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# Examining High Status via Resource Control Strategies, Emotional Intelligence, and Empathy

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# EXAMINING HIGH STATUS VIA RESOURCE CONTROL STRATEGIES, EMOTIONAL INTELLIGENCE, AND EMPATHY

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Master of Science, Experimental Psychology

By

Rebekkah Ann Wall

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**EXAMINING HIGH STATUS VIA RESOURCE CONTROL STRATEGIES,**

**EMOTIONAL INTELLIGENCE, AND EMPATHY**

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## ABSTRACT

The innate drive for human belongingness in cooperative societies is coupled with strategies they use to gain resources. Individuals in high social status use specific strategies to gain their status. Emotional intelligence and empathy are also factors that enable status acquisition as they facilitate connectedness and the ability to relate to others, which can be important for the development of humans as social beings. High status, or popularity among peers, is usually examined via peer-reports of sociometric and perceived popularity, however, they may be evaluated via likability or social dominance respectively due to shared characteristics. This study examined self-reported social dominance and self-reported likability as classifications of high status. Prior research shows socially dominant individuals (perceived popular) use a combination of prosocial and coercive strategies, though strategy usage has not been determined for individuals high in likability (sociometric popularity). Analyses showed prosocial strategies predicted self-reported likability, and both prosocial and coercive strategies predicted social dominance. This means self-reported likable individuals only use prosocial resource control strategies. Analyses showed emotional intelligence was a significant predictor of both high status variables. This study also explored the relationship of high status to cognitive and affective empathy and found that cognitive empathy predicted self-reported likability and social dominance, but that affective empathy did not predict either high status variable. This research differentiates between the two types of self-reported high status.

**KEYWORDS**: high status, social dominance, likability, resource control strategies, emotional intelligence, empathy

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# INTRODUCTION

According to the belongingness hypothesis, humans have a fundamental, innate drive to feel a sense of belonging and maintain a feeling of importance within society, and a lack of connectedness with others can cause psychological distress (Baumeister & Leary, 1995). Therefore, cooperation between group members and gaining resources is essential to an individual's status within their group, as well as their psychological well-being. In cooperative societies, social status influences the thoughts and behaviors of its members (Manstead, 2018). High status has been shown to predict well-being (Ostberg, 2003), as well as healthy levels of interpersonal functioning (Hartup, 1995).

Subtypes of high social status, or popularity among peers, have been presented in past research grouping high status individuals into one of two categories, either a sociometric popular category, individuals who are considered more liked, or a perceived popular category, individuals considered more socially dominant (De Laet et al., 2014; Meijs et al., 2008; Parkhurst & Hopmeyer, 1998). Previous research has shown that they may be related but, each are distinct from one another and consist of differing descriptive traits (Kosir & Pecjak, 2007). Research has shown that an individual's status often depends on what strategies they use to gain or maintain resources (Sapolsky, 2004). Hawley's strategy-based perspective of resource control suggests those who are perceived popular, a dimension of high status, use specific strategies to aid their status acquisition. In prior research, Hawley assessed resource control strategies using the Resource Control Strategy Inventory (RCSI), which includes items pertaining to both prosocial and coercive resource control strategies (Hawley et al., 2007). Specifically, perceived popular individuals seem to use a combination of prosocial strategies, such as being helpful or

kind, and coercive strategies, such as being commanding or misleading, and exhibit more characteristics of social dominance to gain or maintain status (Hawley, 1999; Hawley, 2003).

Past research has linked sociometric popularity with important affiliative behaviors like displaying dimensions of emotional intelligence such as empathetic concern (Warden & Mackinnon, 2003), and emotional stability (Massey-Abernathy, 2017). Emotional intelligence is related to status as it allows people to better relate to each other, which in turn has beneficial social and personal implications (Salovey & Mayer, 1990). Emotional intelligence consists of many dimensions which aid an individual's ability to accurately express and understand various emotions in oneself and others and use the resulting information adaptively to facilitate their own behaviors and thoughts (Salovey et al., 2002). According to Salovey and Mayer (1990), empathy is a dimension of emotional intelligence and assists in understanding one's own emotions or the emotions of others. Prior research has divided empathy into two categories, cognitive empathy and affective empathy, and shows both could have benefits in social contexts (Gladstein, 1983; Davis et al., 1994). Cognitive empathy helps individuals understand and perceive the emotions of others (Gladstein, 1983), while affective empathy elicits emotions within the perceiver (Davis et al., 1994; Davis, 1983).

Experiencing empathy often, or consistently over time, can be detrimental to one's own health (Dickerson & Kemeney, 2004; Figley, 1995; Schieman, & Turner, 2001), so the ability to use sparingly could be regarded as an adaptive ability. Perceived popular individuals are seen to use a combination of prosocial and coercive strategies of resource control (Hawley, 2003), and some high-status individuals report the use of empathy but do not show it physiologically (Massey-Abernathy & Byrd-Craven, 2016b). So, it might be that these individuals differ somewhere within the level of empathy (cognitive/affective) being used, which serves as a

socially adaptive mechanism. The current study aimed to explore the relationships between high-status (self-reported social dominance and self-reported likability), resource control strategies, emotional intelligence, and components of empathy (cognitive, and affective).

**Popularity (Social Status)**

Prior research has commonly separated popularity into two types, sociometric popularity and perceived popularity (Parkhurst & Hopmeyer, 1998). Sociometric popular individuals tend to exhibit cooperative behavior and usually do not engage in aggressive behavior (Meijs et al., 2008). These individuals are considered socially well-adjusted as they usually have friendships of high-quality throughout their lives (Rubin et al., 1998). They are also seen as being kind, trustworthy, and are considered liked by their peers (Parkhurst & Hopmeyer, 1998), making likability a viable dimension of sociometric popularity (De Laet et al., 2014; Gifford-Smith & Brownell, 2003). Sociometric popularity is typically calculated by assessing peer perceptions of an individual and taking the amount of peer "likes" and subtracting the peer "dislikes" then assessing other factors of peer perceptions of social preference and social impact. Those with the highest calculated scores in each profile are high in different groups of sociometric popularity (Coie et al., 1982).

Individuals in the perceived popular category tend to display characteristics of social dominance such as being a leader in crowds, and displaying self-confidence (Parkhurst & Hopmeyer, 1998). Other research has defined perceived popularity as social dominance characterized by being influential and prestigious in peer groups (Meijs et al., 2008). Socially dominant individuals are also seen to exhibit behaviors that are considered aggressive, though used in moderation (Hawley, 2003). Research done in work settings showed an increased use of

harsh power strategies from those who are socially dominant (Aiello et al., 2013). Prior research also shows those who are socially dominant display less consideration for those around them (Nicol, 2009), unless they are engaging with in-group members, showing those who are socially dominant flex a level of behavioral adaptability depending on in- or out-group interactions (Palese & Schmid Mast, 2020). Therefore, even though socially dominant individuals display various characteristics of aggression, they seem to understand when to act with a more cooperative, prosocial disposition and when to act assertively or coercively (Hawley, 2003), which could be an adaptive behavior relative to goal achievement (Coie et al., 1991).

Individuals who have sociometric popularity are considered less aggressive and more likable, and those who have perceived popularity are usually less liked and considered more socially dominant. Most individuals usually do not possess the qualities of both dimensions of peer status and those ranked as higher in perceived popularity are often seen as higher in social dominance (Hawley 2003; Parkhurst & Hopmeyer, 1998), making social dominance a prospective measure of perceived popularity.

