.

As mentioned previously, physical bullying is more likely to be employed by males during adolescence (Boulton, Trueman, & Flemington, 2002). Physical bullying tends to be a risky behaviour because of the opportunity for aggressive retaliation by the victim, and the likelihood of being caught or punished by an adult (Rivers & Smith, 1994). However, males are evolutionarily more tolerant to take risks due to their greater variability in reproduction (Ellis et al., 2012) and lower levels of parental investment (Trivers, 1972). By engaging in risky physical bullying, males are able to demonstrate traits such as dominance and physical strength that are believed to be attractive to females (Archer, 2009; Benenson, 2009; Volk et al., 2012a). Dominance and physical strength may demonstrate a male's ability to provide a mate with resources and good genes, deter future intrasexual rivals, and protect offspring (Buss & Shackelford, 1997; Volk et al., 2012a). Thus, adolescent males willing to perpetrate bullying may enhance their own appeal and attractiveness to opposite-sex peers, which may contribute to their improved dating and mating success (e.g., Dane et al., in press).

In contrast, for females, gaining access to a mate depends less on intrasexual competition compared to males (Archer, 2009). Females do not have to fight each other in order to mate because they can always find a willing male; instead it makes sense for them to vie for the highest quality mates available (de Bruyn, Cillessen, & Weisfeld, 2012). Furthermore, females are evolutionarily less tolerant to take risks due to their lower variability in reproduction and higher likelihood of being the primary caregiver to future children (Geary, 2010). In other words, it may be especially important for females to survive and stay away from physical violence because of gestation and caring for offspring (Campbell, 1999; 2004). Consistent with this, adolescent females rely more on relational bullying as an intrasexual competitive strategy and less on physical bullying to reduce the risks of detection and consequently retaliation and injuries (Vaillancourt, 2013). For instance, when females engage in intrasexual bullying, they tend to resort to insults or disparaging comments that diminish a rival's physical appearance or emphasize their sexual promiscuity (Leenaars et al., 2008; Shute, Owens, & Slee, 2008). Attractiveness and sexual fidelity are believed to be evolutionarily attractive to males who have evolved to prefer those types of traits in females (Buss, 1988), as they are indicators of good health (Gangestad & Buss, 1993) and assurance in paternity (Buss, 1989). Thus, attacking these traits may be a way of reducing the appeal of a rival female to potential male partners (Benenson, 2009; Owens, Shute, & Slee, 2000), while simultaneously enhancing the bully's own relative appeal (Pellegrini & Long, 2003; Timmerman, 2003). In support of this, Owens, Shute, and Slee (2000) found that adolescent girls reported sexual bullying that consisted of social exclusion and rumour spreading as strategies to compete with other girls over potential mates. Derogating

female rivals may be an effective strategy in diminishing the target female's attractiveness as perceived by males (e.g., Fisher & Cox, 2009). Taken together, bullying appears to be an effective strategy for males and females to be successful in intrasexual competition, which is supported by the findings mentioned earlier regarding bullies' increased dating and sexual behaviours (e.g., Connolly et al., 2000; Volk et al., 2015). Therefore, adolescent bullying may be an adaptive behaviour that promotes mating success (e.g., Dane et al., in press; Volk et al., 2015).

In summary, adolescent bullying may be an adaptive behaviour that provides competitive advantages for obtaining reputation, resources, and reproduction that were adaptive in the ancestral past and are still adaptive today (Volk et al., 2012b). This suggests that bullying extends beyond just intentionally harming the welfare of others to also include a goal-directed aspect (Rigby, 2012). However, bullying may only be adaptive for adolescents with certain personality traits who are willing to employ the behaviour as a strategy to gain significant adaptive benefits (Provenzano et al., 2016)

Bullying and Personality

Personality traits may to some extent influence which individuals perpetrate bullying (Connolly & O'Moore, 2003; Isaacs, Voeten, & Salmivalli, 2013). Olweus (1993) initially characterized the personality of bullies as being aggressive, impulsive, having a lack of empathy for others, and being tolerant of violence. Early studies using the Eysenck Personality Questionnaire (Eysenck & Eysenck, 1975) revealed that psychoticism (e.g., impulsive, callous, and selfish; Mynard & Joseph, 1997; Slee & Rigby, 1993) and neuroticism (e.g., Byrne, 1994; Connolly & O'Moore, 2003) was associated with bullying. Currently, most studies have used the Big Five to investigate

the link between personality and bullying. A meta-analysis revealed that bullying was related to lower Agreeableness and lower Conscientiousness and higher Extraversion and higher Neuroticism (Mitsopoulou & Giovazolias, 2015).

In recent years the HEXACO has been used to study the personality traits of bullies and may provide a unique advantage over the Big Five in a couple of ways. First, the HEXACO has greater cross-cultural validity than the Big Five with six personality dimensions, instead of five, having been replicated in the personality-descriptive adjectives of many different languages and cultures (Ashton & Lee, 2007). Second, the addition of a sixth personality factor, Honesty-Humility, has only a small portion of its variance accounted for in the Big Five (Lee et al., 2008), and may contain content that is inaccurately represented in the Big Five's Agreeableness as well as enough new content not included in the rest of the Big Five model that it warrants the addition of a sixth dimension (Sibley et al., 2010). For example, traits related to exploitation and deception is better captured by Honesty-Humility than the Big Five (Ashton, Lee, & Son, 2000). The uniqueness of Honesty-Humility may be responsible for the advantage of the HEXACO over the Big Five when exploring various forms of antisocial attitudes and behaviours (e.g., Lee & Ashton, 2005; Lee & Ashton, 2013). Thus, the HEXACO may be better suited to study the personality traits of antisocial behaviours, such as bullying.

Initially, lower levels of Agreeableness predicted bullying when using the Big Five (e.g., Menesini, Camodeca, & Nocentini, 2010; Scholte, van Lieshout, de Wit, & van Aken, 2005; Tani, Greenman, Schneider, & Fregoso, 2003). However, two studies using the HEXACO found that lower Honesty-Humility predicted bullying at the multivariate level (when controlling for other HEXACO personality factors), while lower

Agreeableness (when controlling for reactive aggression) and Emotionality predicted bullying at the univariate level (Book, Volk, & Hosker, 2012, Farrell, Della Cioppa, Volk, & Book, 2014). These findings indicate that some personality factors may, to some extent, influence which adolescents engage in bullying. Given that bullying has been linked with adaptive outcomes (e.g. Volk et al., 2012a; 2014), it is reasonable to suggest that individuals with antisocial tendencies may be willing to take advantage of potentially adaptive bullying strategies to gain adaptive outcomes.

Current Study

The purpose of the current study was twofold. First, it was designed to explore whether or not the HEXACO's Honesty-Humility, Emotionality, and Agreeableness contribute to adaptive outcomes both directly and indirectly through their association with bullying. Second, it looked to extend past research by broadening the age of the sample to include younger and middle adolescents and the range of adaptive outcomes examined in relation to bullying to cover social dominance and material resources not investigated in previous research in addition to the reproduction-related outcome (e.g., sexual partners) already examined in older adolescents by Provenzano and colleagues (2016). As a result, I predicted that bullying would partially mediate the relations between Honesty-Humility and social dominance, resources, and reproduction. I also predicted that bullying would partially mediate similar relations for both Emotionality and Agreeableness with each of the three adaptive outcomes. I predicted only partial mediations (see Shrout & Bolger, 2002) because individuals with antisocial tendencies may be willing to use bullying as a potential strategy to gain adaptive outcomes (indirect effects), but as discussed earlier, these same antisocial tendencies may also be associated

with attaining social, material, and sexual benefits using behaviours beyond bullying (direct effects).

Material and Methods

Participants

A sample of 231 adolescents (113 males, $M_{\text{age}} = 14.60$, $SD = 1.57$) was recruited from extra curricular clubs, sports teams, and youth organizations in the Southern Ontario region. The ethnicity of the participants included Caucasian (68.3%), Asian (6.9%), Middle-Eastern (3.9%), and African-Canadian (2.5%). Participants also reported “Other” for ethnicity (6.4%), while the remaining participants did not report any ethnicities (11.9%). The majority of participants reported their family’s socio-economic status (SES) to be “about the same” (65.8%) in wealth as the average Canadian, while fewer reported “more rich” (18.8%), “less rich” (10.9%), and “a lot less rich” (4.5%).

Measures

Bullying. Participants completed the 14-item Bullying Questionnaire that assessed the frequency of their involvement in bullying in the last school term (Appendix B; adapted from Volk & Lagzdins, 2009). Half of the items reflected being a victim of bullying, while the other half reflected being a perpetrator of bullying. The latter half of the items involved different subtypes of bullying and a school bullying composite was created by averaging the physical, verbal, social, sexual, and racial subtypes that are perpetrated by male and female adolescents and peak at various ages during adolescence (e.g., Larochette, Murphy, & Criag, 2010; Monks et al., 2009; Pontzer, 2010; Volk et al., 2006; Wang et al., 2012). Given that my sample consisted of younger, middle, and older adolescents, and I had an almost equal number of males and females, it was logical to

create a composite of bullying that included different subtypes. Sample items from the questionnaire included: “In school, how often have you hit, slapped, or pushed someone much weaker or less popular last term?” and “In school, how often have you threatened, yelled at, or verbally insulted someone much weaker or less popular last term?”. Items were rated on a 5-point Likert scale (1 = *that hasn't happened* to 5 = *several times a week*). The reliability coefficient was $\alpha = .82$.

Social Dominance. Participants completed the six-item Interpersonal Influence subscale from the 41-item Social Dominance and Resource Control scale (Appendix C; adapted from Hawley, 2003; Hawley, Little, & Card, 2008; Hawley, Little, & Pasupathi, 2002). Across these studies, different items were used for scales relating to resource control and social dominance, which then served as the basis for item content on the Interpersonal Influence subscale. The six items were averaged to create a composite of the subscale, which assesses an individual's level of social influence over others (i.e., the ability to command respect and attention, control the behaviours of others, and receive priority access to privileges) and is an indicator of social dominance (Weisfeld, Bloch, & Ivers, 1984). Sample items included: “I have a lot of power over others” and “In groups I am usually in charge or in control”. Although items found in the studies mentioned above were rated on 4-point Likert scale, similar items that comprised the Interpersonal Influence subscale were rated on a 5-point Likert scale (1 = *never true* to 5 = *almost always true*). The reliability coefficient was $\alpha = .85$.

Resources. Participants completed the five-item Centrality subscale from the 15-item Material Values Scale (Appendix D; Richins, 2004). The subscale of this self-report measure assessed an individual's preference or desire for possessions or luxuries.

Responses were computed by summing the five items of the subscale (Richins, 2004). However, items were slightly modified to reflect materialistic behaviours rather than attitudes. For example, to reflect materialistic attitudes, sample items on the original Centrality subscale stated: “I try to keep my life simple, as far as possessions are concerned” and “I like a lot of luxury in my life”. To reflect materialistic behaviours, sample items on the modified Centrality subscale stated: “I live a simple life as far as possessions are concerned” and “I have a lot of luxury things in my life”. Items were rated on a 5-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*). The reliability coefficient was $\alpha = .67$.

Reproduction. To measure outcomes related to reproduction, participants were asked: “How many different people have you gone on dates with, just the two of you?”, “How many different girlfriends/boyfriends have you had a voluntary sexual experience with (i.e., more than kissing or making out) since the age of 12?”, and “Since the age of 12, with how many different partners have you had voluntary sexual experiences without having an interest in a long-term committed relationship with this person?”. All three items were averaged to create a composite of reproduction, as number of dating and sexual partners may be considered contemporary indicators of reproductive success (Kanazawa, 2003). The reliability coefficient was $\alpha = .75$.

Personality. Participants completed the 60-item HEXACO Personality Inventory-Revised (Appendix E; Lee & Ashton, 2004). This self-report instrument assesses the six major dimensions of personality. Scores on the personality dimensions are each comprised of an average of four subscales, which are computed by averaging the items that correspond to each subscale (Lee and Ashton, 2004). Sample items include: “If I

want something from a person I dislike, I will act very nicely toward that person in order to get it,” for Honesty-Humility, “I worry a lot less than most people do,” for Emotionality, “I enjoy having lots of people around to talk with,” for Extraversion, “I rarely hold a grudge, even against people who have badly wronged me,” for Agreeableness, “I often check my work over repeatedly to find any mistakes,” for Conscientiousness, and “People have often told me that I have a good imagination,” for Openness to Experience. Items were rated on a 5-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*). The reliability coefficients for Honesty-Humility, Emotionality, and Agreeableness were $\alpha = .74$, $.73$, and $.75$, respectively.

Peer Valued Characteristics. Physical Attractiveness and athletic competence were each assessed using one item from the nine item Peer Valued Characteristics, which is a self-report measure of characteristics and competencies that a peer group is likely to perceive as important (Appendix F; adapted from Knack, Tsar, Vaillancourt, Hymel, & McDougall, 2012; Vaillancourt & Hymel, 2006). Participants rated the following statements: “I am good looking and attractive” and “I do well at sports” on a seven-point scale (1 = *very untrue of me* to 7 = *very true of me*).

Likeability. Participants’ likeability was measured using one item from the 25-item Strength and Difficulties Questionnaire, which assesses positive and negative attributes in oneself (Appendix G; Goodman, 2001). Participants rated the following statement: “Other people my age generally like me” on a three-point scale (1 = *not true*, 2 = *somewhat true*, 3 = *certainly true*).

