EXAMINING MORAL IDENTITY FROM MULTIPLE PERSPECTIVES IN ORDER TO PROMOTE ITS DEVELOPMENT

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Abstract

Moral identity is generally defined as considering moral values important to an individual's overall sense of self. It has received much attention in the field for being significant for helping to promote moral behavior. Because of this, the current dissertation conducted three studies to explore different aspects related to moral identity. Study 1 applied Bronfenbrenner's ecological model to longitudinal data from the Civic Purpose Project in order to investigate the best predictors for moral identity two years after Time 1. Results showed that ethnic identity was the most significant predictor, along with school climate and school and neighborhood support. Study 2 investigated the best model for predicting beyond-the-self (BTS) motivation using moral identity and empathic traits. Results showed moral identity symbolization and perspective taking were the most significant predictors, along with moral identity internalization and empathic concern. Finally, Study 3 conducted a reanalysis of fMRI data in order to investigate the neural correlates of selfhood when responding to various moral violations. Results showed that the medial prefrontal cortex and posterior cingulate cortex differently interacted with brain areas such as supplementary motor area, hippocampus, and fusiform gyrus depending on intentionality and type of violation. Implications for promoting development of moral identity and moral behavior are discussed.

Dedication

This dissertation is for a woman who has dedicated her life to helping lessen the suffering of others - my sweet yet fierce mom. Although life has tested her, she has never wavered in being the most moral individual I have ever known. Thank you for instilling in me a great love for knowledge and for showing me its power.

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General Introduction

The relationship between moral thought and moral behavior in reality is of great significance to not only moral educators but also society as a whole. One previous study suggests that moral behavior has a significant impact on happiness, finding that the strongest gain in happiness occurred after people witnessed a moral act and the strongest loss in happiness after witnessing an immoral act (Hofmann et al., 2014). Furthermore, as Hart et al. (1998) put it, when people behave morally, communities benefit, such as people that are hungry being fed. If this is the case, it is well within everyone's interest to promote as much moral action as possible.

In order to promote moral behavior specifically in students and effectively develop moral educational interventions, it is first necessary to understand what factors translate into moral behavior. Answering this question has proven difficult, however, and there is still widespread disagreement about how to connect moral thought and moral action. Indeed, there is a well-known gap between moral thought and moral action that continues to trouble moral psychologists (Blasi, 1980).

Although moral reasoning received a great deal of attention from founders of the field, namely Kohlberg, it is now largely considered insufficient by itself for explaining moral behavior in reality (Shao et al., 2008). Rather, in the social intuitionist model, moral reasoning has been suggested as a process that occurs *after* moral intuition or action, to explain to oneself why they intuitively made a certain judgment about moral information or acted in a certain way (Haidt, 2001). If the process of having students reason through problems such as hypothetical moral dilemmas that are largely unrelated to their actual experiences is not supported by

empirical evidence of promoting moral behavior, this is of course problematic for moral educators. This is highlighted by the fact that even after moral reasoning has been called into question for being effective at promoting moral behavior, it has still been suggested as a point of emphasis for schools to teach their students (Dolph & Lycan, 2008). If, as the previous research suggests, moral reasoning does not effectively promote moral behavior, teaching students how to work through moral dilemmas may sharpen moral reasoning skills but fail to encourage moral beings.

Over the years there have been numerous other proposed mechanisms to bridge this gap between moral thought and moral action, from single components to multicomponent models (Darnell et al., 2019). Single components that have been proposed include moral identity and moral emotion whereas multicomponent models include the four-component model (Rest, 1984) and even the Aristotelian concept of *phronesis,* or practical wisdom, has received attention for potentially bridging this gap (Walker, 2004). This dissertation seeks to take a closer look at the singular component of moral identity and how it might be included in multicomponent models that have shown promise in better understanding why there may be a discrepancy between moral thought and moral action. First, however, it may be helpful to consider the foundation of the field in order to put moral identity into context.

Moral Judgment and Neo-Kohlbergians

Kohlberg's theory of moral development posited that there are six distinct stages that comprise the development of moral reasoning which individuals progress through over the course of their lives in a linear fashion (Kohlberg & Hersh, 1977). The first stage is the preconventional level which can be broken down into two stages: the punishment-and-obedience orientation and the instrumental-relativist orientation. The second stage is the conventional level

which has two stages: the interpersonal concordance orientation and the “law and order” orientation. Finally, the third stage is the postconventional level which consists of the social-contract legalistic orientation and the universal-ethical-principle orientation. Kohlberg believed that the social interactions within an individual’s environment influence the stage of moral development they progress to and their moral reasoning.