## Creating Social Status

**Resource Control Strategies.** According to Hawley's research on social status, social status within groups is a result of competition for resources and the variability between group members of attaining those resources. For members to gain resources, different strategies might be utilized depending on an individual's status within the group. The strategy-based perspective breaks resource control behaviors into two categories: prosocial strategies and coercive strategies (Hawley, 1999). Prosocial strategies consist of cooperation, reciprocity, and negotiation, whereas coercive strategies consist of aggressive, threatening, and antagonistic behaviors

(Hawley et al., 2008; Olthof et al., 2011). Individuals who are regarded by their peers as socially dominant (perceived popular), are bi-strategic controllers, meaning they tend to use a combination of prosocial and coercive strategies of resource control (Hawley et al., 2007). These individuals are seen to possess both negative and positive characteristics while also being socially central, skilled, dominant, aggressive, and well-adjusted (Hawley, 2003). It is unclear at this time what strategies are used by sociometric individuals although cooperative behaviors are often displayed (Meijs et al., 2008).

**Emotional Intelligence and Empathy.** Emotional intelligence has the potential to impact an individual's status within society. Individuals who exhibit dimensions of emotional intelligence are often seen in society as being pleasant and aware, whereas those who do not are often seen as vulgar or uncivilized, and risk being ostracized (Salovey & Mayer, 1990). This makes emotional intelligence an important factor in an individual's social development and status. Salovey and Mayer's work on emotional intelligence outlines a framework for understanding the different dimensions involved in being able to accurately appraise and express emotion within ourselves and others. They theorize that empathy is a dimension of emotional intelligence and it allows individuals to choose socially adaptable behaviors more effectively in response to emotional stimuli by allowing the perceiver to comprehend the feelings of another as well as potentially experiencing the feelings themselves. This ability allows people to better relate to each other which in turn has implications for increased life satisfaction and less stress (Salovey & Mayer, 1990).

Emotional intelligence, particularly empathy, is important in social interactions, but researchers debate how to operationally define and research empathy. Some researchers use a single construct of empathy, while others use two central concepts, cognitive empathy and

affective empathy (Duan & Hill, 1996). Across various studies, cognitive empathy is described as the ability to take the perspective, or psychological point of view, of another individual (Gladstein, 1983; Davis et al., 1994). Affective empathy, which some consider to be an additional relay of emotional information to the brain resulting in a physiological response (Carr et al., 2005), is marked by an emotional reaction often in relation to personal distress and empathic concern (Davis et al., 1994; Davis, 1983).

Cognitive empathy has been shown to motivate individuals to prioritize the needs of others before their own safety (Konrath & Grynberg, 2016), which can increase social status. Various nonverbal displays of emotions also yield benefits in social contexts by enhancing social interactions which increases friendly associations and could also avert any potential hostile behaviors from others (van Hooff, 1972). Affective empathy could function in a similar way, as individuals would be more apt to express their emotional responses in certain social contexts if necessary. However, affective empathy can result in negative health consequences. For example, studies have found that excess empathy relates to higher hypothalamic pituitary adrenal activation which can increase the chances of compassion fatigue and depression (Dickerson & Kemeney, 2004; Figley, 1995; Schieman, & Turner, 2001). Other studies found parents who display increased levels of empathy were shown to display higher systemic inflammation (Manczak et al., 2016). Another study involving strategic social interactions showed that perspective taking (cognitive empathy) lead to certain social advantages, while empathetic concern (affective empathy) was viewed as more of a social liability (Longmire & Harrison, 2018). This speaks to the potentially costly nature of empathy. In general, empathy is widely seen as a constructive and beneficial tool in social interactions, however, it can also be costly depending on the type and magnitude of empathy being experienced.

Having or displaying empathy may be an additional resource control strategy that can create social status benefits. A previous study found that individuals high on sociometric popularity (likability) also scored high on empathetic awareness (Warden & Mackinnon, 2003). Whereas in another study, individuals high on perceived popularity (social dominance) reported high empathy but did not show it physiologically (Massey-Abernathy & Byrd-Craven, 2016a). From a resource control strategies stance, socially dominant individuals are bi-strategic controllers, meaning they use both prosocial strategies and coercive strategies (Hawley, 2003). If empathy is seen as a prosocial strategy, this begs to question whether reporting but not feeling empathy is a strategy used by socially dominant individuals as a form of resource control and maintenance, and whether there are differences in the types of empathy being used.

## Hypotheses

This study examined the relationship between self-report questionnaires on likability, social dominance, resource control strategies, emotional intelligence, and empathy (cognitive and affective).

**Hypothesis 1.** Using prosocial and coercive strategy scores from the Resource Control Strategy Inventory (Hawley et al., 2007), it was predicted that previous studies would be replicated by showing a strong positive correlation between the combination of prosocial and coercive strategies and self-reported dominance. Therefore, it was also hypothesized that there would be a significant relationship between prosocial strategy scores and self-reported social dominance, and coercive strategy scores and self-reported social dominance.

**Hypothesis 2.** It was predicted that individuals who score high on self-reported likability will score high on emotional intelligence and show high cognitive and affective empathy.

**Hypothesis 3.** It was predicted that individuals who score high on self-reported social dominance will have high emotional intelligence, high self-reported cognitive empathy, and low affective empathy.

# METHOD

## Participants

Participants were obtained via a subject pool database (SONA) through Missouri State University. Students from an introductory psychology class used the system to sign up for timeslots and received research credit for participating. Each participant was provided an informed consent document to read and sign indicating their voluntary consent for participating in the study (see Appendix A). Analyses included a total of 136 participants. Participants indicated their biological sex given to them at birth and descriptives show there were 39 males and 97 females, with an age range from 18-33 and a mean age of 19.5 (*SD* = 2.5), and 113 reported as Caucasian/White, 12 as other, and 11 indicated more than one race.

## Materials

**Demographics.** The first set of questions were used to gather basic demographic information such as age, sex, and ethnicity. Also included on the demographics were a series of questions asking for various self-reported characteristics related to status (see Appendix B).

Likability. This question asked the participant to indicate a percentage between 0% - 100% in ten-point increments for, "Usually I am liked by___% of people" and "Usually I am disliked by_% of people." Our likability variable was then calculated by subtracting the indicated "disliked" percentage from the indicated "liked" percentage.

Social Dominance. This question asked the participant to rate, "Usually I am socially dominant" ranging from 1 *(Not at all*) to 5 (*Very much*). The self-report five-point scale

has been used in previous research (Massey-Abernathy & Byrd-Craven, 2016a; Massey et al., 2015).

**Resource Control Strategy Inventory (RCSI).** The Resource Control Strategy Inventory (RCSI) is used to assess characteristics of resource control through prosocial and coercive (bi-strategic) strategies. Prosocial behaviors are assessed based on two questions (i.e. "I have good ideas or suggestions that others like to follow"; "I am chosen by others to lead the group"). Coercive reported behaviors are also assessed based on two questions (i.e., "I make others do what I want"; "I force others to follow my plans"). Scores are based on a 5-point Likert scale ranging from 1 *(Strongly disagree) to 5 (Strongly agree)*. The scores for bi-strategic controllers are configured using the sum of prosocial questions and coercive questions. This method is a deviation from previous work by Hawley (2003) in which percentiles were used. When used in previous research, the resource control strategy assessment had a reliability of .78 to .88 (Hawley et al., 2007) (see Appendix C).