Popularity. To measure popularity, participants responded to the statement: “I feel that I am unpopular person”. The item was reverse scored and came from the Social

Self-Esteem facet of the Extraversion dimension of the 60-item HEXACO Personality Inventory-Revised (Lee & Ashton, 2004). The item was rated on a 5-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*).

Procedure

Supervisors of the extracurricular clubs, sports teams, and youth organizations were contacted about having adolescents participate in this study. Once consent was obtained from these supervisors, adolescents were recruited and told that this study was about adolescent peer relationships. Adolescents interested in participating received an envelope containing a parental consent form, an assent form, and a unique identification number to access the study online. Questionnaires were placed in random order in order to avoid the possibility of one questionnaire systematically influencing responses on others. Participants were notified that both the consent and assent forms needed to be signed and returned in order for the completed questionnaire to be used in the study. The completed forms were collected at the same locations they were initially distributed in the subsequent weeks. When participants gave back the envelopes, they were compensated \$15 for their time.

Results

Preliminary Analyses

Missing Data. All analyses were conducted using SPSS 24. Missing values were not completely missing at random ($\chi^2(236) = 294.88, p = .01$). However, this was only the case when the reproduction-related items were included in the missing value analysis. Plausible values that were imputed did not change the pattern of results.

Multivariate Assumptions. The data showed slightly violated assumptions of multivariate normality for the bullying and reproduction-related items. Considering that

antisocial behaviours, such as bullying, tend to be low in frequency, positive skew and outliers were expected. I decided to include potential outliers in the analysis because it reflected responses towards the higher end of bullying perpetration, which was of interest. Furthermore, reproduction-related variables were also positively skewed and contained outliers. Considering that self-report data on sexual behaviour may be underreported (Morrison-Beedy, Carey, & Tu, 2006) and that most of the sample was under 15 years old and may have less dating or sexual experience, the positive skew was expected. To reduce the impact of the outliers, extreme values were winsorized replacing them with the next highest value that was not an outlier (e.g., a z score less than $|3.29|$; Field, 2013) because they were not representative of the population and not consistent with previous research and theory. Regressions run with winsorized variables improved the pattern of results (See Table 1 for means and standard deviations for all variables after dealing with outliers). Bootstrapping with bias-corrected confidence intervals using 1,000 samples was used to circumvent nonnormality of the variables (e.g., Mooney, Duval, & Duval, 1993).

Correlations

Effect sizes of correlations were small to large. Most of the variables were nominal or ordinal, so Spearman's correlations were conducted (See Table 2). Being younger was significantly correlated with athletic competence and Agreeableness, whereas being older was significantly correlated with social dominance, reproduction, and Honesty-Humility. Being a girl was significantly correlated with Emotionality. Physical attractiveness was significantly positively correlated with likeability, popularity, athletic competence, social dominance, resources and agreeableness. Popularity was

significantly positively correlated with athletic competence and social dominance and significantly negatively correlated with Emotionality. Athletic competence was significantly positively correlated with social dominance. As expected, bullying perpetration was significantly positively correlated with social dominance, resources, and reproduction and significantly negatively correlated with Honesty-Humility and Agreeableness. Social dominance was significantly positively correlated with resources and reproduction and significantly negatively correlated with Honesty-Humility. Resources was significantly negatively correlated with Honesty-Humility. Reproduction was significantly negatively correlated with Honesty-Humility. Finally, Honesty-Humility was significantly positively correlated with Emotionality and Agreeableness.

Table 1

Means and Standard Deviations for all Independent and Dependent Variables

Variables	N	Mean	SD
Age	230	14.60	1.57
Sex	230	1.52	.51
Physical Attractiveness	227	4.83	1.63
Likeability	226	2.52	.58
Popularity	228	3.23	1.23
Athletic Competence	227	5.47	1.85
Bullying	228	1.19	.43
Social Dominance	227	2.71	.81
Resources	221	15.34	2.83
Reproduction	218	.72	1.26
Honesty-Humility	229	3.34	.60
Emotionality	229	3.25	.62
Agreeableness	229	3.26	.55

Table 2

Spearman Correlations Between all Independent and Dependent Variables

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Age ^a	–	.04	-.09	-.03	.06	-.25***	.09	.15*	.01	.48***	.32***	.09	-.15*
2. Sex ^b		–	-.001	-.002	.001	-.04	-.07	.02	.01	-.04	.05	.38***	.11
3. PA			–	.26***	.33***	.50***	.04	.34***	.18**	.07	.02	-.01	.14*
4. Likeability				–	.36***	.28***	-.16*	.22**	.08	-.08	-.09	-.02	.24***
5. Popularity					–	.39***	-.05	.24***	.12	-.08	-.07	-.20**	.10
6. AC						–	-.01	.17**	.07	-.06	-.11	-.10	.10
7. Bullying							–	.22**	.21**	.17*	-.32***	-.04	-.29***
8. Social Dom								–	.35***	.21**	-.36***	-.03	-.11
9. Resources									–	.06	-.43***	-.05	-.13
10. Reproduc ^a										–	-.21**	.08	-.07
11. H											–	.19**	.32***
12. E												–	-.06
13. A													–

Note. ^aPearson correlations.

^bSex was coded as 1 = male and 2 = female.

PA = Physical Attractiveness, AC = Athletic Competence, Social Dom = Social Dominance, Reproduc = Reproduction, H = Honesty-Humility, E = Emotionality, A = Agreeableness.

* $p < .05$. ** $p < .01$. *** $p < .001$

Mediation Analyses

All variables were entered simultaneously into the linear regression models for all mediation analyses. Bootstrap tests of the indirect effect were conducted using PROCESS macro on SPSS 24 (e.g., Preacher & Hayes, 2004) to establish whether or not bullying partially mediated the association between the three antisocial HEXACO factors and social dominance, resources, and reproduction. Furthermore, I controlled for a number of individual differences such as age (e.g., LaFontana & Cillessen, 2010; Santelli, Brener, Lowry, Bhatt, & Zabin, 1998), sex of the participant (e.g., Jonason, 2008; Rose, Glick, & Smith, 2011), physical attractiveness (e.g., Vaillancourt & Hymel, 2006; Rhodes, Simmons, & Peters, 2005), likeability (Feldman, Rosenthal, Brown, & Canning, 1995), popularity (e.g., Pellegrini & Long, 2003), and athletic competence (e.g., Bagwell, Newcomb, & Bukoswki, 1998; LaGreca, Prinstein, & Fetter, 2001) because these have all

been associated with indices of social dominance, resources, or reproduction.

Social Dominance. There was a significant negative relationship between Honesty-Humility and bullying ($\beta = -.27, p < .001$) and a significant positive relationship between bullying and social dominance ($\beta = .18, p = .004$). There was also a significant negative relationship between Honesty-Humility and social dominance ($\beta = -.31, p < .001$; see Table 3 for regression paths) and a significant indirect effect of Honesty-Humility on social dominance through bullying ($\beta = -.10$, BCa CI $[-.10, -.02]$; see Figure 1).

Table 3

Mediation Effects of Bullying (B) on the Relationship between Honesty-Humility (H) and Social Dominance (SD)

Regression paths	β	SE	t	95% CI
Mediation a path (H on B)	-.27***	.06	-4.30	[-.40, -.15]
Mediation b path (B on SD)	.18**	.06	2.91	[.06, .31]
Total effect, c path (H on SD; no mediator)	-.31***	.05	-5.10	[-.42, -.19]
Direct effect, c' (H on SD including B as mediator)	-.25***	.06	-4.16	[-.38, -.13]
Indirect (mediated) effect with 95% confidence interval	-.10	.02		[-.10, -.02]*

Note. $N = 221$.

Total $R^2 = .30, F(8, 211) = 12.76, p < .001$.

* $p < .05$. ** $p < .01$. *** $p < .001$.

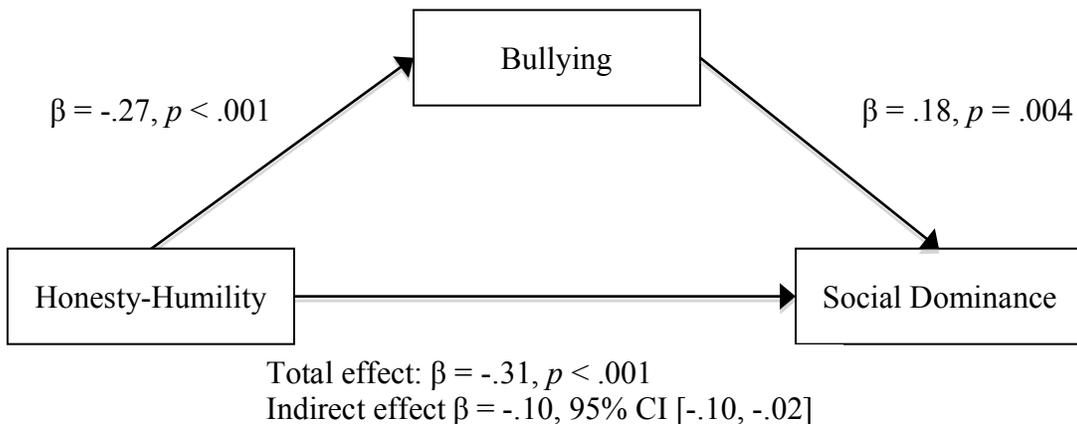


Figure 1. Bullying partially mediates the relationship between Honesty-Humility and social dominance.

Furthermore, there was a significant negative relationship between Agreeableness and bullying ($\beta = -.15, p = .02$) and a significant positive relationship between bullying and social dominance ($\beta = .24, p < .001$). There was also a significant negative relationship between Agreeableness and social dominance ($\beta = -.17, p = .006$; see Table 4 for regression paths) and a significant indirect effect of Agreeableness on social dominance through bullying ($\beta = -.04$, BCa CI $[-.10, -.01]$; see Figure 2).

Table 4

Mediation Effects of Bullying (B) on the Relationship between Agreeableness (A) and Social Dominance (SD)

Regression paths	β	SE	t	95% CI
Mediation a path (A on B)	-.15*	.07	-2.31	[-.28, -.02]
Mediation b path (B on SD)	.24***	.06	3.73	[.11, .36]
Total effect, c path (A on SD; no mediator)	-.17**	.06	-2.80	[-.30, -.05]
Direct effect, c' (A on SD including B as mediator)	-.14*	.06	-2.26	[-.26, -.02]
Indirect (mediated) effect with 95% confidence interval	-.04	.01		[-.10, -.01]*

Note. $N = 221$.

Total $R^2 = .26, F(8, 211) = 10.48, p < .001$.

* $p < .05$. ** $p < .01$. *** $p < .001$.

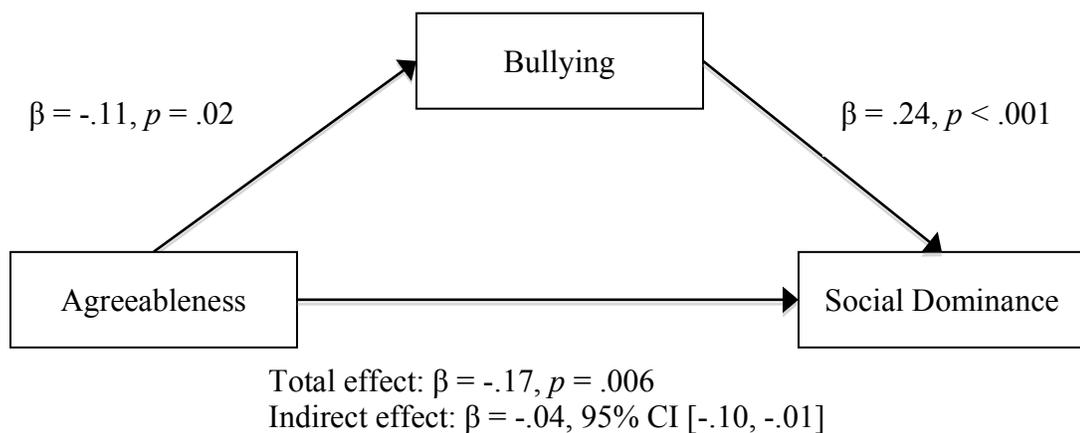


Figure 2. Bullying partially mediates the relationship between Agreeableness and social dominance.

Finally, there was no significant relationship between Emotionality and bullying ($\beta = -.05, p = .48$), but there was a significant positive relationship between bullying and social dominance ($\beta = .26, p < .001$). There was also no significant relationship between Emotionality and social dominance ($\beta = -.04, p = .51$; see Table 5 for regression paths) and no significant indirect effect of Emotionality on social dominance through bullying ($\beta = -.01, \text{BCa CI} [-.05, .02]$; see Figure 3).

Table 5

Mediation Effects of Bullying (B) on the Relationship between Emotionality (E) and Social Dominance (SD)

Regression paths	β	SE	t	95% CI
Mediation a path (E on B)	-.05	.07	-.70	[-.18, .09]
Mediation b path (B on SD)	.26***	.06	4.07	[.13, .38]
Total effect, c path (E on SD; no mediator)	-.04	.07	-.65	[-.17, .09]
Direct effect, c' (E on SD including B as mediator)	-.03	.06	-.47	[-.16, .10]
Indirect effect (mediated) with 95% confidence interval	-.01	.02		[-.05, .02]

Note. N = 221.

Total $R^2 = .24, F(8, 211) = 9.56, p < .001$.