The Neo-Kohlbergian approach keeps many of Kohlberg’s ideas intact, however one key difference is the shift from the six stages of moral development to three moral schemas: personal interest, maintaining norms, and postconventional (Rest et al., 2000). The shift from stages to schemas was meant to signal that Neo-Kohlbergians believe in less developmentally distinct stages, and rather that as people get older they tend to utilize more complex schemas more frequently. These moral schemas are thought to play a key role in processing information relevant to morality due to being stored in long-term memory (Walker, 2002). Here it is noted that one key advantage of schemas over stages of moral development is that they are more sensitive to situational factors and context and less focused on cognitive processing.

Although Kohlberg contributed a great deal to the field of moral psychology, as previously mentioned, his focus on moral reasoning has not been shown to explain the gap between moral thought and moral action. This is not to say that it is not important, but just that it does not explain the whole picture. It has been found that moral reasoning accounts for about 10% of moral action (Walker, 2004). Kohlberg expanded his theory and proposed that responsibility judgment (Kohlberg & Candee, 1984), or individuals believing that they have a responsibility to act, may bridge this gap. However, one previous study found an insignificant relationship between academic cheating and responsibility judgement (Stephens, 2018). Responsibility judgment did however mediate the relationship between academic cheating and

moral disengagement, so it may be an important factor, but again not enough to bridge the gap between moral thought and moral action. Although this has led to a push for moving beyond moral reasoning (Saxena & Babu, 2013; Shao et al., 2008), an interpretation more helpful to the field of moral psychology may be that single factors are unlikely to bridge the desired gap. This is similar to other suggestions in the field that a single component cannot make moral thought and action align. Since morality is such a complex concept, previous suggestions state that it is unlikely that the solution is any one single component (Darnell et al., 2019).

Some previous studies of moral judgment support this idea. For example, one previous study examined how appealing to moral identity might enhance moral judgment and lead to more moral behavior (Neesham & Gu, 2015). This study found that by having students reflect on a different moral trait each week and write about themselves using the moral trait for nine weeks, their moral judgment intensity was increased. The authors suggest that appealing to moral identity may provide the affective component that teaching methods strictly relying on moral judgment do not provide. This suggests that moral judgment and moral identity may be able to work together in order to strengthen one's sense of morality.

The Four-Component Model

Along with this, Neo-Kohlbergians have acknowledged the view that single component solutions for explaining the relationship between moral thought and moral action are insufficient (Walker, 2002). As a result, they developed the four-component model in which they suggested the following components work together to produce moral behavior: moral sensitivity, moral judgment, moral motivation, and moral character (Rest, 1986). Since, as will be discussed, moral identity can be considered a source of moral motivation, this model supports the idea that moral judgment and moral identity may work together, along with moral sensitivity and moral

character, to produce moral behavior. Narvaez and Lapsley (2008) describe each of the four components in the model as “a ‘toolkit’ of subskills” that can be taught to students (p.4).

The current dissertation focuses on how one of the components, moral motivation, might be strengthened and taught to students through developing a sense of moral identity, along with incorporating other factors important for morality, such as empathy, which goes along with the component of moral sensitivity. Empathy and identity may be highly related because empathy requires an individual to differentiate between the other person and themselves in order to understand what they might need, as well as understanding that what another person needs might be different from what they would need (Narvaez & Rest, 1995). Narvaez and Rest (1995) note that many factors can influence the impact of empathy on moral behavior, such as ambiguity (Staub, 1978). This goes along with recent debates suggesting that empathy may motivate people to care deeply for those close to them while overlooking those in outer circles (Bloom, 2017; Graham et al., 2017; Singer, 2015). Therefore, it may be especially important to find various ways to expand circles of moral regard so that empathy can be felt and acted on for as many people as possible. Some previous studies suggest that moral identity and empathy may be able to work together to produce moral behavior while only employing one (i.e., moral identity) may not result in moral behavior (Lee et al., 2014).

Moral Identity

Among the different components that have been proposed to result in moral behavior, moral identity has received much attention for its promise in explaining the connection between moral thought and moral action. Moral identity, although it has been defined in many ways, can best be understood as feeling as though one’s morality is important to their sense of self (Hardy et al., 2020). It has been suggested to be an important factor for promoting moral behavior

because people are often motivated to behave in a way that aligns with how they see themselves. In other words, people act in a way to avoid cognitive dissonance that may result from behaving contrary to the person they think that they are (Mulder & Aquino, 2013).