**Trait Emotional Intelligence Questionnaire – Short Form (TEIQue-SF).** The Trait Emotional Intelligence Questionnaire (TEIQue-SF) is a measure of emotional intelligence and has been shown to have valid psychometric properties. This questionnaire is recommended for use when a quick assessment of trait emotional intelligence is needed. TEIQue-SF is a 30-item questionnaire, with two items from each of the 15 facets of the TEIQue and is aimed to measure global trait intelligence (trait EI). Items were selected primarily for their correlations with the corresponding total facet scores, which ensured broad coverage of the sampling domain of the construct. It is based on the long form of the TEIQue (Petrides & Furnham, 2003). When used in previous research, the internal consistency score of the TEIQue-SF is .81 and test-retest reliability of the total score is .86 (Deniz et al., 2013) (see Appendix D).

**Questionnaire of Cognitive and Affective Empathy (QCAE).** This questionnaire is used to measure affective empathy and cognitive empathy. In prior research, a principal component analysis yielded 31 items split between 5 factors, with Components 1 and 3 representing cognitive empathy and Components 2, 4, and 5 representing affective empathy. When used in past research, the reliability scores for each resulting scale of raw scores were: Component 1 ($\alpha = .85$), Component 2 ($\alpha = .72$), Component 3 ($\alpha = .83$), Component 4 ($\alpha = .65$), and Component 5 ($\alpha = .70$). For analysis purposes, averages between corresponding components for the two factors (cognitive or affective), are averaged for a total score per each type of empathy factor (Reniers et al., 2011) (see Appendix E).

## Procedures

This study was formally proposed to the Institutional Review Board (IRB) for Missouri State University and granted approval (see Appendix F). Participants were provided a Qualtrics link to access the questionnaires. First, participants read and electronically signed an informed consent document explaining the study. The first set of questions were used to gather basic demographic information such as age, sex, and ethnicity. Also included on the demographics were a series of questions asking for various self-reported characteristics related to status. They were then presented a series of counterbalanced questionnaires including the Resource Control Strategy Inventory (RCSI), the Trait Emotional Intelligence Questionnaire – Short Form (TEIQue-SF), and the Questionnaire of Cognitive and Affective Empathy (QCAE).

# RESULTS

## Incomplete or Duplicate Data

Data was removed from the analyses if it was incomplete or a duplicate participant in efforts to only use intact and first-attempt data. Overall, 27 participants were removed, 8 based on being incomplete, and 19 due to participants submitting the questionnaires more than once.

## Analyses

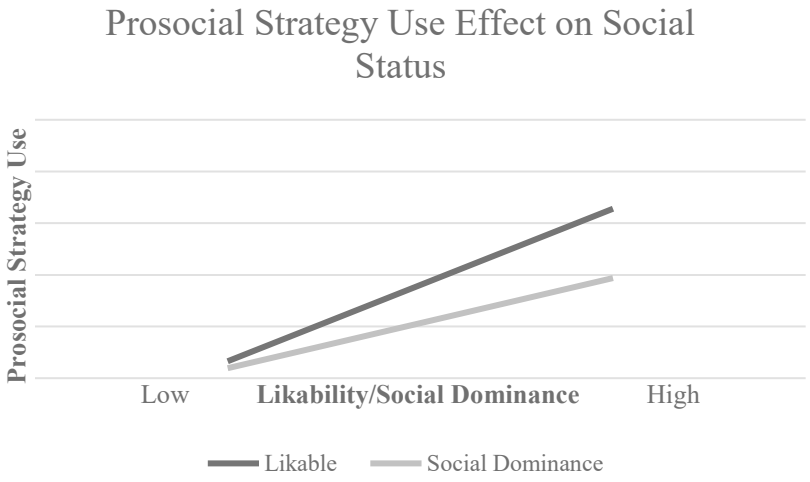
The measures of self-reported likability and self-reported social dominance should slightly correlate since they are both measures of high status and relate to sociometric and perceived popularity respectively, which have already been shown to be correlated in the past (Cillessen & Mayeux 2004; Lease et al., 2002). However, they should not be identical as they are meant to measure different constructs of high status. To test the strength of the relationship, a correlation was run between self-reported likability and self-reported social dominance and found there was a small significant correlation between likability and social dominance ($r = .195$, $p = .023$).

**Reliability.** Reliability analyses were run on the QCAE ($\alpha = .879$), the TEIQue – SF ($\alpha = .877$), and the RCSI ($\alpha = .657$), showing each of the questionnaires are within the boundaries of reliable scales (Cronbach, 1951).

**Hypothesis 1.** A linear regression found the combination of prosocial and coercive resource control strategies significantly predicted self-reported social dominance ($F(1, 134) = 24.929$, $p < .001$ , $r^2 = .157$, $R^2_{adj} = .151$). Two additional linear regressions were conducted to look at each factor independently and found that prosocial resource control strategies

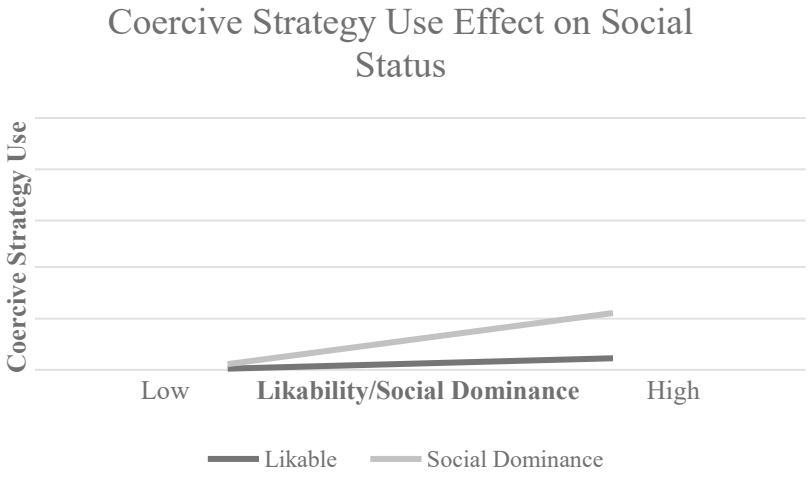
significantly predicted self-reported social dominance, ($F(1, 134) = 23.631$, $p < .001$, $r^2 = .150$, $R^2_{adj} = .144$), and that coercive resource control strategies significantly predicted self-reported dominance ($F(1, 134) = 6.948$, $p = .009$, $r^2 = .049$, $R^2_{adj} = .042$) (see Figure 1 and Figure 2). These analyses show that those who self-report social dominance use both prosocial and coercive resource control strategies, confirming the hypotheses and showing the variable was related to the same resource control strategies perceived popularity was found to relate to in past research. To further analyze resource control strategies and high-status (although not a specific hypothesis in the current study), a linear regression found the combination of prosocial and coercive resource control strategies did not predict self-reported likability ($F(1, 134) = 1.601$, $p = .208$, $r^2 = .012$, $R^2_{adj} = .004$). Two additional linear regressions were conducted to look at each factor independently and found that prosocial resource control strategies significantly predicted self-reported likability ($F(1, 134) = 6.003$, $p = .016$, $r^2 = .043$, $R^2_{adj} = .036$), and that coercive resource control strategies predicting self-reported likability was not significant ($F(1, 134) = .234$, $p = .630$, $r^2 = .002$, $R^2_{adj} = .006$) (see Figure 1 and Figure 2). This suggests those who self-report as likable do not tend to use coercion as a resource control strategy, unlike self-reported social dominant individuals who use both prosocial and coercive strategies of resource control.