* $p < .05$. ** $p < .01$. *** $p < .001$.

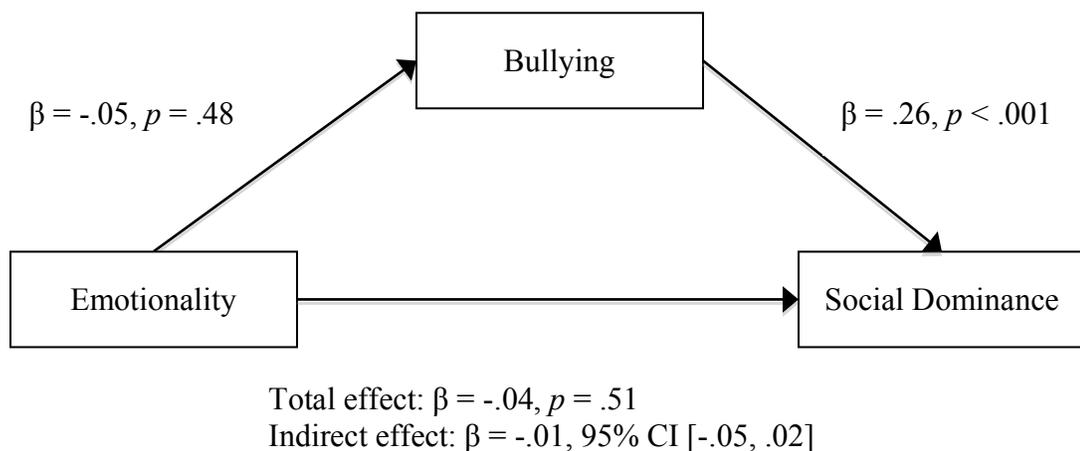


Figure 3. Bullying does not partially mediate the relationship between Emotionality and social dominance.

Resources. There was a significant negative relationship between Honesty-Humility and bullying ($\beta = -.26, p < .001$), but no significant relationship between bullying and resources ($\beta = -.06, p = .34$). There was a significant negative relationship between Honesty-Humility and resources ($\beta = -.50, p < .001$; see Table 6 for regression paths), but no significant indirect effect of Honesty-Humility on resources through bullying ($\beta = .02$, BCa CI $[-.03, .10]$; see Figure 4)

Table 6

Mediation Effects of Bullying (B) on the Relationship between Honesty-Humility (H) and Resources (RES)

Regression paths	β	SE	t	95% CI
Mediation a path (H on B)	-.26***	.06	-4.47	[-.39, -.15]
Mediation b path (B on RES)	-.06	.07	-.99	[-.20, .07]
Total effect, c path (H on RES; no mediator)	-.50***	.06	-8.40	[-.62, -.38]
Direct effect, c' (H on RES including B as mediator)	-.52***	.06	-8.32	[-.64, -.40]
Indirect (mediated) effect with 95% confidence interval	.02	.02		[-.03, .10]

Note. $N = 215$.

Total $R^2 = .31, F(8, 206) = 11.40, p < .001$.

* $p < .05$. ** $p < .01$. *** $p < .001$.

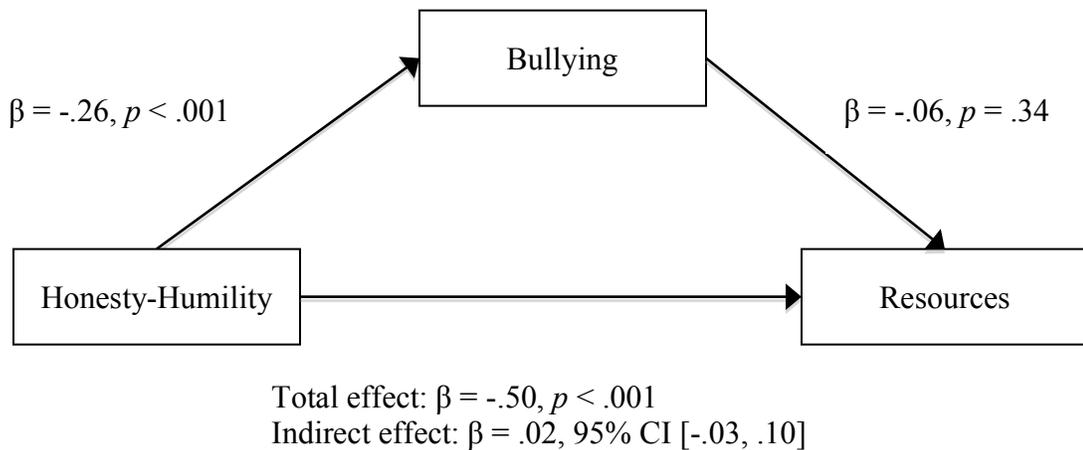


Figure 4. Bullying does not partially mediate the relationship between Honesty-Humility and resources.

There was a significant negative relationship between Agreeableness and bullying ($\beta = -.14, p = .04$), but no significant relationship between bullying and resources ($\beta = .06, p = .40$). Furthermore, there was a significant negative relationship between Agreeableness and resources ($\beta = -.22, p = .002$; see Table 7 for regression paths), but no significant indirect effect of Agreeableness on resources through bullying ($\beta = -.01, \text{BCa CI } [-.04, .01]$; see Figure 5).

Table 7

Mediation Effects of Bullying (B) on the Relationship between Agreeableness (A) and Resources (RES)

Regression paths	β	SE	t	95% CI
Mediation a path (A on B)	-.14*	.07	-2.10	[-.27, -.01]
Mediation b path (B on RES)	.06	.07	.85	[-.10, .20]
Total effect, c path (A on RES; no mediator)	-.22**	.07	-3.19	[-.35, -.10]
Direct effect, c' (A on RES including B as mediator)	-.21**	.07	-3.03	[-.35, -.10]
Indirect (mediated) effect with 95% confidence interval	-.01	.01		[-.04, .01]

Note. $N = 215$.

Total $R^2 = .12, F(8, 206) = 3.35, p = .001$.

* $p < .05$. ** $p < .01$. *** $p < .001$.

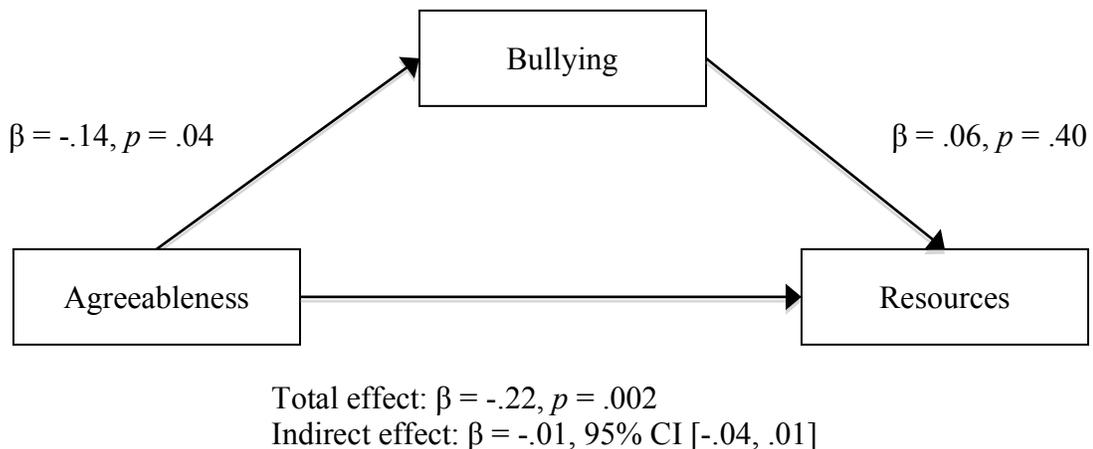


Figure 5. Bullying does not partially mediate the relationship between Agreeableness and resources.

Lastly, there were no significant relationships between Emotionality and bullying ($\beta = -.04, p = .52$), bullying and resources ($\beta = .10, p = .20$), and Emotionality and resources ($\beta = -.01, p = .93$; see Table 8 for regression paths). There was also no significant indirect effect of Emotionality on resources through bullying ($\beta = -.004$, BCa CI [-.05, .01]; see Figure 6).

Table 8

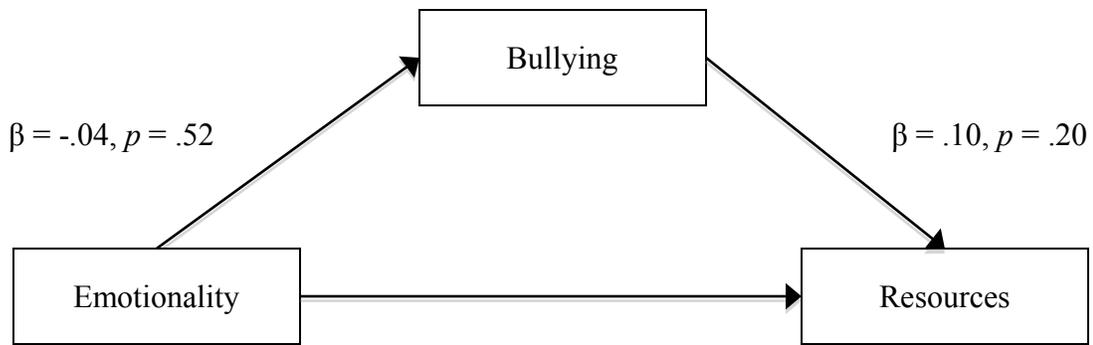
Mediation Effects of Bullying (B) on the Relationship between Emotionality (E) and Resources (RES)

Regression paths	β	SE	t	95% CI
Mediation a path (E on B)	-.04	.07	-0.65	[-.18, .10]
Mediation b path (B on RES)	.62	.07	1.28	[-.10, .23]
Total effect, c path (E on RES; no mediator)	-.01	.07	-1.10	[-.15, .14]
Direct effect, c' (E on RES including B as mediator)	-.003	.07	-0.03	[-.15, .14]
Indirect (mediated) effect with 95% confidence interval	-.004	.01		[-.05, .01]

Note. $N = 215$.

Total $R^2 = .08, F(8, 206) = 2.10, p = .04$.

* $p < .05$. ** $p < .01$. *** $p < .001$.



Total effect: $\beta = -.01, p = .93$

Indirect effect: $\beta = -.004, 95\% \text{ CI } [-.05, .01]$

Figure 6. Bullying does not partially mediate the relationship between Emotionality and resources.

Reproduction. Honesty-Humility was significantly negatively related to bullying ($\beta = -.28, p < .001$), bullying was significantly positively related to reproduction ($\beta = .25, p < .001$), but Honesty-Humility was not significantly related to reproduction ($\beta = -.11, p = .06$; see Table 9 for regression paths). There was a significant indirect effect of Honesty-Humility on reproduction through bullying ($\beta = -.10, \text{BCa CI } [-.16, -.01]$; see Figure 7).

Table 9

Mediation Effects of Bullying (B) on the Relationship between Honesty-Humility (H) and Reproduction (REPRO)

Regression paths	β	SE	t	95% CI
Mediation a path (H on B)	-.28***	.07	-4.30	[-.41, -.15]
Mediation b path (B on REPRO)	.25***	.06	4.48	[.15, .37]
Total effect, c path (H on REPRO; no mediator)	-.10	.06	-1.92	[-.21, .003]
Direct effect, c' (H on REPRO including B as mediator)	-.03	.06	-.62	[-.14, .08]
Indirect (mediated) effect with 95% confidence interval	-.10	.04		[-.16, -.01]*

Note. N = 209.

Total $R^2 = .32, F(8, 200) = 11.54, p < .001$.

* $p < .05$. ** $p < .01$. *** $p < .001$.

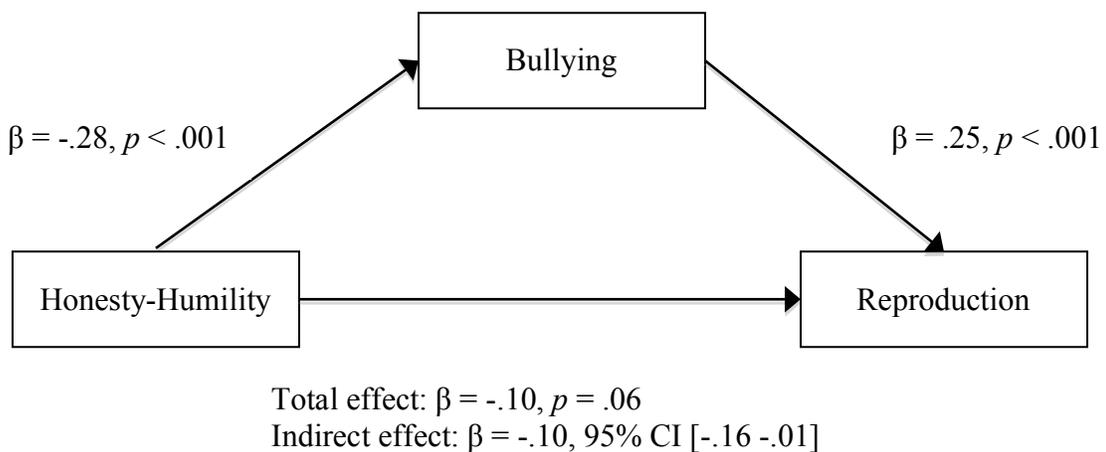


Figure 7. Honesty-Humility had a significant indirect effect on reproduction through bullying.