Of course, the extent to which an individual sees morality as important to their selfhood influences how morally they would need to behave in order to stay aligned with how they view themselves. A person that does not have a strong sense of moral identity would not be uncomfortable behaving less morally (Blasi, 2004). In line with this, Mulder and Aquino (2013) found that individuals with high levels of moral identity were extremely motivated to behave morally after acting immorally (lying, in this case) in order to reaffirm their moral view of themselves. On the other hand, those with low levels of moral identity continued to behave consistently regardless of whether their behavior was moral or not. Still, other studies have shown that high levels of moral identity may provide people with the permission to behave immorally through moral licensing (Conway & Peetz, 2012). An important goal may therefore be to learn how to instill a strong sense of moral identity in people that also has an emphasis on considering others.

Measuring Moral Identity

Some previous studies argue that moral identity is no better at accounting for moral behavior than any other predictor that has been proposed (Hertz & Krettenauer, 2016). However, to determine if this is truly the case, it is first necessary to come to an agreement as to how to measure the construct. Most studies involving moral identity rely on self-report measures that can be categorized into explicit and implicit measures. Explicit measures such as the Good-Self Assessment (Arnold, 1993) and Moral Identity Scale (Aquino & Reed, 2002) directly ask participants about moral traits and how important it is to them that they have each trait. Implicit

measures such as the Implicit Association Test (Perugini & Leone, 2009) measure participants' reaction time when viewing a moral trait and classifying it as either moral or immoral and related to the self or other. From the previous research, there is a clear distinction between these two categories, often concluding significantly different results based on which was used.

For instance, implicit measures of moral identity in particular are often suggested to have greater accuracy in predicting actual moral behavior. One previous study using the IAT found that implicit moral identity, but not explicit moral identity, was predictive of moral outrage (measured by heart rate and diastolic blood pressure) after listening to recordings of people sharing opinions that violated different moral values (Johnston et al., 2013). However, the situation is not quite as simple as implicit measures accurately predicting moral action and explicit measures failing to do so. For instance, Johnston et al. (2013) measured implicit moral identity using the Good-Self Assessment (Arnold, 1993), which is a different measure than many studies of moral identity use and therefore more difficult to compare (Ding et al., 2018; Reynolds & Ceranic, 2009; Winterich et al., 2013). Additionally, their measure of implicit moral identity was introduced by Perugini and Leone (2009), who developed their measure based on the original IAT (Greenwald et al., 1998), which has been questioned for its validity, including its predictive validity (Schimmack, 2021).

Further, there are also examples of explicit measures of moral identity predicting moral behavior. For instance, one previous study explicitly measured moral identity using the Ideal Self Value Ratings, which was adapted from previous studies (Arnold, 1993; Pratt et al., 1998; Pratt et al., 1999) and found a significant association between moral identity and community involvement (Pratt et al., 2003). Importantly, this was true for both Time 1 and Time 2, which occurred two years apart. Thus, in order to better understand the relationship between moral

identity and moral behavior, it may be necessary to first agree upon how to measure the construct.

Although there is not yet a consensus as to the best measure of moral identity, the Moral Identity Scale (Aquino & Reed, 2002) is one of the most commonly used, which provides two categories for moral identity: internalization and symbolization. Internalization refers to the private experience of thinking about one's sense of morality and feeling as though it is important. Symbolization refers to the outward expression of morality, such as charitable actions or personal items such as clothing. Further complicating the study of moral identity, it is fairly common for studies using the MIS to only use the internalization subscale of the measure, or to combine both subscales into one overall moral identity scale (Hardy et al., 2013; Wu & Yang, 2018). There is rarely a rationale for excluding the symbolization subscale, however previous studies that do include it suggest it is important. For example, one previous study found that symbolization is significantly negatively associated with immoral traits (Glenn et al., 2010). This inconsistency with the way the measure is used could further account for contradictory findings within the moral identity literature.

Although there is not yet a consensus about measuring moral identity or its exact role in prosocial behavior, one previous study by Colby and Damon (1992) is particularly compelling for the importance of moral identity in contributing to moral behavior. In this study, the authors highlighted how moral exemplars, ordinary people who displayed extraordinary moral behavior, spontaneously provided evidence of a strong moral identity when interviewed about their moral behavior. This study is often cited as support for the impact moral identity has on moral behavior due to its findings that the moral exemplars' sense of self and sense of morality were closely

intertwined. However, qualitative studies such as this one that interview participants about having a sense of moral identity are rare.