**Figure 1**




*Prosocial Strategy Use Effect on Social Status*
*Note.* This figure shows a comparison of *r* values across prosocial strategy usage for self-reported likability (*r* = .656) and self-reported social dominance (*r* = .387).

**Figure 2**




*Coercive Strategy Use Effect on Social Status*
*Note.* This figure shows a comparison of *r* values across coercive strategy usage for self-reported likability (*r* = .045) and self-reported social dominance (*r* = .221).

**Hypothesis 2.** A linear regression found that high emotional intelligence significantly predicted self-reported likability ($F(1, 134) = 15.672$, $p < .001$, $r^2 = .324$, $R^2_{adj} = .105$), and a second linear regression showed high cognitive empathy significantly predicted self-reported likability ($F(1, 134) = 5.939$, $p = .016$, $r^2 = .042$, $R^2_{adj} = .035$). This confirms the hypotheses that high emotional intelligence would predict self-reported likability and high cognitive empathy would predict self-reported likability. However, a third linear regression showed affective empathy did not predict self-reported likability ($F(1, 134) = 1.754$, $p = .188$, $r^2 = .013$, $R^2_{adj} = .006$), which does not confirm the hypotheses that high affective empathy would predict self-reported likability.

**Hypothesis 3.** A linear regression found that high emotional intelligence significantly predicted self-reported social dominance ($F(1, 134) = 13.082$, $p < .001$, $r^2 = .089$, $R^2_{adj} = .082$), confirming the hypothesis that high emotional intelligence would predict self-reported social dominance. A second linear regression found that high cognitive empathy significantly predicted self-reported social dominance ($F(1, 134) = 4.515$, $p = .035$ , $r^2 = .033$, $R^2_{adj} = .025$), and a third linear regression found that affective empathy was not a predictor of self-reported social dominance ($F(1, 134) = .158$, $p = .692$, $r^2 = .001$, $R^2_{adj} = -.006$). The hypothesis that high cognitive empathy would predict self-reported social dominance was confirmed. However, the hypothesis that low affective empathy would predict self-reported social dominance did not yield significant results, therefore not confirming the hypothesis.

# DISCUSSION

## Conclusion

Past research has shown both prosocial and coercive resource control strategies relate to socially dominant (perceived popular) individuals which makes them bi-strategic controllers (Hawley, 2003). Previous research has also shown that socially dominant individuals engage in both affiliative and aggressive behaviors (Pelligrini, 2008) such as bullying behaviors (Caravita et al., 2009). Analyses showed a significant positive relationship between prosocial strategy scores and both self-reported social dominance and self-reported likability, as well as a significant positive relationship between coercive strategy scores and self-reported social dominance. This suggests those who self-report as likable (sociometric popularity) do not tend to use coercion as a resource control strategy, but those who self-report as socially dominant (perceived popular) do use coercion, though they may adaptively regulate these behaviors more as it has the potential to impact their status if they are more coercive than prosocial. This gives us a better understanding of different social statuses and how those in high status gain or maintain resources.

Emotional intelligence is also important in social settings. Past research has linked likability with dimensions of emotional intelligence such as empathetic concern (Warden & Mackinnon, 2003), and emotional stability (Massey-Abernathy, 2017). One study found that females with high social status were linked to high emotional intelligence (Andrei et al., 2015), which contains dimensions of affiliative behaviors, like empathy (Salovey & Mayer, 1990). The analyses showed that both self-reported likability and self-reported social dominance related to emotional intelligence. This could be due to the need for understanding others' emotions in

social contexts as a function of gaining or maintaining social resources or forming social connectedness. This can partially be done through one's empathetic disposition in social contexts since empathy is a facet of emotional intelligence.

Empathy can be explored through a two-concept model which splits the construct into two factors, cognitive empathy and affective empathy (Duan & Hill, 1996). It was predicted those who have high status would also have high cognitive empathy and our analyses showed cognitive empathy did significantly predict both self-reported likability and self-reported social dominance. It was also predicted that affective empathy would predict self-reported likability but would not predict self-reported dominance as dominant individuals are able to perceive the emotions of others, but perhaps they do not tend to engage in an "additional relay" of emotional information. The later was confirmed, however, contrary to prior research (Carreras et al., 2014), the analysis of affective empathy predicting self-reported likability did not yield significant results. This suggests that both types of high-status individuals may exhibit emotional intelligence, but are not fully displaying all dimensions of empathy, such as affective empathy. Or it could be related to a problem with self-reports of affective empathy, due to a possible difficulty for people to understand they are experiencing an additional relay of emotional information during an event which elicits an empathetic response. Future directions on further analyzing this relationship through physiological measures of empathy are described below.

**Limitations**

In this study, self-reported social dominance consisted of one numerical rating and did not include multiple items or subscales to compile a more valid composite variable. Though this

could potentially cause a problem with the validity of the variable, the analyses show it relates highly to prosocial and coercive resource control strategies, which have both been shown to relate to individuals who are socially dominant (perceived popular) (Hawley, 2003). For future studies, it would be beneficial to compose a multi-item subscale of self-reported social dominance and determine the best fit items through an exploratory factor analysis. Using multiple items to assess self-reported social dominance would improve the reliability and validity of the measure. The way in which empathy is examined is also important. This study looked at self-report methods to examine the difference between cognitive and affective empathy, though, self-report methods have been shown to elicit gender-role stereotypes (Baez et al., 2017) and social desirability bias (Nederhof, 1985).

## Future Directions

**Physiological Measures of Empathy.** To get a better idea of whether empathy, and what type, is being experienced and not just reported, it would be beneficial to look at comparisons in empathy types and physiological measures via galvanic skin response (GSR), also known as skin conductance. Galvanic skin response is a measure of activation of the autonomic nervous system which has been linked to physiologically experiencing empathy (Hein et al., 2011). Using physiological methods can remove any social desirability bias. It is important to note that others have shown mixed results when it comes to the degree of matching between an individual's self-reported empathy and their physiological measures of empathy (Rae Westbury & Neumann, 2008). Physiological data may not specifically differentiate between cognitive and affective empathy but will allow confirmation that an empathetic response is being experienced. One study found higher neural activity when observing and imitating emotional

facial expressions from others, compared to only observing those expressions, and they believe this is due to the added relay of emotional information to different areas of the brain (Carr et al., 2005). Therefore, since GSR is a measure of physiological arousal, it could be that a higher GSR is representative of the additional relay of emotional information proposed to be involved in affective empathy.

The social neuroscience approach on empathy research proposes the need for studying empathy at various biological, cognitive, and social levels and states that any resulting information can provide a more comprehensive understanding of the interplay of others' thoughts and feelings and the subsequent influence on our own behaviors (Decety, & Ickes, 2009). Our analyses contradicted past research showing those in high status tend to report affective empathy (Massey-Abernathy & Byrd-Craven, 2016a; Massey-Abernathy & Byrd-Craven, 2016b). Our results showed neither high-status group (self-reported likable or socially dominant), reported affective empathy. Some studies have found that high/low levels of self-reported empathy match high/low changes in skin conductance (Eisenberg et al., 1991; Tamborini et al., 1990). It would be beneficial to continue exploring this relationship by collecting physiological measures of affective empathy such as galvanic skin responses through skin conductance to see if they are experiencing affective empathy but not reporting it.