There was a significant negative relationship between Agreeableness and bullying ($\beta = -.15, p = .03$) and a significant positive relationship between bullying and reproduction ($\beta = .27, p < .001$). There was no significant relationship between Agreeableness and reproduction ($\beta = -.001, p = .98$; see Table 10 for regression paths), but there was a significant indirect effect of Agreeableness on reproduction through bullying ($\beta = -.04, \text{BCa CI} [-.11, -.01]$; see Figure 8).

Table 10

Mediation Effects of Bullying (B) on the Relationship between Agreeableness (A) and Reproduction (REPRO)

Regression paths	β	SE	t	95% CI
Mediation a path (A on B)	-.15**	.07	-2.20	[-.29, -.02]
Mediation b path (B on REPRO)	.27***	.05	4.93	[.16, .38]
Total effect, c path (A on REPRO; no mediator)	-.001	.06	-.02	[-.11, .11]
Direct effect, c' (A on REPRO including B as mediator)	.04	.06	.73	[-.10, .15]
Indirect (mediated) effect with 95% confidence interval	-.04	.02		[-.11, -.01]*

Note. $N = 208$.

Total $R^2 = .31, F(8, 200) = 11.57, p < .001$.

* $p < .05$. ** $p < .01$. *** $p < .001$.

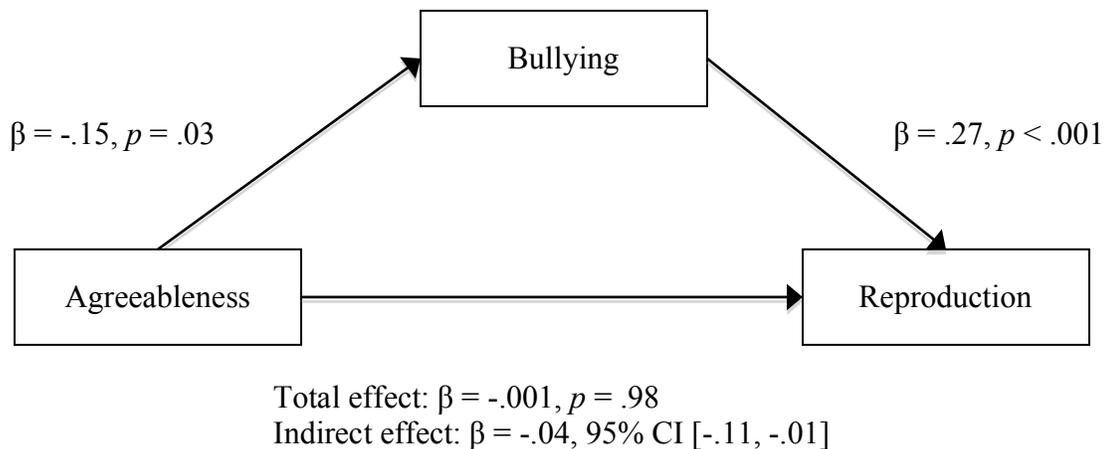


Figure 8. Agreeableness had a significant indirect effect on reproduction through bullying.

As for Emotionality, it was not significantly related to bullying ($\beta = -.07, p = .33$), but bullying was significantly positively related to reproduction ($\beta = .27, p < .001$). There was no significant relationship between Emotionality and reproduction ($\beta = .02, p = .70$; see Table 11 for regression paths) and no significant indirect effect of Emotionality on reproduction through bullying ($\beta = -.02$, BCa CI [-.10, .02]; see Figure 9).

Table 11

Mediation Effects of Bullying (B) on the Relationship between Emotionality (E) and Reproduction (REPRO)

Regression paths	β	SE	t	95% CI
Mediation a path (E on B)	-.07	.07	-9.97	[-.22, .10]
Mediation b path (B on REPRO)	.27***	.05	4.91	[.16, .37]
Total effect, c path (E on REPRO; no mediator)	.02	.06	.39	[-.10, .14]
Direct effect, c' (E on REPRO including B as mediator)	.04	.06	.75	[-.10, .15]
Indirect (mediated) effect with 95% confidence interval	-.02	.02		[-.10, .02]*

Note. N = 206.

Total $R^2 = .32, F(8, 200) = 11.35, p < .001$.

* $p < .05$. ** $p < .01$. *** $p < .001$.

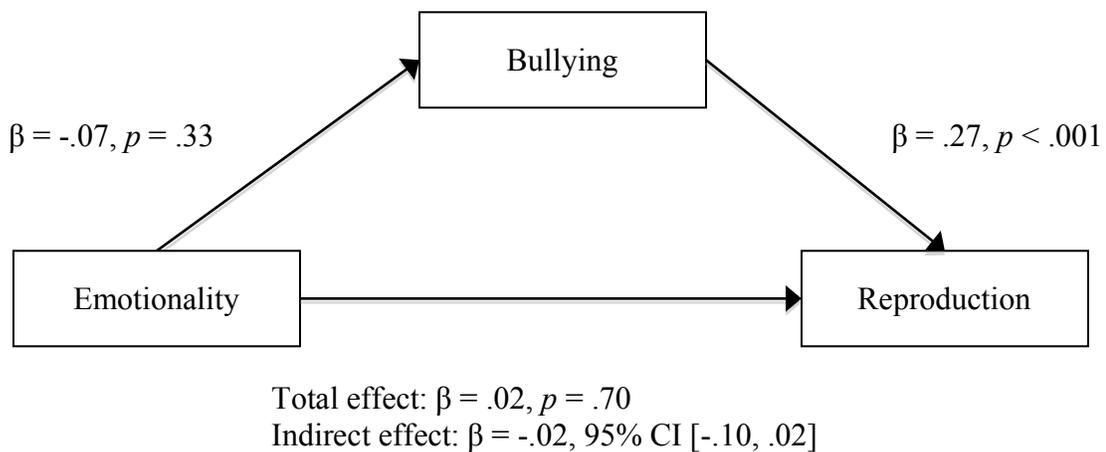


Figure 9. Bullying does not partially mediate the relationship between Emotionality and reproduction.

Discussion

Adolescents may compete for access to adaptive outcomes that have reliably led to survival and reproduction in the ancestral past. Individual differences in personality are likely to be adaptive in providing adolescents with competitive advantages. For example, certain personality traits may be expressed through bullying behaviour to obtain adaptive outcomes. I investigated whether or not the associations between any of the antisocial HEXACO factors (Honesty-Humility, Emotionality, and Agreeableness) and the three adaptive outcomes (social dominance, resources, and reproduction) were partially mediated by bullying perpetration. Results offered mixed support for my predictions as bullying partially mediated the relations of Honesty-Humility and Agreeableness with social dominance, but not with resources and reproduction. However, Honesty-Humility and Agreeableness both had direct effects on resources and indirect effects on reproduction through bullying. Furthermore, bullying did not partially mediate the relations between Emotionality and any of the adaptive outcomes. These findings extend the Provenzano et al., (2016) study by suggesting that adolescents with antisocial tendencies (i.e., lower Honesty-Humility and lower Agreeableness) may obtain social dominance, physical resources from others, and reproductive partners, with and without bullying. Direct and indirect effects among personality, bullying, and adaptive outcomes will be discussed in further detail below.

Social Dominance

In the present study, Honesty-Humility had a direct effect on social influence, which has been defined in the past as having the ability to negotiate dominance in social hierarchies (Weisfeld et al., 1984). Socially dominant individuals have much impact and

influence over others in the peer group (Garandean & Cillessen, 2006). Buss and Duntley (2006) suggest that individuals can climb their peer group's hierarchy and attain social dominance by using manipulation tactics to increase their power. Considering that Honesty-Humility characterizes the willingness to manipulate others (Ashton & Lee, 2007), it is not surprising that individuals lower in Honesty-Humility had more social dominance and may have used manipulation as a strategy to achieve it. This finding is consistent with previous research, which found Honesty-Humility was negatively associated with SDO (Lee et al., 2010). Although SDO reflects the attitude or preference for wanting group dominance, the present findings suggest that adolescents lower in Honesty-Humility do indeed have more social dominance than others.

Dominant group members tend to be in positions of power (Dépret & Fiske, 1993), which suggests an inherent power imbalance as peers higher in a dominance hierarchy have more power than peers lower in a dominance hierarchy. Power imbalances are a critical component of bullying, which is often used as a strategy to obtain a powerful social reputation via a dominant position in the peer group (e.g., Olthof, Goossens, Vermande, & van der Meulen, 2011; Salmivalli & Peets 2008; Reijntjes et al., 2013). Accordingly, bullying partially mediated the association between Honesty-Humility and social dominance. This partial mediation suggests that adolescents lower in Honesty-Humility may be willing to use bullying to obtain social dominance, but also may use mechanisms other than bullying (e.g., manipulation) to obtain dominance. Overall, the antisocial tendencies associated with lower Honesty-Humility may allow for youth to have at least two antisocial behavioural pathways in which to achieve their social goals.

In addition, Agreeableness also had a direct effect on social influence. This result is in line with previous research by Lee and colleagues (2010) who found Agreeableness was negatively related to SDO. Individuals with a greater SDO are more likely to see disadvantaged groups as a threat to the status of the dominant group, which may evoke discrimination or anger directed toward the disadvantaged group (Saeri, Iyer, & Louis, 2015) perhaps as a way to assert control or power over these individuals and maintain superior group status (Pratto et al., 1994). Traits related to anger and intolerance are found in the lower pole of Agreeableness (Ashton & Lee, 2007), thus the relation to SDO is straightforward. And similar to Honesty-Humility, individuals with lower levels of Agreeableness may actually be socially dominant, rather than just having the attitude that some groups are superior to others. The current results suggest that the lower pole of Agreeableness, which describes traits related to anger and stubbornness, may translate into social dominance, particularly over those who are lower in status (i.e., people who are weaker or disadvantaged).

Targeting individuals who are perceived to be weaker is also a common feature of bullying. Bullies may choose to attack “easy” targets such as those who are submissive (Schwartz et al., 1998), physically weak (Hodges & Perry, 1999), have no peers who are likely to defend them (Veenstra, Lindenberg, Munnikma, & Dijkstra, 2010), and/or victims who have a lower status in the peer group (Hodges & Perry, 1999). Therefore, I expected (and found) that bullying partially mediated the relation between Agreeableness and reputation. Bullying may be a way for individuals lower in Agreeableness to maintain their status in peer groups (Kolbert & Crothers, 2003) when feeling that others may threaten the social order (Swearer & Hymel, 2015). Bullying as a retaliatory

response to a perceived threat may be reactive (i.e., emotional, impulsive; Camodeca, Goossens, Terwogt, & Schuengel, 2002) or proactive if the retaliation is delayed (and therefore planned; Volk et al., 2014). The former appears to be consistent with traits found in the lower pole of Agreeableness, which partly characterizes individuals who are reactive, rather than exploitative (Ashton & Lee, 2007). Although bullying has been conceptualized as a planned, proactive behaviour (e.g., Volk et al., 2014), individuals lower in Agreeableness may still cultivate a tough reputation through bullying behaviour that relies on reactive anger as it may be adaptive in creating a credible deterrent by signalling to others that these individuals are ready and willing to harm others at any time (Pinker, 2011). Taken together, individuals lower in Agreeableness may bully those who challenge them or threaten their status in order to maintain the hierarchy and to send a signal to others not to aggress against them, but also may be willing to use other antagonistic behaviours beyond bullying to acquire their social goals.

In contrast, adolescents lower in Emotionality did not show a direct relationship with social dominance nor did bullying partially mediate the relation between Emotionality and social dominance. This result is inconsistent with previous research, which found lower Emotionality was a significant predictor of SDO (Sibley et al., 2010). As mentioned previously, SDO reflects an individual's attitudes toward wanting power and dominance over people with lower status. However, I measured whether or not individuals actually have social dominance. This discrepancy may be one instance when attitudes do not predict behaviour. That is, it might be that adolescents who have a desire for power or dominance over others is not actually reflected in their behaviour or ability to achieve it in a peer context whether as a result of lower sentimentality and empathy or

through bullying. Considering that social dominance is situated within a peer network, individuals lower in Emotionality, who in addition to being unempathetic, tend to be emotionally detached from others (Ashton & Lee, 2007), may manifest as a lack of effort or interest in creating or maintaining peer relationships with others that are critical to achieving social dominance and may explain why Emotionality was not directly associated with reputation. Furthermore, the lack of a correlation between Emotionality and bullying and the weak correlations in past research (e.g., Book et al., 2012), support the notion that individuals lower in Emotionality, although antisocial; lack the exploitativeness that may be necessary to perpetrate bullying. Alternatively, lower Emotionality also partly characterizes individuals who feel little fear and are not deterred by physical harm (Ashton & Lee, 2007). Considering that a composite measure of bullying was used that was comprised of mostly non-physical subtypes, this may be one reason for the lack of a link to bullying. In sum, adolescents with certain antisocial personality factors (i.e., lower Honesty-Humility and lower Agreeableness) may attain social dominance directly, but also may be willing to use bullying as an adaptive strategy to achieve social dominance. While more broadly, the current findings provide support for the adaptive nature of bullying. The positive association between bullying and social dominance found in this study is consistent with previous research that has linked bullying to different reputational outcomes (e.g., Estell, Farmer, & Cairns, 2007; Juvonen et al., 2003; Pellegrini & Long, 2002).