Promise of Moral Identity

First, it is possible that the relationship between moral identity and moral behavior is not sufficient to fully explain the gap between moral thought and moral action due to other factors playing an important role. For instance, moral intuition and emotion have often been suggested as key factors that impact moral action (Leavitt et al., 2016; Navarrete et al., 2012; Nelissen et al., 2013; Teper et al., 2015). Most relevant to moral identity, Leavitt et al. (2016) suggest that moral intuition may be used to access the positive benefits of having a strong sense of moral identity, even for people who report that they do not have strong moral identity.

Still, previous research investigating moral identity suggests that it is significant enough to warrant further investigation. In the previously mentioned study by Colby and Damon (1992), they found a common theme in the moral exemplars that they interviewed of being committed to moral behavior even in the face of extreme challenges. Although "personal concerns [are] inseparable from moral ones" (p.17) for moral exemplars, they note that if there was an option to abandon morals or make personal sacrifices, they would choose to make personal sacrifices. This suggests the importance of moral identity for helping people to behave morally consistently, even when it is not easy.

In other studies, moral identity has been thoroughly explored for influencing how people see and treat members of an out-group. For example, Reed II and Aquino (2003) extended findings that moral identity helps people expand their circle of moral regard and investigated how it affects attitudes towards out-group members even amid conflict. Their findings suggest that moral identity, specifically internalization, may not only make people more willing to help

strangers in an out-group, but also lead to people choosing to donate to members of an out-group over members of an in-group even after intergroup conflict (donating to Afghani women over New York Police five months after September 11th in this case).

Similar to this study, having a high sense of internalized moral identity has also been shown to mitigate the potential downsides of endorsing binding moral foundations such as in-group loyalty and authority/respect, resulting again in an increased circle of moral regard (Smith et al., 2014). The authors found that those who endorsed the binding foundations were in support of torture and withholding help from an out-group, but this was only true for participants with low moral identity. This is a significant finding since binding foundations are often associated with less moral behavior (Clark et al., 2017). However, this study suggests that no matter what moral foundations somebody endorses, moral behavior can be encouraged through an increased sense of internalized moral identity.

In addition to helping extend moral beliefs to members of perceived out-groups, moral identity has also been shown to moderate the relationship between trait anger and cyberbullying (Wang et al., 2017), as well as between moral disengagement and aggression and self-regulation and rule breaking (Hardy et al., 2015). Internalized moral identity has even been shown to increase green consumption, which is defined as being mindful of product choices and behaviors that positively influence the environment, as long as there is a perceived responsibility for environmental damage (Wu & Yang, 2018).

From these studies, there is evidence that moral identity might be best understood as a factor that either moderates or mediates the relationship between other moral indicators and moral behavior. In fact, it has been suggested to buffer against factors that increase immoral behavior, such as moral disengagement and aggression (Detert et al., 2008; Teng et al., 2020).

This could also help explain the discrepancy that is sometimes found in previous research regarding whether moral identity increases moral behavior. As was the case with Wu and Yang's (2018) study, there may be situational factors interacting with moral identity that affect the behavioral outcome.

Influences on the Development of Moral Identity

Even with mounting evidence that moral identity plays a significant role in motivating prosocial behavior, little work has been done that considers the influences in an individual's life that help develop a strong sense of moral identity. For example, individual level factors such as parental and school influence have received little attention for impacting students' moral identity development. Previous research looking at parental influence on other moral indicators such as moral disengagement, which was discussed previously as having negative associations with moral identity, has shown that poor parenting increases moral disengagement (Campaert et al., 2018). Since moral disengagement and moral identity have been shown to be negatively correlated (Hardy et al., 2015), this may suggest that moral identity could be influenced by quality of parenting.

Another study that investigated the influence of parents on morality distinguished between external and internal morality, which refers to the influence of outside sources and self-interest, respectively (White & Matawie, 2004). Although these constructs are not equivalent to internalization and symbolization of moral identity, they do have similarities that may suggest how parents influence the two subcomponents of moral identity differently. The authors found that parents' external morality significantly predicted adolescents' external morality when families were emotionally close, rules and the different roles that family members play were flexible, and there was positive communication. Importantly, parents' external morality did not

significantly predict adolescents' internal morality. This study highlights that although parents may play an important role in moral identity development, adolescents have their own private experience with matters relating to morality that may be influenced by other factors.