**Oxytocin Receptor Polymorphism (OXTR rs53576).** Just as social environment is important for human development, it is also important to consider the genetic components that can impact thoughts and behaviors. Oxytocin has been widely connected to affiliative behaviors and has been shown to be an agent in enhancing social behaviors, greater overall social support, and better general health (Massey-Abernathy, 2017). One area of interest in current research regarding genetic components of social behaviors, is the oxytocin receptor site gene (OXTR

53576) and its allele variations, or polymorphism (AA, AG, GG). This receptor is specific to oxytocin, which is a neuropeptide produced in the hypothalamus (Gutnick et al., 2011).

OXTR rs53576 is a specific oxytocin polymorphic receptor site that when G homozygous, meaning possessing two G alleles (GG), individuals show more empathetic concern (Smith et al., 2014), and increased emotional regulation (Massey-Abernathy, 2017). Studies have also shown that general sociality and social orientation are linked to individuals who are rs53576G homozygous (Li et al., 2015) and they tend to be more empathetic, on both sympathetic and subjective measures (Smith et al., 2014). They have also been shown to handle stress better by exhibiting lower cortisol responses to stressful situations (Rodrigues et al., 2009), higher trust behaviors (Kosfeld et al., 2007), and a greater ability to infer the emotional states of others (Domes et al., 2007). Recently, the personality trait, emotional stability, has also been linked to rs53576G homozygous individuals (Massey-Abernathy, 2017). All these outcomes have profound implications on the ability to gain status within a cooperative society and the connection between affiliative behaviors and status acquisition and can allow for increased social benefits while an individual seeks to gain or maintain status.

## REFERENCES


Aiello, A., Pratto, F., & Pierro, A. (2013). Framing social dominance orientation and power in organizational context. *Basic and Applied Social Psychology*, *35*(5), 487– 495. https://doi.org/10.1080/01973533 .2013.823614

Andrei, F., Mancini, G., Mazzoni, E., Russo, P. M., & Baldaro, B. (2015). Social status and its link with personality dimensions, trait emotional intelligence, and scholastic achievement in children and early adolescents. *Learning and Individual Differences*, *42*, 97-105. https://doi.org/10.1016/j.lindif.2015.07.014

Baez, S., Flichtentrei, D., Prats, M., Mastandueno, R., García, A. M., Cetkovich, M., & Ibáñez, A. (2017). Men, women who cares? A population-based study on sex differences and gender roles in empathy and moral cognition. *PLoS ONE*, *12*(6). Retrieved from https://search.ebscohost.com/login.aspx?direct=true&db=psyh&AN=2017-38780-001&site=ehost-live&scope=site

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*(3), 497–529. https://doi.org/10.1037/0033-2909.117.3.497

Cronbach, L.J. Coefficient alpha and the internal structure of tests. *Psychometrika 16***,** 297–334 (1951). https://doi.org/10.1007/BF02310555

Caravita, S. C. S., Di Blasio, P., & Salmivalli, C. (2009). Unique and interactive effects of empathy and social status on involvement in bullying. *Social Development, 18*(1)*,* 140–163. doi:10.1111/j.1467-9507.2008.00465.x

Carr, L., Iacoboni, M., Dubeau, M.-C., Mazziotta, J. C., & Lenzi, G. L. (2005). Neural mechanisms of empathy in humans: A relay from neural systems for imitation to limbic areas. In J. T. Cacioppo & G. G. Berntson (Eds.), *Social neuroscience: Key readings.* (pp. 143–152). New York, NY: Psychology Press.

Carreras, M. R., Braza, P., Muñoz, J. M., Braza, F., Azurmendi, A., Pascual-Sagastizabal, E., Cardas, J., & Sánchez-Martín, J. R. (2014). Aggression and prosocial behaviors in social conflicts mediating the influence of cold social intelligence and affective empathy on children's social preference. *Scandinavian Journal of Psychology, 55*(4), 371–379. doi:10.1111/sjop.12126

Cillessen, A. H. N., & Mayeux, L. (2004). From censure to reinforcement: Developmental change in the association between aggression and social status. *Child Development*, *75*, 147–163. doi:10.1111/j.1467-8624.2004.00660.x.

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

Coie, J. D., Dodge, K. A., & Coppotelli, H. (1982). Dimensions and types of social status: A cross-age perspective. *Developmental Psychology, 18*(4), 557–570. https://doi.org/10.1037/0012-1649.18.4.557

Coie, J. D., Dodge, K. A., Terry, R., & Wright, V. (1991). The role of aggression in peer relations: An analysis of aggression episodes in boys' play groups, *Child Development*. *62*. 812-826.

Davis, M. H. (1983). Measuring individual differences in empathy: Evidence for a multidimensional approach. *Journal of Personality and Social Psychology*, *44*(1), 113–126. https://doi.org/10.1037/0022-3514.44.1.113

Davis, M. H., Luce, C., & Kraus, S. J. (1994). The heritability of characteristics associated with dispositional empathy. *Journal of Personality*, *62*(3), 369–391. https://doi.org/10.1111/j.1467-6494.1994.tb00302.x

De Laet, S., Doumen, S., Vervoort, E., Colpin, H., Van Leeuwen, K., Goossens, L., & Verschueren, K. (2014). Transactional links between teacher-child relationship quality and perceived versus sociometric popularity: A three-wave longitudinal study. *Child Development, 85*(4), 1647–1662. doi:10.1111/cdev.12216

Decety, J., & Ickes, W. (Eds.). (2009). *Social neuroscience. The social neuroscience of empathy.* MIT Press. https://doi.org/10.7551/mitpress/9780262012973.001.0001

Deniz, M.E., Özer, E. ve Işık, E., (2013). Trait Emotional intelligence questionnaire– short form: Validity and reliability studies. *Education and Science*, *38*(169), 407-419.

Dickerson, S. S., & Kemeny, M. E. (2004). Acute stressors and cortisol responses: A theoretical integration and synthesis of laboratory research. *Psychological Bulletin*, *130*(3), 355–391. doi:10.1037/0033-2909.130.3.355

Domes, G., Heinrichs, M., Michel, A., Berger, C., & Herpertz, S. C. (2007). Oxytocin improves 'Mindreading' in humans. *Biological Psychiatry*, *61*(6), 731–733. doi:10.1016/j.biopsych.2006.07.015.

Duan, C., & Hill, C. E. (1996). The current state of empathy research. *Journal of Counseling Psychology, 43*(3), *261–274.* doi:10.1037/0022-0167.43.3.261

Eisenberg, N., Fabes, R. A., Schaller, M., Miller, P., Carlo, G., Poulin, R., Shea, C., & Shell, R. (1991). Personality and socialization correlates of vicarious emotional responding. *Journal of Personality and Social Psychology, 61*(3), 459–470. https://doi.org/10.1037/0022-3514.61.3.459

Figley, C. R. (1995). Compassion fatigue: Toward a new understanding of the costs of caring. In B. H. Stamm (Ed.), *Secondary traumatic stress: Self-care issues for clinicians, researchers, and educators.* (pp. 3–28). Baltimore, MD: The Sidran Press. Retrieved from https://search.ebscohost.com/login.aspx?direct=true&db=psyh&AN=1996-97172-001&site=ehost-live&scope=site

Gifford-Smith, M. E., & Brownell, C. A. (2003). Childhood peer relationships: Social acceptance, friendships, and social network. *Journal of School Psychology, 41*, 235–284. doi:10.1016/S0022-4405(03)00048-7

Gladstein, G. A. (1983). Understanding empathy: Integrating counseling, developmental, and social psychology perspectives. *Journal of Counseling Psychology*, *30*(4), 467–482. https://doi.org/10.1037/0022-0167.30.4.467

Gutnick, A., Blechman, J., Kaslin, J., Herwig, L., Belting, H.-G., Affolter, M., Bonkowsky, J, L., Levkowitz, G. (2011). The hypothalamic neuropeptide oxytocin is required for formation of the neurovascular interface of the pituitary. *Developmental Cell, 21*(4), 642–654. https://doi.org/10.1016/j.devcel.2011.09.004

Hartup, W. W. (1995). The three faces of friendship. *Journal of Social and Personal Relationships, 12,* 569–574. doi:10.1177/0265407 595124012.