Resources

In addition to social dominance, adolescents may also compete with each other for access to material resources. For adolescents, having material resources may involve

wearing expensive, brand name clothing or having the most current electronics, which may enhance status or signal wealth (Plourde, 2008). Material resources have become increasingly important to adolescents (Chaplin & John, 2010), which may facilitate the use of antisocial strategies especially if such resources can be translated into future social benefits. As such, lower Honesty-Humility had a direct effect on material possessions. This may involve strategies related to manipulation as a way to obtain material possessions. Consistent with this result, previous research found Honesty-Humility was negatively associated with materialistic tendencies (Lee et al., 2013), which is logical considering that the lower pole of Honesty-Humility is defined by greed and similar characteristics (Ashton & Lee, 2008b). The drive for luxury items is ubiquitous among humans as it may increase status (Cummins, 2005) and displaying luxury may be an adaptive strategy (Nelissen & Meijers, 2011). For instance, Nelissen & Meijers (2011) found that wearing clothing with expensive brand labels lead to more benefits in social interactions (e.g., protection, mating opportunities).

The importance of material resources during adolescence is highlighted by the fact that Honesty-Humility had the strongest correlation with the resources outcome. Competition for resources may have occurred in ancestral environments where individuals would bully each other for access to food in order to survive (Volk et al., 2012b). In contemporary societies, individuals may use bullying to thwart rivals when competing for limited job opportunities and enrolment spots in school that may eventually lead to wealth and material possessions (Flanagan, 2007). However, given that most of the current sample is too young to have a job or enroll in school where spots are limited, I expected bullying to partially mediate Honesty-Humility with material

resources.

Although lower Honesty-Humility was directly related to material resources, bullying was not found to partially mediate this association. While bullying and resources were significantly correlated, it was nearly half the size of the correlation between Honesty-Humility and resources. In Western cultures, bullying for material resources is difficult as the behaviour may be easy to catch and punish (e.g., stealing a laptop may result in legal consequences). Therefore, it may be too costly for individuals lower in Honesty-Humility to resort to bullying for material gains. Furthermore, considering that adolescence marks the beginning of sexual development and initiation of sexual behaviour (Baams, Dubas, Overbeek, & van Aken, 2015), outcomes related to reproduction may take precedence over material resources. Employing other manipulative strategies may be the best choice for adolescents who are lower in Honesty-Humility, rather than using bullying to gain material possessions.

Similar to Honesty-Humility, lower Agreeableness also had a direct effect on resources. This finding is in line with previous research showing that Agreeableness was negatively related to materialistic tendencies (e.g., Lee et al., 2013). Although Lee and colleagues (2013) used the Material Values Scale (MVS; e.g., Richins & Dawson, 1992) in their study to examine the association between Agreeableness and materialism, the strongest predictor of the Belk Materialism Scale (e.g., Belk, 1985), which shares a similar understanding of materialism with the MVS (Ahuvia & Wong, 1995), was the angry and hostility facet of Big Five Neuroticism (Watson, 2015). However, anger and hostility in the HEXACO is found in the lower pole of Agreeableness (Ashton & Lee, 2007). Individuals who are materialistic may routinely make material comparisons with

others (Sirgy, 1998) and may feel a sense of anger or hostility if they perceive others to have more material things than they do (Watson, 2015). This may lead individuals lower in Agreeableness to engage in antagonistic behaviours in order to reduce the discrepancy between what they have and what others have by taking away resources from others. Acquiring physical resources may have become increasingly important during adolescence perhaps due to their potential adaptive value (e.g., Nelissen & Meijers, 2011). As a result, youth may compete with each other for material possessions using behaviours such as bullying which have been used in the ancestral past to compete against others for physical resource such as food when shortages were imminent (Volk et al., 2012b). As such, I expected bullying to partially mediate Agreeableness with material resources.

Despite the fact that lower Agreeableness was associated with resources directly, bullying did not partially mediate the relationship. Given that previous findings showed Agreeableness was a better predictor of reactive aggression (Book et al., 2012), it suggests that adolescents who are able to gain material goods may do so through traits related to lower Agreeableness that are characteristic of more reactive behaviours rather than a planned, deliberate strategy such as bullying.

Conversely, lower Emotionality was not associated with material possessions both directly and indirectly through bullying. The lack of a significant relationship between Emotionality and resources contradicts previous research, which found traits described by lower Emotionality (e.g., empathy, sensation seeking) to be related to materialism (e.g., Can, 2013; Troisi et al., 2006). One reason for the inconsistent results may be due to the fact that the studies by Can (2013) and Troisi et al. (2006) had samples that consisted of

young adults. Considering that young adulthood tends to be the time when individuals become preoccupied with education and finding a career in order to acquire material possessions later in life (Nurmi, 1991), the relation between traits of lower Emotionality (e.g., presumably lower empathy as risk taking tends to decline after adolescence; Ellis et al., 2012) and materialistic tendencies is expected. However, the current sample consisted of adolescents. While adolescence is marked by an increase in risk-taking behaviour (Ellis et al., 2012), it was reasonable to expect this trait to be related to material goals (as discussed earlier). However, risky behaviours often confer status and may be attractive to members of the opposite sex, therefore adolescents may engage in risk-taking in order to increase dominance and secure mating partners (Ellis et al., 2012), rather than to acquire material possessions.

This line of reasoning may also explain why bullying was not a partial mediator. Adolescents may not be willing to engage in risk-taking strategies (even bullying) to gain material resources because they are interested in more salient goals, such as dominance and mating. This may be one explanation for the significant results found for the social and sexual (discussed later) goals. Overall, bullying did not partially mediate the relationships between the three antisocial HEXACO factors and material resources. But antisocial behaviours beyond bullying that are associated with lower Honesty-Humility and lower Agreeableness may still translate into material gains.

Reproduction

The final adaptive outcome is reproduction and represents the ultimate goal of any organism as way to pass on genes to future generations (Dawkins, 1989). While lower Honesty-Humility was significantly correlated with reproduction at the univariate level,

there was a lack of a direct effect of Honesty-Humility on reproduction. This result was unexpected, as previous research has found Honesty-Humility to be directly associated with number of sexual partners (Provenzano et al., 2016). One potential explanation for this result is that Provenzano and colleagues (2016) focused on a more narrow measure of reproduction (e.g., sexual partners) for their older adolescent sample, whereas the reproduction measure in this study was a composite that consisted of both dyadic dating and sexual partners (casual sex and sex within committed relationships) in order to incorporate sexual goals that may be more salient for younger adolescents. As a result, dyadic dating and/or having a girlfriend/boyfriend may involve more non-exploitative long-term resources and investment (Buss & Schmitt, 1993) related to additional prosocial qualities (e.g., fairness, reciprocity; found in the higher pole of Honesty-Humility). Due to the self-serving nature of individuals lower in Honesty-Humility, they may not be as inclined as others to get involved in dating and/or committed relationships where there is an expectation of cooperation.

While lower Honesty-Humility may not have been directly associated with reproduction, Honesty-Humility had an indirect effect on reproduction through bullying. Manipulative strategies used by individuals lower in Honesty-Humility may not improve reproductive success, however, using bullying as a strategy may do so. Previous research has found that compared to adolescents not involved in bullying, younger adolescent bullies are more likely to date at an earlier age, have more dating partners, and spend more time with opposite-sex peers (Connolly et al., 2000). Furthermore, in a study by Volk, Dane, Marini, and Vaillancourt (2015), adolescent bullying was positively associated with number of dating and sexual partners. Bullies may display evolutionarily

attractive traits (e.g., strength, size, and social dominance; Gallup, White, & Gallup, 2007; Koh & Wong, 2015) that advertise their ability to deter same-sex rivals, provide resources, and protect offspring (Gallup, O'Brien, & Wilson, 2011; Koh & Wong, 2015; Volk et al., 2012a) making them desirable reproductive partners. As a result, individuals lower in Honesty-Humility may be willing to engage in bullying behaviour, which in turn may facilitate sexual access.

Along with Honesty-Humility, there was no direct effect of Agreeableness on reproduction. Provenzano et al. (2016) suggested that adolescents lower in Agreeableness may have a difficult time securing sexual partners due to their anger and stubbornness. That is, these individuals may not be easy to get along with and may be viewed unfavorably by potential mating partners (Buss, 1991; Schmitt, 2005). A similar line of reasoning may also apply to Agreeableness and this broader measure of reproduction. Individuals lower in Agreeableness may have a difficult time establishing dating and/or sexual relations because of their ill temper, which others may find off-putting. However, Agreeableness was found to be a significant predictor of bullying, which is consistent with previous research (e.g., Book et al., 2012; Farrell et al., 2014), and bullying has been found improve access to dating and sexual partners (Connolly et al., 2000; Volk et al., 2015). As such, results offered partial support for initial hypotheses as Agreeableness had an indirect effect on reproduction through bullying. This suggests that individuals lower in Agreeableness may be more likely to bully, which in turn may lead to sexual opportunities. Traits such as anger have been found to be a trigger of aggressive behaviour (Anderson & Bushman, 2002), while being antagonistic may jeopardize relationships with others in order to push for one's own benefits (Judge, Livingston, &

Hurst, 2012). For these reasons, lower Agreeableness may make individuals more willing to use bullying as a strategy. And despite being antisocial, bullying can be attractive to the opposite sex, and can intimidate and deter intrasexual rivals from entering the mating pool (Provenzano et al., 2016). Thus, lower Agreeableness may be adaptive in the sense that it leads to sexual opportunities, but only through bullying.

Finally, similar to the other two HEXACO factors, lower Emotionality was predicted to have a direct effect on reproduction. Previous research has supported this idea finding that Emotionality was negatively associated with short-term mating (e.g., Manson, 2015). However, Emotionality was not directly related to reproduction. This result is consistent with Provenzano et al., (2016) who found a similar finding for Emotionality with sexual partners. Results from both studies may not be surprising when considering that individuals lower in Emotionality are emotionally detached or uncaring, and may be perceived by others as being indifferent or uninterested in engaging in any dating or sexual behaviours. As a result, these individuals may not be desirable dating or sex partners, which may explain the lack of a direct association with reproduction. The unsentimental nature associated with lower Emotionality may not be enough to secure reproductive success.

However, while Emotionality was not related to bullying in this study, previous research has found it to be linked to bullying perpetration in past studies (e.g., Book et al., 2012; Farrell et al., 2014), which in turn may improve mating success (e.g., Volk et al., 2015). As such, I initially predicted that bullying would partially mediate the association between Emotionality and reproduction. However, based on the data, there was a lack of a significant indirect effect of Emotionality on reproduction through bullying. Results

suggest that individuals lower in Emotionality may not obtain mating partners directly and indirectly through bullying and are consistent with the Provenzano et al., (2016) study. Similar to their study, the correlation between Honesty-Humility and Emotionality was almost half the size of the correlation between Honesty-Humility and Agreeableness. The willingness to use bullying in order to gain reproductive opportunities may be driven by exploitative (i.e., lower Honesty-Humility) or antagonistic (i.e., lower Agreeableness) traits, as indicated by significant indirect effects found for those two personality factors (and a larger correlation found between them; Provenzano et al., 2016). But the lack of a significant indirect effect found for Emotionality may be due to traits found in the lower pole of Emotionality lacking the exploitative or antagonist nature (as indicated by the smaller correlations between Emotionality and the other two factors) to use bullying effectively to obtain sexual benefits (Provenzano et al., 2016).

Therefore, while bullying appears to be a sexually adaptive strategy for adolescents lower in Honesty-Humility and lower Agreeableness, adolescents lower in Emotionality may have a difficult time finding reproductive success both directly and indirectly through bullying. And similar to social dominance, these results may provide support for bullying as an adaptive behaviour. The positive relation between bullying and reproduction found in this study is consistent with previous findings that have linked bullying to different reproduction outcomes (e.g., Connolly et al., 2000; Dane et al., in press; Volk et al., 2015).

Implications

Theory. The findings from this study have several important theoretical implications for individual differences in personality helping to determine which

adolescents use bullying as an adaptive strategy to gain access to fitness-relevant outcomes. Lack of available social, material, and sexual resources are recurrent adaptive problems (Buss, 2009) that may be solved (to some extent) by specific personality traits (Denissen & Penke, 2008). Results from this study suggest that traits with antisocial tendencies may provide a competitive advantage for adolescents to gain access to social dominance, material resources, and mating opportunities. Furthermore, the results provide support for the adaptive function of bullying as a strategy to obtain social and sexual goals. Previous research has found that, for adolescents with specific antisocial personality traits (e.g., lower Honesty-Humility and lower Agreeableness but not lower Emotionality), bullying may be an adaptive choice for improving mating success (Provenzano et al., 2016). I extended these previous findings in two ways. First, I focused on additional fitness-relevant outcomes such as social dominance and physical resources that are important during adolescence and have been linked to personality (e.g., Lee et al., 2013) and bullying (e.g., Volk et al., 2012; 2014). Second, I broadened the measure of reproduction to include dyadic dating and being in committed relationships in order to account for behaviours that would be common in a relatively younger adolescent sample, but also may create contexts where sexual behaviour is likely to occur (Collins et al., 2009; Zimmer-Gembeck & Helfand, 2008).

Furthermore, these findings also provide evidence that individuals with antisocial personality traits may be flexible in their strategies in order to maximize their ability to obtain fitness-relevant outcomes. More specifically, individuals may use manipulative (lower Honesty-Humility) or antagonistic (lower Agreeableness) tactics to gain adaptive benefits, but also may employ bullying in order to secure social and sexual goals.