One of those other factors that might be especially important is the school that adolescents attend. A previous study that investigated school climate in 188 schools found a significant effect of school on self-esteem and depression (Brand et al., 2003). They found that students were better able to adjust to school when their peers were dedicated to their schoolwork and prosocial behavior, as well as when they had the support of their teachers. This suggests that peers and teachers within a school may significantly influence a student's well-being and potentially influence their sense of morality.

Evolutionary Basis of Morality

When considering how to promote moral behavior and teach students moral values, it is beneficial to consider the biological and evolutionary basis. Krebs (2008) outlines four stages introduced by Darwin (1874) that he thought led to a sense of morality. These are: developing prosocial instincts, developing a conscience through intellectual abilities, developing language acquisition which provides a method for a common good to be expressed, and social learning encouraging behavior that aligned with this common good of the community. Although some of the ideas proposed by Darwin (1874) are outdated, Krebs (2008) believes that these four stages are still relevant today.

Further, Brosnan (2011) explains the evolution of moral behavior in terms of equity. When somebody is experiencing inequity, there is a clear advantage to changing his or her behavior in order to have a more favorable outcome. However, when somebody notices another person experiencing inequity, the benefit of changing his or her behavior is less obvious. The

author suggests several likely possibilities that motivate changing behavior in this case, such as signaling to others that the person is a good social partner, increasing positive reputation, and the positive emotions one experiences from helping others. This goes along with Aristotle's belief that interpersonal relationships are a necessary part of flourishing, or eudaimonia, because of the highly social nature of human beings (Fowers, 2016). Related to evolution, this may suggest that behaving morally may help to achieve eudaimonia because it emphasizes actions that express one's human potential. However, what a eudaimonic life actually looks like may differ from person to person because of people's unique skills, opportunities, etc. (Fowers, 2016). This may also be true of moral behavior in that the motivation to be a good social partner, help people, etc. may be present naturally, but may be expressed differently.

The social nature regarding the evolution of morality goes along with another perspective that posits morality was essential in order to survive living in groups (Hamlin, 2013). One important component for this successful group living was cooperation. Hamlin explains that cooperation requires three factors of morality: moral goodness, moral evaluation, and moral retribution. Interestingly, recent research has begun to explore the presence of this sense of morality and cooperation present in infants, suggesting that humans may have at least some innate sense of morality (Haidt & Joseph, 2007).

Related to the social nature of the evolution of morality, others suggest a significant role of empathy for developing morality that evolved from primates and their ability to function in group settings (Manner & Gowdy, 2008). Decety (2014) explains that evolution shaped our brains to care about the suffering of others in addition to being highly social. Since relationships are essential to humans so much so that they feel a sense of threat and even physical pain when their

social relationships are in danger (Eisenberger, 2012), empathy and morality help to take care of those relationships.

Considering the evolutionary basis of morality may be important for moral education since, as Haidt and Joseph (2007) suggest, it may be easiest and most intuitive to teach values that may be innate in humans. Additionally, teaching skills such as cooperation, empathy, and communication skills that facilitate social functioning may be further supported by looking at these skills through a lens of morality. As Immordino-Yang and Damasio (2007) explain, the human brain evolved to use emotion in order to monitor and respond to the current state of one's body, and this process is highly involved with the learning experience. Importantly, this view sees skills such as mathematical skills and skills that contribute to morality such as emotional-regulation skills as complementary to each other.

Implications for Education

One advantage of considering the many different factors influencing an individuals' sense of moral identity is that it provides multiple pathways for intervention. For example, conflict between parents and low moral identity were both found to foster moral disengagement in one previous study, increasing the risk of cyberbullying (Yang et al., 2018). This suggests that encouraging a positive relationship with parents as well as helping individuals to develop a sense of morality that is intertwined with their sense of self may help to reduce behaviors considered immoral, such as cyberbullying.

Moral disengagement has consistently been found to be a powerful method of disconnecting from how an immoral act may affect others, through mechanisms such as dehumanization and downplaying agency (Bandura, 2002). Therefore, moral identity's negative association with moral disengagement may indicate a point of emphasis for intervention. That is,

helping people to develop a sense of moral identity through acknowledging the agency behind their actions, while also connecting with how others are impacted by actions in order to discourage disengagement, may be effective in promoting moral behavior. One previous study implemented an intervention targeted towards this relationship between moral identity and moral disengagement and found a decrease in likelihood of doping for athletes (Stanger & Backhouse, 2020). Similar interventions have the potential to be applied to various domains by identifying common mechanisms for morally disengaging and designing interventions to discourage those mechanisms. For example, in the study by Stanger and Backhouse (2020) they identified diffusion of responsibility as one of the commonly used mechanisms to justify doping, so in order to experimentally manipulate low moral disengagement, a situation was described where the athlete's coach was supportive and did not pressure the athlete. Such a concept has a clear translation to students in classrooms and their communities, as they may employ diffusion of responsibility depending on how their teachers, friends, parents, etc. influence their behavior. Combining methods for increasing moral identity while decreasing moral disengagement may offer an effective way to decrease unwanted behavior.