Hawley, P. H. (1999). The ontogenesis of social dominance: A strategy-based evolutionary perspective. *Developmental review, 19*(1), 97-132. https://doi.org/10.1006/drev.1998.0470

Hawley, P. H. (2003). Prosocial and coercive configurations of resource control in early adolescence: A case for the well-adapted machiavellian. *Merrill-Palmer Quarterly*, *49*(3), 279–309. https://doi-org.proxy.missouristate.edu/10.1353/mpq.2003.0013

Hawley, P. H., Little, T. D., & Card, N. A. (2007). The allure of a mean friend: Relationship quality and processes of aggressive adolescents with prosocial skills. *International Journal of Behavioral Development*, *31*(2), 170–180.

Hawley, P. H., Little, T. D., & Card, N. A. (2008). The myth of the alpha male: A new look at dominance-related beliefs and behaviors among adolescent males and females. *International Journal of Behavioral Development, 32*(1), 76–88. https://doi.org/10.1177/0165025407084054

Hein, G., Lamm, C., Brodbeck, C., & Singer, T. (2011). Skin conductance response to the pain of others predicts later costly helping. *PloS one*, *6*(8), e22759. https://doi.org/10.1371/journal.pone.0022759

Konrath, S., & Grynberg, D. (2016). The positive (and negative) psychology of empathy. In D. F. Watt & J. Panksepp (Eds.), *Psychology of emotions, motivations and actions. Psychology and neurobiology of empathy* (p. 63–107). Nova Biomedical Books.

Košir, K., & Pečjak, S. (2005). Sociometry as a method for investigating peer relationships: What does it actually measure?.*Educational Research*, *47*(1), 127-144.

Kosfeld, M., Heinrichs, M., Zak, P. J., Fischbacher, U., & Fehr, E. (2005). Oxytocin increases trust in humans. *Nature*, *435*(7042), 673–676. doi:10.1038/nature03701.

Lease, A. M., Kennedy, C. A., & Axelrod, J. L. (2002). Children's social constructions of popularity. *Social Development, 11*, 87– 109. doi:10.1111/1467-9507.00188.

Li J, Zhao Y, Li R, Broster LS, Zhou C, Yang S (2015) Association of oxytocin receptor gene (OXTR) rs53576 polymorphism with sociality: A meta-analysis. *PLoS ONE, 10*(6): e0131820. https://doi.org/10.1371/journal.pone.0131820

Longmire, N. H., & Harrison, D. A. (2018). Seeing their side versus feeling their pain: Differential consequences of perspective-taking and empathy at work. *Journal of Applied Psychology*, *103*(8), 894–915. https://doi.org/10.1037/apl0000307.supp (Supplemental)

Manczak, E. M., DeLongis, A., & Chen, E. (2016). Does empathy have a cost? Diverging psychological and physiological effects within families. *Health Psychology*, *35*(3), 211–218. https://doi.org/10.1037/hea0000281

Manstead, A. S. R. (2018). The psychology of social class: How socioeconomic status impacts thought, feelings, and behaviour. *British Journal of Social Psychology, 57*(2), 267–291. https://doi.org/10.1111/bjso.12251

Massey-Abernathy, A. (2017). From oxytocin to health: Exploring the relationship between OXTR rs53576, emotional stability, social support, and health. *Adaptive Human Behavior and Physiology*, *3*(3)*,* 212-220. https://doi.org/10.1007/s40750-017-0063-2

Massey-Abernathy, A., & Byrd-Craven, J. (2016). Functional leadership: Bi-strategic controllers high on effortful control show gains in status and health. *Personality and Individual Differences, 97,* 193–197. https://doi.org/10.1016/j.paid.2016.03.039

Massey-Abernathy, A., & Byrd-Craven, J. (2016). Seeing but not feeling: Machiavellian traits in relation to physiological empathetic responding and life experiences. *Adaptive Human Behavior and Physiology, 2*(3), *252–266.* doi:10.1007/s40750-016-0041-0

Massey, A. R., Byrd-Craven, J., Auer, B. J., & Swearingen, C. L. (2015). Climbing the social ladder: Physiological response to social status in adolescents. Adaptive Human Behavior and Physiology, *1*(1), 72–92.

Meijs, N., Cillessen, A. H. N., Scholte, R. H. J., Segers, E., & Spijkerman, R. (2008). Social intelligence and academic achievement as predictors of adolescent popularity. *Journal of Youth and Adolescence, 39(1), 62–72.* doi:10.1007/s10964-008-9373-9

Nederhof, A. J. (1985). Methods of coping with social desirability bias: A review. *European Journal of Social Psychology, 15*(3), 263–280. doi:10.1002/ejsp.2420150303

Nicol, A. A. (2009). Social dominance orientation, right-wing authoritarianism, and their relation with leadership styles. *Personality and Individual Differences*, *47*(6), 657– 661. https://doi.org/10.1016/j.paid.2009 .06.004

Olthof, T., Goossens, F. A., Vermande, M. M., Aleva, E. A., & van der Meulen, M. (2011). Bullying as strategic behavior: Relations with desired and acquired dominance in the peer group. *Journal of school psychology*, *49*(3), 339-359. https://doi.org/10.1016/j.jsp.2011.03.003

Ostberg, V. (2003). Children in classrooms: Peer status, status distribution and mental well-being. *Social Science and Medicine, 56,* 17–29. doi:10.1016/S0277-9536(02)00006-0.

Palese, T., & Schmid Mast, M., 2020. The role of social categorization and social dominance orientation in behavioral adaptability. *Journal of Personality and Social Psychology.* Advance online publication. http://dx.doi.org/10.1037/pspi0000351

Parkhurst, J. T., & Hopmeyer, A. (1998). Sociometric popularity and peer-perceived popularity: Two distinct dimensions of peer status. *The Journal of Early Adolescence, 18*(2), 125–144. https://doi.org/10.1177/0272431698018002001

Pellegrini, A. (2008). The roles of aggressive and affiliative behaviors in resource control: A behavioral ecological perspective. *Developmental Review, 28*(4), *461–487.* doi:10.1016/j.dr.2008.03.001

Petrides, K. V., & Furnham, A. (2003). Trait emotional intelligence: Behavioural validation in two studies of emotion recognition and reactivity to mood induction. *European Journal of Personality*, 17, 39-57.