Although these strategies, and antisocial personality traits in general, may involve physical or emotional harm towards other (Lee & Ashton, 2012), they hold potential adaptive value. What is important to recognize, however, is that bullying did not partially mediate all of the relationships between the antisocial HEXACO factors and adaptive outcomes. Bullying did not partially mediate Honesty-Humility and Agreeableness with resources and reproduction, although there were indirect effects found for the latter. This suggests that bullying may require the right antisocial personality factors in order to be used effectively to obtain some outcomes, but not others. For the outcome (resources) in which there was no significant indirect effects, adolescents may be better off using strategies beyond bullying that are defined by the lower poles of their respective personality factors, as indicated by the direct effects of Honesty-Humility and Agreeableness on resources, in order to achieve that particular outcome. In sum, the results provide important theoretical implications for the link among personality, bullying, and adaptive outcomes

Practice. To go along with the theoretical implications, the findings from this study may also help improve the effectiveness of anti-bullying initiatives. Meta-analyses have found that bullying interventions produce little positive effects (e.g., Merrell, Gueldner, Ross, & Isava, 2008; Ttofi & Farrington, 2011). This may be due to the fact that many interventions involve zero-tolerance or empathy training (Merrell et al., 2008), which focus on punishment or developing cognitive and social skills, both of which may be costly or ineffective at reducing bullying (see Anderson & Kincaid, 2005; Ellis et al., 2012), and do not consider the goal-directed nature of bullying (Ellis, Volk, Gonzalez, & Embry, 2015). Results of this study are consistent with previous research (e.g., Volk et

al., 2012; 2014) suggesting that bullying may be an adaptive tool to gain access to social, material, and sexual goals. Adolescents are unlikely to abandon a behaviour that results in favourable outcomes (Volk et al., 2012a). Instead, anti-bullying initiatives may want to focus on programs that provide prosocial alternatives for bullies to still achieve their adaptive goals without harming others (Ellis et al., 2015). This may involve having bullies enrolled in competitive sports where they can be aggressive and obtain benefits associated with being an athlete (Volk et al., 2012) or by giving bullies meaningful roles and responsibilities through school jobs (e.g., being a door greeter) and receiving positive praise from peers (see Ellis et al., 2015).

In addition to zero-tolerance and empathy training, bullying interventions also suffer from a “one-size-fits-all” approach that treats bullying as homogeneous behaviour (Volk et al., 2012). Yoon, Barton, Taiariol (2004) suggest that anti-bullying initiatives must target environmental and individual factors under which bullying occurs. For environmental factors, this may involve interventions recognizing that adolescence is a time of rapid physical and social development that also coincides with a peak in bullying (Volk et al., 2006), so it is no surprise that youth may use their newly developing abilities and competencies to bully others in order to gain access to valuable resources. For the individual factors, this may involve interventions recognizing individual differences in personality and how they may influence the willingness to engage in bullying. Results from this study suggest that adolescents who are manipulative and antagonistic appear to be better off at using bullying as an adaptive tool to gain favourable outcomes, whereas adolescents with low empathy may not be able use bullying effectively obtain outcomes. Interventions that focus on altering empathy may be ineffective for a trait that is not

related to adolescent bullying (Rigby, 2012). Instead, interventions may want to target some of the fundamental aspects of bullying perpetration–personality traits related to lower Honesty-Humility and lower Agreeableness. Although previous findings suggest that personality traits can be modified through interventions (e.g., Clark et al., 2003; Krasner et al., 2009; Tang et al., 2009), it may be difficult and costly to do so given the large number of adolescents that have been estimated to perpetrate bullying (Volk et al., 2006). This creates a greater need for anti-bullying programs that emphasize prosocial alternatives to antisocial behaviours (e.g., Ellis et al., 2015) if modifying the personality traits of bullies is not likely to be feasible.

Limitations and Future Directions for Research

In line with my findings and implications, there are limitations that should be considered. One limitation was that self-report measures were used to collect the data, particularly for bullying, personality, and reproduction-related goals. To begin with, adolescent’s understanding of bullying can sometimes differ from researchers (Vaillancourt et al., 2008). However, behaviour-based self-report surveys, such as the Bullying Questionnaire used in this study, contain items that reflect the different subtypes of bullying and victimization (Furlong, Sharkey, Felix, Tanigawa, & Green, 2009) to help ensure youth have a clearer understanding of what constitutes “bullying” in contrast to other forms of victimization (Sawyer, Bradshaw, & O’Brennan, 2008).

In addition, social desirability bias may also be a concern when collecting self-report data. For example, involvement in bullying and sexual behaviour may be underreported (and exaggerated in the latter) in the interest of maintaining social desirability (Hazler, Carney, & Granger, 2006; Morrison-Beedy et al., 2006). Whereas

the concern with individual differences is that they may represent biased self-reports of some personality traits, particularly as it relates to social desirability for individuals who are lower in Honesty-Humility who may lie to demonstrate having higher levels instead (Ashton, Lee, & de Vries, 2014). However, if participants are assured their responses will be kept confidential; then it reduces the incentive to alter their behaviour in order to present themselves in a socially acceptable manner (Ashton et al., 2014). Consistent with this, previous studies have found using self-report measures for bullying (e.g., Pellegrini & Bartini, 2000), sexual behaviour (e.g., Brener, Billy, & Grady, 2003), and personality (e.g., Ashton et al., 2014) to be valid.

Another limitation was the homogeneity of the sample, which was comprised of primarily White, middle class, and younger adolescents. Given that most adolescents reported that their family's SES level was about the same or higher than the average Canadian, a lack of material resources may not have been an issue. This may partly explain why bullying did not mediate the associations between the antisocial HEXACO factors and resources variable. Antisocial personality traits may not need to be expressed adaptively through bullying if material resources are readily available in the home. Therefore, future studies may want to use a more diverse sample, particularly adolescents with lower SES, to determine whether or not similar or different patterns of results would be found regarding the resources variable.

A third limitation was that the study was cross-sectional so it shares the common weaknesses associated with this particular methodological design. For example, cause-and-effect relationships cannot be inferred among the variables, therefore alternative explanations to the observed associations may not be ruled out even though I controlled

for a variety of variables that have been linked to the adaptive outcomes in past research. Furthermore, I am also unable to determine the causal direction of the relationships between the variables. For instance, my results do not indicate whether the adaptive outcomes are a cause or outcome of bullying or whether the three antisocial HEXACO traits precede or follow bullying and whether they precede or follow the adaptive outcomes. Although my results were cross-sectional, the temporal order of the variables was consistent with previous research. Future longitudinal studies may be able to establish causal relations among the variables.

Finally, bullying perpetration was a partial mediator for some, but not all of the associations between the antisocial personality factors and the adaptive outcomes. In certain instances, adolescents may have been better off using manipulative or antagonistic behaviours in order to obtain their goals, while in other instances adolescents would have benefitted from employing bullying in order to obtain their goals. Considering that adolescents are willing to use antisocial behaviours that do and do not involve bullying to gain adaptive benefits, future studies may want to delve into the specifics of these antisocial strategies. For instance, do adolescents use similar or different types of manipulative and antagonistic strategies to achieve social dominance as they do material resources? Do similar or different subtypes of bullying partially mediate social goals? Future research should look to tease apart the complexity of different antisocial behaviours. Moreover, my results indicated partial mediations, which suggests the possibility of other internal and/or external ecological factors as potential mediators (Zhao, Lynch, & Chen, 2010) that may provide additional behavioural pathways for individuals with antisocial personality traits to obtain their goals. Exploring other

ecological factors in the future may help in understanding the biological and environmental factors that influence the willingness of individuals with antisocial tendencies to resort to bullying in order to obtain their goals.

Conclusion

The current research has extended the findings of the Provenzano et al., (2016) study by suggesting that adolescents with a blend of lower Honesty-Humility and lower Agreeableness may obtain social dominance and reproductive opportunities using various antisocial strategies (e.g., manipulation, antagonism, and bullying). Considering that adolescents undergo dramatic physical and social changes that may prepare them for competition over limited, but valuable, social, material, and sexual resources, antisocial personality traits may be expressed adaptively through bullying (or through other antisocial behaviours) in order to compete successfully and reap the benefits. Therefore, anti-bullying interventions need to be conscious of bullying as an adaptive, goal-directed behaviour, particularly for social and sexual goals, that may be influenced, to some extent, by antisocial personality traits and that adolescents with lower levels of Honesty-Humility and lower levels of Agreeableness may be flexible in their use of antisocial strategies to achieve their goals.

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Appendix A: Demographics

1. Please type in your unique Identity (ID) Number on your assent form, located below the website link: _____

2. How old are you? _____

3. Are you a boy or a girl? _____

4. What grade are you in? _____

5. Which parents do you live with at home?

- a. Birth Parents
- b. Adopted Parents
- c. Just Mom
- d. Just Dad
- e. Mom and Step Dad
- f. Dad and Step Mom
- g. Other

6. If your parents are divorced, how long have they been divorced? _____

7. How many biological brothers do you have? _____

8. How many biological sisters do you have? _____

9. How many step/half-brothers do you have? _____

10. How many step/half-sisters do you have? _____

11. What is your ethnic/racial background? _____

12. Compared to the average Canadian, do you think your family is (circle one):
a lot less rich less rich about the same more rich a lot more rich

10. In your school, how much income inequality was there amongst the students' families?

A low amount A medium amount A high amount

11. In your neighborhood, how much income inequality is there amongst the families?

A low amount A medium amount A high amount

12. How important is being wealthy/having money to you?

Very Important Somewhat important Not very important Not at all important

13. What is the highest level of education that your mother has completed? (circle one)

- a) some high school
- b) finished high school
- c) some college/ university/ apprenticeship program
- d) finished college/ university/ apprenticeship program
- e) finished a professional degree (e.g., Master's, Doctorate)

14. What is the highest level of education that your father has completed? (circle one)

- a) some high school
- b) finished high school
- c) some college/ university/ apprenticeship program
- d) finished college/ university/ apprenticeship program
- e) finished a professional degree (e.g., Master's, Doctorate)

15. What is the name of your school? _____

16. In what city do you go to school? _____

17. What grade, on average, do you typically receive in school?

- A (80-100%)
- B (70-79%)
- C (60-69%)
- D or lower (59% or lower)

18. How did you find out about this study?

- a) Sports team
- b) Youth club (e.g., Scouts, Cadets)
- c) School
- d) Tutoring center
- e) Other club (e.g., art, drama)
- f) Other _____

Appendix B: Bullying Questionnaire

Below are some questions about social relationships at school. Please answer them as honestly as you can. Your answers will be kept completely confidential, and there is no way for anyone to determine your answers about your relationship with them or anyone else.

1. In school, how often has someone much stronger or more popular made fun of you because of your religion or race last term i.e., the last school term or last 4 months)?

- a) that hasn't happened
- b) once or twice
- c) once a month
- d) once a week
- e) several times a week

2. In school, how often has someone much stronger or more popular made fun of you because of the way you look or talk last term?

- a) that hasn't happened
- b) once or twice
- c) once a month
- d) once a week
- e) several times a week

3. In school, how often has someone much stronger or more popular hit, slapped, or pushed you last term?

- a) that hasn't happened
- b) once or twice
- c) once a month
- d) once a week
- e) several times a week

4. In school, how often has someone much stronger or more popular threatened, yelled at, or verbally insulted you last term?

- a) that hasn't happened
- b) once or twice
- c) once a month
- d) once a week
- e) several times a week

5. In school, how often has someone much stronger or more popular spread rumours, or told mean lies about you, or actively excluded you last term?

- a) that hasn't happened
- b) once or twice
- c) once a month
- d) once a week
- e) several times a week

6. In school, how often has someone much stronger or more popular made sexual jokes, comments, or gestures aimed at you last term?

- a) that hasn't happened
- b) once or twice
- c) once a month
- d) once a week
- e) several times a week

7. In school, how often has someone much stronger or more popular made any of the previous acts against you electronically?

- a) that hasn't happened
- b) once or twice
- c) once a month
- d) once a week
- e) several times a week

8. In school, how often have you made fun of someone much weaker or less popular because of their religion or race last term?

- a) that hasn't happened
- b) once or twice
- c) once a month
- d) once a week
- e) several times a week

9. In school, how often have you made fun of someone much weaker or less popular because of the way they looked or talked last term?

- a) that hasn't happened
- b) once or twice
- c) once a month
- d) once a week
- e) several times a week

10. In school, how often have you hit, slapped, or pushed someone much weaker or less popular last term?

- a) that hasn't happened
- b) once or twice
- c) once a month
- d) once a week
- e) several times a week

11. In school, how often have you threatened, yelled at, or verbally insulted someone much weaker or less popular last term?

- a) that hasn't happened
- b) once or twice
- c) once a month
- d) once a week

e) several times a week

12. In school, how often have you spread rumours, mean lies, or actively excluded someone much weaker or less popular last term?

a) that hasn't happened

b) once or twice

c) once a month

d) once a week

e) several times a week

13. In school, how often have you made sexual jokes, comments, or gestures aimed at someone much weaker or less popular last term?

a) that hasn't happened

b) once or twice

c) once a month

d) once a week

e) several times a week

14. In school, how often have you made any of the acts against someone electronically?

a) that hasn't happened

b) once or twice

c) once a month

d) once a week

e) several times a week

Appendix C: Social Dominance and Resource Control

How true are the following statements?