Rae Westbury, H., & Neumann, D. L. (2008). Empathy-related responses to moving film stimuli depicting human and non-human animal targets in negative circumstances. *Biological Psychology, 78*(1), 66–74. doi:10.1016/j.biopsycho.2007.12.009

Reniers, R. L. E. P., Corcoran, R., Drake, R., Shryane, N. M., & Völlm, B. A. (2011). The QCAE: A questionnaire of cognitive and affective empathy. *Journal of Personality Assessment, 93*(1), 84–95. doi:10.1080/00223891.2010.528484

Rodrigues, S. M., Saslow, L. R., Garcia, N., John, O. P., & Keltner, D. (2009). Oxytocin receptor genetic variation relates to empathy and stress reactivity in humans. *PNAS Proceedings of the National Academy of Sciences of the United States of America, 106*(50), 21437–21441. https://doi.org/10.1073/pnas.0909579106

Rubin, K. H., Bukowski, W. M., & Parker, J. G. (1998). Peer interactions, relationships, and groups. In: W. Damon (Series Ed.) & N. Eisenberg (Vol. Ed.), *Handbook of child psychology. Social, emotional, and personality development, 3* (pp. 619– 700). New York: Wiley

Salovey, P., & Mayer, J. D. (1990). Emotional intelligence. *Imagination, Cognition and Personality*, *9*(3), 185–211. https://doi.org/10.2190/DUGG-P24E-52WK-6CDG

Salovey, P., Mayer, J. D., & Caruso, D. (2002). The positive psychology of emotional intelligence. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of positive psychology* (p. 159–171). Oxford University Press.

Sapolsky, R. M. (2004). Social status and health in humans and other animals. *Annual Review of Anthropology, 33*(1), 393–418. doi:10.1146/annurev.anthro.33.070203.144000

Schieman, S., & Turner, H. A. (2001). "When feeling other people's pain hurts": The influence of psychosocial resources on the association between self-reported empathy and depressive symptoms. *Social Psychology Quarterly*, *64*(4), 376–389. https://doi.org/10.2307/3090161

Smith, K. E., Porges, E. C., Norman, G. J., Connelly, J. J., & Decety, J. (2014). Oxytocin receptor gene variation predicts empathic concern and autonomic arousal while perceiving harm to others. *Social Neuroscience, 9*(1), 1–9. https://doi.org/10.1080/17470919.2013.863223

Tamborini, R., Stiff, J., & Heidel, C. (1990). Reacting to graphic horror: A model of empathy and emotional behavior. *Communication Research*, *17*(5), 616–640. https://doi.org/10.1177/009365090017005003

van Hooff, J. A. R. A. M. (1972). A comparative approach to the phylogeny of laughter and smiling. *Non-verbal communication*, 209-41.

Warden, D., & Mackinnon, S. (2003). Prosocial children, bullies and victims: An investigation of their sociometric status, empathy and social problem-solving strategies. *British Journal of Developmental Psychology*, *21*(3), 367-385. https://doi.org/10.1348/026151003322277757

# APPENDICES

## Appendix A

### Informed Consent

**Nature vs. Nurture: Examining the role that Oxytocin Polymorphism Receptors and Early Childhood Environments Play on Adult Social Interactions**
**Part One**
**Consent to Participate in a Research Study**
*Missouri State University - College of Health & Human Services*
*Principal Investigator: Dr. Amber Abernathy*

**Introduction**
You have been asked to participate in a research study. Before you agree to participate in this study, it is important that you read about and understand the study and the procedures it involves. If you have any questions about the study or your role in it, you can contact the investigator (Dr. Abernathy) at: amberabernathy@missouristate.edu

You will need to type your name in the box below giving us your permission to be involved in the study. Taking part in this study is entirely your choice. If you decide to take part, but later change your mind, you may stop at any time. If you decide to stop, you do not have to give a reason and there will be no negative consequences for ending your participation.

**Purpose of this Study**
The goal of the current two-part study is to examine the role of specific traits and biological factors on adult social interactions. Part one of this study will explore the role of various environmental factors such as childhood adversity, parenting styles, social status, emotional intelligence, empathy, and adult attachment styles on adult interactions.

**Description of Procedures**
If you decide to take part in this study, you will be asked to fill out a series of questionnaires online. This part of the study will take about 30 - 45 minutes to complete. You will be asked at the end of these questionnaires if you are willing to participate in the second part of the study. If so, you will be contacted and asked to set up a time to come to the research lab in Hill Hall. You do not have to participate in the second part of the study. Any information about you will be kept confidential. To protect your privacy, you will be assigned a coded number and your name, or any other identifying information will not appear on the questionnaire.

**What are the risks?**
There are no risks of harm or discomfort. The likelihood of physical, psychological, social, legal, or economic harm is low considering the nature of this study.

**What are the possible benefits?**
This two-part study examines the interplay of biology (nature) and environmental factors (nurture) on psychosocial development. The resulting information will help increase the current knowledge base surrounding "nature versus nurture" and how both can impact development and social

relationships. Specifically, part one of the study will explore how experiences early in life may impact our social interactions as adults.

**How will your privacy and confidentiality be protected?**

Information about you will be coded and all your data will receive an arbitrary number. Your name will not appear on any data. The information gathered will be accessible only by the investigators and it will be kept in a locked facility on campus and in password protected computers. You will not be identified by name in any publications that result from this research. All information from this study will be destroyed (shredded or cleared using data cleaning software) 3 years after the study ends.

**********

**PARTICIPANT CONSENT**

If you want to participate in this study, Nature vs. Nurture: Examining the role that Oxytocin Polymorphism Receptors and Early Childhood Environments Play on Adult Social Interactions, you are required to type your name below as an indication of your willingness to participate:
I have read and understand the information in this form. I have been encouraged to ask questions. I have also been informed that I can withdraw from the study at any time. By typing in my name, I voluntarily agree to participate in this study.

_____

Signed Name, Date and Time

**Appendix B**

## Demographics

1. What is your age? (fill in the blank)
2. Please list your preferred gender (male, female, transgender, etc.)
3. Please indicate the biological sex assigned to you at birth.
    A. Male
    B. Female
4. Please indicate those which best describe your ethnicity.
    A. Caucasian/White
    B. Black
    C. Latino or Hispanic
    D. Asian
    E. Native American
    F. Native Hawaiian or Pacific Islander
    G. Other
    H. Unknown/Prefer not to say
5. Please indicate the best response for each statement based on your own experiences:

| Usually I am… | 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Liked by____% of people | | | | | | | | | | | |
| Disliked by____% of people | | | | | | | | | | | |
| I am in the top____% of the dominant people in my social group | | | | | | | | | | | |

6. Please indicate the best response for each statement based on your own experiences:

| Usually I am……. | Not at All | Slightly | Neither yes nor no | Somewhat | Very Much |
|---|---|---|---|---|---|
| Socially Dominant | | | | | |
| Popular | | | | | |
| Cooperative | | | | | |
| Healthy | | | | | |
| Coercive (making others do what you want) | | | | | |
| Prosocial (helping others) | | | | | |
| Empathetic (feeling what others feel) | | | | | |
| Stressed | | | | | |
| Satisfied with life | | | | | |
| Happy | | | | | |