Response Scale:

1 = never true, 2 = hardly ever true, 3 = sometimes true, 4 = often true, 5 = almost always true

1. I am good at being able to get what I want from others
2. I have good ideas or suggestions that others like to follow
3. I am able to make others do what I want
4. I am admired by others
5. I am able to get people to help me
6. I usually get what I need, even if others don't
7. Others choose me to lead the group
8. I usually force others to follow my plans
9. Others pay attention to me
10. Others want to be in my group
11. I am able to get others to do what I say
12. I influence others by doing something for them in return
13. I often bully or push others to do what I want to do
14. People respect me
15. Others want to be friends or to hang out with me
16. Others usually side with me
17. I have a lot of power over others
18. I influence others by being really nice about it
19. I often trick others to do what I want
20. I get a lot of positive attention from others
21. Most people think I'm pretty cool
22. People usually want me to join their group
23. In groups I am usually in charge or in control
24. I influence others by explaining why it's a good idea
25. I threaten others to get my way
26. Others often invite me to do things
27. People usually approve of the things I do
28. Others usually stick with me and stick by me
29. I usually get my way when I deal with others
30. I cooperate with others so that we all get what we want
31. I control who's part of my group to make sure I get my way
32. People want to spend time with me
33. Others ignore me
34. People want to have someone like me around
35. I negotiate with others so everyone gets a fair deal
36. When someone tries to stop me, I make them look bad to get what I want
37. Others don't seem to notice me
38. People often criticize me

39. The people in my group stick together and support each other
40. Others often imitate me or try to be like me
41. Others look up to me

Appendix D: Material Values Scale (Centrality Subscale)

Indicate your agreement with the following statements. Use the following scale to respond to each statement.

1 = strongly disagree 2 = disagree 3 = neutral 4 = agree 5 = strongly agree

- 1 ____ I live a simple life, as far as possessions are concerned.
- 2 ____ The things I own aren't all that important to me.
- 3 ____ Buying things gives me a lot of pleasure.
- 4 ____ I have a lot of luxury things in my life.
- 5 ____ I own less material things than most people I know.

Appendix E: HEXACO Personality Inventory-Revised

1 = strongly disagree 2 = disagree 3 = neutral 4 = agree 5 = strongly agree

- 1 _____ I would be quite bored by a visit to an art gallery.
- 2 _____ I plan ahead and organize things, to avoid scrambling at the last minute.
- 3 _____ I rarely hold a grudge, even against people who have badly wronged me.
- 4 _____ I feel reasonably satisfied with myself overall.
- 5 _____ I would feel afraid if I had to travel in bad weather conditions.
- 6 _____ I wouldn't use flattery to get a raise or promotion at work, even if I thought it would succeed.
- 7 _____ I'm interested in learning about the history and politics of other countries.
- 8 _____ I often push myself very hard when trying to achieve a goal.
- 9 _____ People sometimes tell me that I am too critical of others.
- 10 _____ I rarely express my opinions in group meetings.
- 11 _____ I sometimes can't help worrying about little things.
- 12 _____ If I knew that I could never get caught, I would be willing to steal a million dollars.
- 13 _____ I would enjoy creating a work of art, such as a novel, a song, or a painting.
- 14 _____ When working on something, I don't pay much attention to small details.
- 15 _____ People sometimes tell me that I'm too stubborn.
- 16 _____ I prefer jobs that involve active social interaction to those that involve working alone.
- 17 _____ When I suffer from a painful experience, I need someone to make me feel comfortable.
- 18 _____ Having a lot of money is not especially important to me.
- 19 _____ I think that paying attention to radical ideas is a waste of time.
- 20 _____ I make decisions based on the feeling of the moment rather than on careful thought.
- 21 _____ People think of me as someone who has a quick temper.
- 22 _____ On most days, I feel cheerful and optimistic.
- 23 _____ I feel like crying when I see other people crying.
- 24 _____ I think that I am entitled to more respect than the average person is.
- 25 _____ If I had the opportunity, I would like to attend a classical music concert.
- 26 _____ When working, I sometimes have difficulties due to being disorganized.
- 27 _____ My attitude toward people who have treated me badly is "forgive and forget".
- 28 _____ I feel that I am an unpopular person.
- 29 _____ When it comes to physical danger, I am very fearful.
- 30 _____ If I want something from someone, I will laugh at that person's worst jokes.

- 31 _____ I've never really enjoyed looking through an encyclopedia.
- 32 _____ I do only the minimum amount of work needed to get by.
- 33 _____ I tend to be lenient in judging other people.
- 34 _____ In social situations, I'm usually the one who makes the first move.
- 35 _____ I worry a lot less than most people do.
- 36 _____ I would never accept a bribe, even if it were very large.
- 37 _____ People have often told me that I have a good imagination.
- 38 _____ I always try to be accurate in my work, even at the expense of time.
- 39 _____ I am usually quite flexible in my opinions when people disagree with me.
- 40 _____ The first thing that I always do in a new place is to make friends.
- 41 _____ I can handle difficult situations without needing emotional support from anyone else.
- 42 _____ I would get a lot of pleasure from owning expensive luxury goods.
- 43 _____ I like people who have unconventional views.
- 44 _____ I make a lot of mistakes because I don't think before I act.
- 45 _____ Most people tend to get angry more quickly than I do.
- 46 _____ Most people are more upbeat and dynamic than I generally am.
- 47 _____ I feel strong emotions when someone close to me is going away for a long time.
- 48 _____ I want people to know that I am an important person of high status.
- 49 _____ I don't think of myself as the artistic or creative type.
- 50 _____ People often call me a perfectionist.
- 51 _____ Even when people make a lot of mistakes, I rarely say anything negative.
- 52 _____ I sometimes feel that I am a worthless person.
- 53 _____ Even in an emergency I wouldn't feel like panicking.
- 54 _____ I wouldn't pretend to like someone just to get that person to do favors for me.
- 55 _____ I find it boring to discuss philosophy.
- 56 _____ I prefer to do whatever comes to mind, rather than stick to a plan.
- 57 _____ When people tell me that I'm wrong, my first reaction is to argue with them.
- 58 _____ When I'm in a group of people, I'm often the one who speaks on behalf of the group.
- 59 _____ I remain unemotional even in situations where most people get very sentimental.
- 60 _____ I'd be tempted to use counterfeit money, if I were sure I could get away with it.

Appendix F: Peer Valued Characteristics

Rate how true the following statements are of you?

1= Very untrue of me, 2 = untrue of me, 3 = somewhat untrue of me, 4 = neither true nor untrue of me, 5 = somewhat true of me, 6 = true of me, 7 = very true of me

- 1 ____ I dress well and I'm in style
- 2 ____ I am good looking and attractive
- 3 ____ I am tough
- 4 ____ I have a lot of cool things or possessions
- 5 ____ I have a good sense of humour and can make people laugh
- 6 ____ Compared to others, I am rich
- 7 ____ I have special talents and skills
- 8 ____ I do well at sports
- 9 ____ People think I'm cool

Appendix G: Strength and Difficulties Questionnaire

Check the box that best describes your opinion on the following statements:

	Not True	Somewhat true	Certainly True
1. I try to be nice to other people. I care about their feelings			
2. I am restless. I cannot stay still for long			
3. I get a lot of headaches, stomach-aches or sickness			
4. I usually share with others (food, games, pens etc.)			
5. I get very angry and often lose my temper			
6. I am usually on my own. I generally play alone or keep to myself			
7. I usually do as I am told			
8. I worry a lot			
9. I am helpful if someone is hurt, upset or feeling ill			
10. I am constantly fidgeting or squirming			
11. I have one good friend or more			
12. I fight a lot. I can make other people do what I want			
13. I am often unhappy, down-hearted or tearful			
14. Other people my age generally like me			
15. I am easily distracted. I find it difficult to concentrate			
16. I am nervous in new situations. I easily lose confidence			
17. I am kind to younger children			
18. I am often accused of lying or cheating			
19. Other children or young people pick on me or bully me			

20. I often volunteer to help others (parents, teachers, children)			
21. I take things that are not mine from home, school or elsewhere			
22. I get on better with adults than with people my own age			
23. I have many fears. I am easily scared			
24. I finish the work I'm doing. My attention is good			

Appendix H: Brock University and Ethics Approval

DATE: 2/5/2016

PRINCIPAL INVESTIGATOR: VOLK, Anthony - Child and Youth Studies

CO-INVESTIGATOR(S): Angela Book; Andrew Dane; Zopito Marini; Elizabeth Shulman

FILE: 15-173-VOLK

TYPE: Undergraduate Masters Thesis/Project

STUDENT: Ann Farrell

SUPERVISOR: Anthony Volk

TITLE: Adolescent Social Relationships

ETHICS CLEARANCE GRANTED

Type of Clearance: NEW

Expiry Date: 2/28/2017

The Brock University Social Science Research Ethics Board has reviewed the above named research proposal and considers the procedures, as described by the applicant, to conform to the University's ethical standards and the Tri-Council Policy Statement. Clearance granted from 2/5/2016 to 2/28/2017.

The Tri-Council Policy Statement requires that ongoing research be monitored by, at a minimum, an annual report. Should your project extend beyond the expiry date, you are required to submit a Renewal form before 2/28/2017. Continued clearance is contingent on timely submission of reports.

To comply with the Tri-Council Policy Statement, you must also submit a final report upon completion of your project. All report forms can be found on the Research Ethics web page at <http://www.brocku.ca/research/policies-and-forms/research-forms>.

In addition, throughout your research, you must report promptly to the REB:

- a) Changes increasing the risk to the participant(s) and/or affecting significantly the conduct of the study;
- b) All adverse and/or unanticipated experiences or events that may have real or potential unfavourable implications for participants;
- c) New information that may adversely affect the safety of the participants or the conduct of the study;
- d) Any changes in your source of funding or new funding to a previously unfunded project.

We wish you success with your research.

Approved: 

Kimberly Maich, Chair
Social Science Research Ethics Board

Note: Brock University is accountable for the research carried out in its own jurisdiction or under its auspices and may refuse certain research even though the REB has found it ethically acceptable.

If research participants are in the care of a health facility, at a school, or other institution or community organization, it is the responsibility of the Principal Investigator to ensure that the ethical guidelines and clearance of those facilities or institutions are obtained and filed with the REB prior to the initiation of research at that site.

Appendix I: Letter of Invitation and Consent Form from Extracurricular Clubs

Dear EXTRACURRICULAR ORGANIZATION

My name is Dr. Anthony Volk. I am a professor of Child and Youth Studies at Brock University. I am currently working with a team of faculty and student collaborators in a study of adolescent relationships. We are particularly interested in how extracurricular participation influences experiences of bullying and relationships in adolescents. As a result, we are interested in asking the members of your organization to participate in our study. Participation is purely voluntary, but prior to participating in the study, your members must obtain parental consent. To do so, we provide a sealed envelope for the parents that contain an information form, a permission form, and another sealed envelope that contains an assent form and website link to Qualtrics, an online survey website for adolescents to fill out. Those who return completed consent forms will receive \$15 cash for their participation. If parental consent is denied, the members still receive the money, but we don't use their data. The questionnaires are private, and they ask your members to discuss their social relationships with their parents and friends, and also on their own personality and individual characteristics.

No personal information is collected on any of the forms, so their confidentiality, and the confidentiality of your organization, is preserved. We therefore can't provide you with specific feedback regarding bullying in your organization, but we can provide you with the overall results of our study after it is completed in 2016. We do provide information regarding resources (including our lab) that the participants can access should they be experiencing problems with bullying.

Specifically what we would need from you and your organization is a time to come in and talk to your members about participating in the study. At this point we will explain the study, answer any questions they have, and pass out the forms. We will then arrange for a time to return to your organization to pick up any completed forms and answer any further questions, comments, or concerns that they may have.

If you have any questions about this study, please feel free to contact me at **tvolk@brocku.ca** or **905-688-5550 Ext. 5368**, or the Brock University Research Ethics Office at (905) 688-5550 Ext. 3035, reb@brocku.ca. The Research Ethics Board has provided ethic clearance for this study. If you are interested in allowing us to come and talk to your members, please let us know.

Thank you very much for your consideration of our request!

Yes, I am interested in allowing you to present your study

No, I am not interested in allowing you to present your study

Signed: _____

Date: _____

Appendix J: Parent Information Sheet and Consent Form

Principal Investigator:

Dr. Anthony Volk, Professor
Department of Child and Youth Studies
Brock University
905-688-5550 xt. 5368
tvolk@brocku.ca

INVITATION

Your son/daughter has been invited to participate in a study that involves research into adolescent relationships. The purpose of this study is to better understand how adolescent relationships in one domain (e.g., parents) influence their relationship in another (e.g., personality, school, or peers). What follows are the specific goals of the study.

We are interested in exploring factors associated with adolescent social relationships including personality, peer relationships, and school factors. For instance, we are interested in how an adolescent's individual traits, such as personality, influence the likelihood that they will be a bully and/or a victim. So far, no one has looked at most of these factors in teenagers, and no one has looked at the combination of all these factors. We believe that answering these questions will give us a much better idea of what factors are involved in adolescent social relationships. We would like to note that a small number of the questions are about violence, sexual activity and related behaviors.

WHAT'S INVOLVED

As a participant, your son/daughter has been asked to fill out questionnaires about themselves, their friends, their peers, their parents, and their basic demographics (e.g., age) on an online survey website. Participation will take approximately 45-50 minutes of their time. Only the researchers will see these responses, and the only ties to participant names will be a unique Identification (ID) number that will be used to confirm participation so that participants can receive \$15 cash for participating. The ID number will not be linked to any other responses to the questionnaires. They will only be linked to participant names on the consent forms, which will be stored separately in a filing cabinet separate from questionnaire responses. The original consent form, which includes the unique identification number, will only be removed from the filing cabinet in the event that the participant chooses to withdraw from the study. In such an event, the removed identification number will be used to identify the participant's response in the questionnaire database, and the data will be deleted.

POTENTIAL BENEFITS AND RISKS

Possible benefits of participation include getting to know their own relationships better, and learning more about adolescent relationships in general through reflection on some of the participants' own relationships. There also may be risks associated with participation in that some relationships are stressful to think about. If they find any part of this study to be stressful, they may contact the researcher, the Brock University Ethics board, or simply stop their participation. We also tell your son/daughter that "[they] may also

freely discuss the study with parents or friends if [they] need to, although we would ask that [they] try not to talk to someone before [they] complete the study on [their] own (e.g., don't share answers until both have completed the study). Sharing answers before the study ends can complicate and/or change their own natural answers. We do not ask any specific questions regarding specific incidents, **so there are no issues of personal or legal liability for any of your son/daughter's answers, nor are we legally obligated to disclose any of their answers (including abuse or harm) to our questions.**

All participants will be offered \$15 cash for their participation. They will receive this payment once the completed forms are returned. Once receiving the \$15, participants will have to sign a sheet for our records indicating you have received the payment.

CONFIDENTIALITY

Participants in this study will only be identified by a unique number that is tied to a master list kept by Dr. Volk. You, or they, may request the withdrawal of their data from the study within 5 years of their participation. Unique, identifiable data (such as date of birth, names) will not be collected.

As a parent, you will have to consent to your son/daughter's participation, **but you will not gain access to their answers. You may only control whether WE are able to view their answers or not by providing or withdrawing your consent.** *We feel that it is very important for the participants in our study to be able to know that their answers are completely confidential.* This will hopefully encourage them to be as honest as possible so we can really understand what is going on in their relationships. To this end, we again ask that you don't discuss the study with your son/daughter until they have completed it in order to avoid biasing their answers. Once the study is completed (i.e., after they have filled in and handed in the forms), you may of course discuss any related topic you feel fit. In the final form explaining the study, we encourage participants to talk to people whom they trust (including parents) about any related issues.

Data collected during this study will be stored on a secure computer and hard copies of forms will be kept in a locked filing cabinet. Data will be kept for five years, after which time the data will be deleted. Access to this data will be restricted to Dr. Volk and his collaborators, who have signed confidentiality agreements. Parents, friends, and participants will not have access to any individual data, although they may have access to the overall study results.

The researchers will own all data collected through Qualtrics and therefore all information will be confidential. Qualtrics data are temporarily stored in the United States and therefore is subject to the Homeland Security or Patriot Act. However, data will be downloaded daily on a secured Canadian server onto a password protected lab computer. Once data is downloaded in the lab, the data will be immediately deleted off from Qualtrics.

VOLUNTARY PARTICIPATION

Your teenager's participation is voluntary. They need not participate, even if you give

parental consent. There are no organizational or personal consequences for not participating other than not receiving the \$15. **Again, as a parent, you do NOT have access to your adolescent's individual results. You control whether or not we are able to view them by providing or withdrawing your consent for their participation.** In the event of withdrawal, data will be confidentially destroyed.

PUBLICATION OF RESULTS

Results of this study may be published in professional journals and presented at conferences. Feedback about this study will be available by late Spring or Early Summer on Dr. Volk's research web page (<http://www.brocku.ca/volk-developmental-science-lab>).

CONTACT INFORMATION AND ETHICS CLEARANCE

If you have any questions or concerns about this study, please contact the study coordinator, Dr. Volk, using the contact information provided above. This study has been reviewed and received ethics clearance through the Research Ethics Board at Brock University #15-173. If you have any comments or concerns about the study ethics, or your adolescent's rights as a research participant, please contact the Research Ethics Office at (905) 688-5550 Ext. 3035, reb@brocku.ca.

If you have any concerns about your adolescent participating as a bully, or being a victim of bullying, please feel free to discuss the matter with other parents, teachers, friends, and/or any trusted individuals. For advice on how to talk to your teen or other individuals about bullying, we recommend www.bullying.org, <http://www.lfcc.on.ca/bully.htm>, and the Niagara Youth Connection (905-641-2118 ext. 5592). You may also feel free to contact me, Dr. Anthony Volk, at tvolk@brocku.ca (905-688-5550 ext. 5368) with any related questions or concerns.

Thank you for your help in this project!

Please keep this form for your records.

CONSENT FORM

I agree to allow my teen to participate in this study described above. I have made this decision based on the information I have read in the Information-Consent Letter. I have had the opportunity to receive any additional details I wanted about the study and understand that I may ask questions in the future. I understand that I may withdraw this consent at any time and request that my son/daughter's data be removed from the study.

Name: _____

Signature: _____

Date: _____

Do you agree to allow your teen to be contacted via e-mail and participate in follow-up studies in the future?

Yes: _____

No: _____

Please return this form.

Appendix K. Adolescent Information and Assent Form

Principal Investigator:

Dr. Anthony Volk, Professor
Department of Child and Youth Studies, Brock University
905-688-5550 xt. 5368
tvolk@brocku.ca

INVITATION

You are invited to participate in a study on adolescent relationships. The purpose of this study is to better understand how adolescent relationships are influenced by various aspects of their personal and social lives, such as personality, school, peers, and parents. We would like to note that a small number of the questions are about violence, sexual activity and related behaviors.

WHAT'S INVOLVED

As a participant, you will be asked to fill out questionnaires about yourself, your social group, and your basic demographics (e.g., things like age, who you live with, etc.) online using the link provided for Qualtrics, a questionnaire website. It should take you about 45-50 minutes to complete the forms. You will need to complete these questionnaires in one sitting. If you close the website or stop in the middle, there will be no way to return to the questionnaire. Only the researchers will see these responses, and the only ties to participant names will be a unique Identification (ID) number that will be used to confirm participation so that you can receive \$15 cash for participating. The ID number will not be linked to any other responses to the questionnaires. They will only be linked to participant names on the consent forms, which will be stored separately in a filing cabinet separate from questionnaire responses. The original consent form, which includes the unique identification number, will only be removed from the filing cabinet in the event that the participant chooses to withdraw from the study. In such an event, the removed identification number will be used to identify the participant's response in the questionnaire database, and the data will be deleted.

POTENTIAL BENEFITS AND RISKS

Possible benefits of participation include getting to know your own relationships better, and learning about adolescent relationships in general through reflection on some of your own experiences. There also may be risks associated with participation. Some relationships are tough to think about. If you find any part of this study to be stressful, you may contact the researcher, the Brock University Ethics board, or simply stop your participation. You may also freely discuss the study with parents or friends if you need to, although we would ask that you try not to talk to someone before they complete the study on their own (e.g., don't share answers until both of you have completed the study unless you feel it's really necessary). Sharing answers before the study ends can distort and/or change your own natural answers.

We do not ask for any specific incidents or events, so **there is no personal or legal liability associated with any of your answers, nor are we legally obligated to disclose**

any of your answers to our questions (including abuse and harm). If you have any concerns about specific behaviours or incidents, we strongly suggest that you discuss them with trusted individuals. These individuals could be parents, teachers, friends, or other trusted adults. You may also contact the Kids Help Phone at: <http://www.kidshelpphone.ca/en/> (1-800-668-6868). It is important to know that you do not need to tolerate any form of abuse!

You will receive \$15 cash for your participation in this study. You will receive this payment once you have completed the questionnaires and returned the consent and assent forms. Once receiving the \$15, you will have to sign a sheet for our records indicating you have received the payment.

CONFIDENTIALITY

You will only be identified by a unique number that is tied your name. There is no way for anyone to identify the data beyond this number. Unique, identifiable data (such as exact date of birth, name, names of friends and family) will not be collected. Your parents will have to consent to your participation, **but they will not be able to read your answers** (although they can request that any such data be deleted). You also do not have to reveal your answers to any of your friends, peers, or anyone else other than the researchers in this study. The only exception is that Dr. Volk will have a copy of your consent form, with your participation number, stored in a password protected computer in his lab, so that you can later request that your data be removed from the study if you wish. No other individual will have access to this link to your name, and Dr. Volk will **ONLY** access this information if you contact him asking to remove your data from the study within 5 years. Your name or ID will in no other way be involved with the data analysis or presentation.

Data collected during this study will be stored on a secure computer. Data will be kept for five years, after which time the data will be deleted or shredded. Access to this data will be restricted to Dr. Volk and his collaborators, who have signed confidentiality agreements. Your parents, friends, participants, and coaches will not have access to any individual data, although they may have access to the overall study results. So you do not have to worry about anyone finding out your answers, or about anyone following up on your answers, or about any consequences of the answers you provide. Your responses will be confidential and the only links between your name and ID number will be stored separately from your questionnaire responses, with access only by Dr. Volk.

In order to best protect your confidentiality, we suggest completing the online questionnaires in private and on your own. This will limit the possibility of others (e.g., parents, siblings, friends) from seeing your responses. The researchers will own all data collected through Qualtrics and therefore all information will be confidential. Qualtrics data are temporarily stored in the United States and therefore is subject to the Homeland Security or Patriot Act. However, data will be downloaded daily on a secured Canadian server onto a password protected lab computer. Once data is downloaded in the lab, the data will be immediately deleted off from Qualtrics.

VOLUNTARY PARTICIPATION

Participation in this study is purely voluntary. Whether you participate, or what questions you answer, is completely up to you. If you want to withdraw from this study at any time, you may do so without any penalty other than not receiving the \$15 and your data will be confidentially destroyed in the event of withdrawal. This research is not linked to your organization, so there is no organizational penalty if you do not participate. If you would like to withdraw your data after you have completed the study, you must provide your unique identification number as it is the only way we have to identify your data. Please keep your ID number attached to this sheet in a safe place in case you wish to withdraw from the study.

However, before you can participate in this study, you MUST obtain parental consent. If you are reading this form, you should have already obtained parental consent. If you haven't, please provide your parents with the appropriate forms immediately. If you do not provide parental consent, you may NOT participate in this study. Again, your parents will not have direct access to your answers, but they do control whether WE are able to see your answers or not. If your parents do provide consent, you are not obligated to participate. That is your own decision. So you need their consent to participate, but that consent doesn't force you to participate.

PUBLICATION OF RESULTS

Results of this study may be published in professional journals and presented at conferences. Feedback about this study will be available by late Spring or Early Summer on Dr. Volk's research web page (<http://www.brocku.ca/volk-developmental-science-lab>).

CONTACT INFORMATION AND ETHICS CLEARANCE

If you have any questions about this study or require further information, please contact Dr. Volk using the contact information provided above. You can also use this contact information if you have any questions about what the questionnaires mean, or if you need any help completing the questionnaires. If you have any questions while you are filling out the forms, please feel free to contact Dr. Volk. This study has been reviewed and received ethics clearance through the Research Ethics Board at Brock University # 15-173 VOLK. If you experience any stress while participating in this study, please refer to debriefing form for a list of agencies you may contact.

If you have any comments or concerns about your rights as a research participant, please contact the Research Ethics Office at (905) 688-5550 Ext. 3035, reb@brocku.ca.

I agree to participate in this study described above. I have made this decision based on the information I have read in the Information-Assent Letter. I have had the opportunity to receive any additional details I wanted about the study and understand that I may ask questions in the future. I understand that I may withdraw this assent at any time.

Yes No

Appendix L: Adolescent Debriefing Form

Thank you for your participation in our study of adolescent relationships! As you can tell from the many forms, we are interested in a wide range of relationship details, personal constructs, and social environments. For instance, we are interested in how an adolescent's individual traits, such as personality, influence the likelihood that they will be a bully and/or a victim. It is our belief that an understanding of all these factors together will help us learn about topics such as: bullying; antisocial behavior; school achievement; parenting; etc. If you have any specific questions or concerns about the study, please feel free to ask them now. Very little research has been done on this topic, which we feel is an important one.

Parts of this study may have been uncomfortable and/or difficult to complete. Bullying and victimization are unfortunately a common experience for many adolescents, but they aren't pleasant. If you have any concerns about participating as a bully, or being a victim of bullying, please feel free to discuss the matter with your parents, teachers, friends, and/or any trusted individuals. We can recommend www.bullying.org, <http://www.kidshelpphone.ca/en/> (1-800-668-6868), and Niagara Youth Connection (905-641-2118 ext. 5592). In general, you can help prevent bullying by: not participating as a bully, intervening when others are being bullied (e.g., report that behaviour to an adult), and by actively disapproving of the bully's behaviour (e.g., telling them it's not cool). You may be able to reduce victimization by: talking to your parents, teachers, and/or friends and by trying to make supportive friendships.

As stated in the briefing letter we asked you to keep, we hope to publish some of the results on Dr. Volk's web page at: www.brocku.ca/volklab.

Should you have any further questions or concerns, you may freely contact the study coordinator, Dr. Anthony Volk at (905) 688-5550 ext. 5368 (tvolk@brocku.ca) or if regarding the study's ethics, the Brock University Research Ethics Board at (905) 688-5550 ext. 3035 (reb@brocku.ca).

Please keep this form for your records.