**Appendix C**

**Resource Control Strategy Inventory (RCSI)**

Answer the following questions based on your daily life

| | | | | | |
|---|---|---|---|---|---|
| 1.) I am kind and agreeable | Strongly disagree [ ] | Tend to disagree [ ] | Neither agree nor disagree [ ] | Tend to agree [ ] | Strongly agree [ ] |
| 2.) I gossips or spreads rumors about others if I am mad at them | Strongly disagree [ ] | Tend to disagree [ ] | Neither agree nor disagree [ ] | Tend to agree [ ] | Strongly agree [ ] |
| 3.) I am good at getting what I want | Strongly disagree [ ] | Tend to disagree [ ] | Neither agree nor disagree [ ] | Tend to agree [ ] | Strongly agree [ ] |
| 4.) I tell my friends to stop liking someone in order to get what I want | Strongly disagree [ ] | Tend to disagree [ ] | Neither agree nor disagree [ ] | Tend to agree [ ] | Strongly agree [ ] |
| 5.) I have good ideas or suggestions that others like to follow. | Strongly disagree [ ] | Tend to disagree [ ] | Neither agree nor disagree [ ] | Tend to agree [ ] | Strongly agree [ ] |
| 6.) I am the kind of person who ignores others or stops talking to them | Strongly disagree [ ] | Tend to disagree [ ] | Neither agree nor disagree [ ] | Tend to agree [ ] | Strongly agree [ ] |
| 7.) I am chosen by others to lead the group | Strongly disagree [ ] | Tend to disagree [ ] | Neither agree nor disagree [ ] | Tend to agree [ ] | Strongly agree [ ] |
| 8.) I push, kick, or punch other because I have been angered by them | Strongly disagree [ ] | Tend to disagree [ ] | Neither agree nor disagree [ ] | Tend to agree [ ] | Strongly agree [ ] |

| | Strongly disagree | Tend to disagree | Neither agree nor disagree | Tend to agree | Strongly agree |
|---|---|---|---|---|---|
| 9.) I know how to make someone smile | [ ] | [ ] | [ ] | [ ] | [ ] |
| 10.) I make others do what I want | [ ] | [ ] | [ ] | [ ] | [ ] |
| 11.) I usually get attention from others | [ ] | [ ] | [ ] | [ ] | [ ] |
| 12.) I have difficulty sitting still during lessons. I fidget uneasily in my seat, and may also be talkative and noisy | [ ] | [ ] | [ ] | [ ] | [ ] |
| 13.) I can tell how others are feeling | [ ] | [ ] | [ ] | [ ] | [ ] |
| 14.) I say mean things to others | [ ] | [ ] | [ ] | [ ] | [ ] |
| 15.) I start fights to get what I want | [ ] | [ ] | [ ] | [ ] | [ ] |
| 16.) I am thorough and make plans | [ ] | [ ] | [ ] | [ ] | [ ] |
| 17.) I force others to follow my plans | [ ] | [ ] | [ ] | [ ] | [ ] |

**Appendix D**

# TEIQue-SF

*Instructions:* Please answer each statement below by putting a circle around the number that best reflects your degree of agreement or disagreement with that statement. Do not think too long about the exact meaning of the statements. Work quickly and try to answer as accurately as possible. There are no right or wrong answers. There are seven possible responses to each statement ranging from 'Completely Disagree' (number 1) to 'Completely Agree' (number 7).

1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5 . . . . . 6 . . . . . 7

**Completely Disagree** — **Completely Agree**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. Expressing my emotions with words is not a problem for me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. I often find it difficult to see things from another person's viewpoint. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. On the whole, I'm a highly motivated person. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. I usually find it difficult to regulate my emotions. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. I generally don't find life enjoyable. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. I can deal effectively with people. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. I tend to change my mind frequently. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. Many times, I can't figure out what emotion I'm feeling. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. I feel that I have a number of good qualities. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. I often find it difficult to stand up for my rights. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11. I'm usually able to influence the way other people feel. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12. On the whole, I have a gloomy perspective on most things. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13. Those close to me often complain that I don't treat them right. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 14. I often find it difficult to adjust my life according to the circumstances. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 15. On the whole, I'm able to deal with stress. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16. I often find it difficult to show my affection to those close to me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 17. I'm normally able to "get into someone's shoes" and experience their emotions. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 18. I normally find it difficult to keep myself motivated. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 19. I'm usually able to find ways to control my emotions when I want to. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 20. On the whole, I'm pleased with my life. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 21. I would describe myself as a good negotiator. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 22. I tend to get involved in things I later wish I could get out of. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 23. I often pause and think about my feelings. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 24. I believe I'm full of personal strengths. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 25. I tend to "back down" even if I know I'm right. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 26. I don't seem to have any power at all over other people's feelings. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 27. I generally believe that things will work out fine in my life. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 28. I find it difficult to bond well even with those close to me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 29. Generally, I'm able to adapt to new environments. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 30. Others admire me for being relaxed. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

## Appendix E

### Questionnaire of Cognitive and Affective Empathy (QCAE).

| People differ in the way they feel in different situations. Below you are presented with a number of characteristics that may or may not apply to you. Read each characteristic and indicate how much you agree or disagree with the item by ticking the appropriate box. Answer quickly and honestly. | | Strongly agree | Slightly agree | Slightly disagree | Strongly disagree |
|---|---|---|---|---|---|
| 1. | I sometimes find it difficult to see things from the 'other guy's' point of view. | | | | |
| 2. | I am usually objective when I watch a film or play, and I don't often get completely caught up in it. | | | | |
| 3. | I try to look at everybody's side of a disagreement before I make a decision. | | | | |
| 4. | I sometimes try to understand my friends better by imagining how things look from their perspective. | | | | |
| 5. | When I am upset at someone, I usually try to 'put myself in his shoes' for a while. | | | | |
| 6. | Before criticising somebody, I try to imagine how I would feel if I was in their place. | | | | |
| 7. | I often get emotionally involved with my friends' problems. | | | | |
| 8. | I am inclined to get nervous when others around me seem to be nervous. | | | | |
| 9. | People I am with have a strong influence on my mood. | | | | |
| 10. | It affects me very much when one of my friends seems upset. | | | | |
| 11. | I often get deeply involved with the feelings of a character in a film, play or novel. | | | | |
| 12. | I get very upset when I see someone cry. | | | | |
| 13. | I am happy when I am with a cheerful group and sad when the others are glum. | | | | |
| 14. | It worries me when others are worrying and panicky. | | | | |
| 15. | I can easily tell if someone else wants to enter a conversation. | | | | |
| 16 | I can pick up quickly if someone says one thing but means another. | | | | |
| 17. | It is hard for me to see why some things upset people so much. | | | | |
| 18. | I find it easy to put myself in somebody else's shoes. | | | | |
| 19. | I am good at predicting how someone will feel. | | | | |
| 20. | I am quick to spot when someone in a group is feeling awkward or uncomfortable. | | | | |
| 21. | Other people tell me I am good at understanding how they are feeling and what they are thinking. | | | | |
| 22. | I can easily tell if someone else is interested or bored with what I am saying. | | | | |
| 23. | Friends talk to me about their problems as they say that I am very understanding. | | | | |
| 24. | I can sense if I am intruding, even if the other person does not tell me. | | | | |
| 25. | I can easily work out what another person might want to talk about. | | | | |

| | | Strongly agree | Slightly agree | Slightly disagree | Strongly disagree |
|---|---|---|---|---|---|
| 26. | I can tell if someone is masking their true emotion. | | | | |
| 27. | I am good at predicting what someone will do. | | | | |
| 28. | I can usually appreciate the other person's viewpoint, even if I do not agree with it. | | | | |
| 29. | I usually stay emotionally detached when watching a film. | | | | |
| 30. | I always try to consider the other fellow's feelings before I do something. | | | | |
| 31. | Before I do something I try to consider how my friends will react to it. | | | | |

## Appendix F

### IRB Approval

Date: 3-28-2021

IRB #: IRB-FY2021-86
Title: Nature vs. Nurture: Examining the role that Oxytocin Polymorphism Receptors and Early Childhood Environments Play on Adult Social Interactions
Creation Date: 8-26-2020
End Date:
Status: Approved
Principal Investigator: Amber Abernathy
Review Board: MSU
Sponsor:

#### Study History

| Submission Type | Review Type | Decision |
|---|---|---|
| Initial | Expedited | Approved |

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