Aside from promoting moral behavior, there is also evidence that helping students to develop a strong sense of moral identity may increase their overall well-being. One previous study found that individuals who scored higher on moral identity had decreased anxiety and depression as well as higher meaning and self-esteem (Hardy et al., 2013). Importantly, the authors point out some previous research (Berman et al., 2008), which makes the point that although there are positive benefits that come from developing a sense of identity (i.e. moral behavior, well-being, decreased disruptive behavior), it is also an important endeavor in itself. Especially for students experiencing important transitions in their lives, such as entering college,

when they may be struggling with their identity, it may be worthwhile to help them explore the type of person they want to be in order to feel more secure.

Positive Youth Development

Complementary to considering how to promote moral behavior in youth is the positive youth development (PYD) approach, which emphasizes the potential that children have and strays away from focusing on the many possible setbacks and risks that children often face. The Five Cs of PYD (competence, confidence, character, connection, and caring) are thought to develop and result from programs that take a PYD approach and focus on the potential strengths of youth (Bowers et al., 2010; Heck & Subramaniam, 2009). Fundamental to this approach, among other things, is the concept of plasticity and the belief that people can change significantly. In addition, PYD holds the belief that children are capable individuals that can positively contribute to society. It shifts away from focusing on the potential ways that youth can go down the wrong path and how to overcome these challenges, and aims instead to foster each individual's ability to thrive no matter their circumstances (Damon, 2004). Importantly, this approach encompasses all youth no matter their history or background.

PYD has great relevance to the discussion of bridging the gap between moral thought and moral action because of the emphasis on the interaction between children and their communities (Damon, 2004). Some of the aims of PYD that are particularly relevant to moral behavior are to promote emotional competence and provide recognition for prosocial behavior. Having a strong sense of social and emotional competence and being able to recognize emotions in one's self and others has been suggested for promoting prosocial values and aiding in building strong relationships (Jennings & Greenberg, 2009). Additionally, providing encouragement for positive behavior, even in small ways such as displaying names on a website, has been shown to foster

moral behavior for those with low scores for internalization of moral identity (Winterich et al., 2013). Encouraging children to positively interact with their community and recognizing them for this positive interaction, in addition to teaching them skills such as emotional intelligence (Salovey & Mayer, 1990), may be one feasible way to create consistency between their ideas about morality and their actions. Finally, the PYD approach is described as "consciously holistic" (Damon, 2004, p. 19) because it considers how a child's entire community affects their development. This also makes it align with the multicomponent approach for exploring the relationship between moral thought and moral behavior. Because of this, the current dissertation incorporated this approach when possible.

Research Questions in Context

Study 1

Many factors that may influence moral identity development have scarcely been examined, such as the influence of parents, peers, schools, and community. In addition, the majority of moral identity research uses cross-sectional studies to look at participants' moral identity at one point in time (Jia et al., 2017; Reynolds & Ceranic, 2007). These studies have provided valuable insights about how moral identity relates to issues such as climate change and how moral identity interacts with moral judgment to influence behavior. However, questions about how moral identity changes over time and the factors that influence its development remain as long as cross-sectional surveys are the primary method used. Krettenauer et al.'s (2016) study looking at four different age groups (adolescence, emerging adulthood, young adulthood, and middle age) found that moral identity significantly increased as people got older, which suggests that there are important processes occurring even as people get older that affect their moral identity.

Although there have been ample suggestions that it is in fact important to study moral identity longitudinally (i.e., Hardy et al., 2014), few studies have done so. Furthermore, it has also been suggested that moral identity may be especially impacted by significant transitions in people's lives, such as when going from high school to college (Hardy et al., 2020). Here it is suggested that significant moments in life may need to be studied when examining the development of moral identity since these periods may not follow the same trends as otherwise seen. Indeed, moral reasoning has been found to be significantly affected by the first year of college for students, which one study found to be a result of taking courses focused on diversity (Mayhew et al., 2012). If students are faced with real-world issues that they have not yet considered during their first year of college, it would make sense that they begin to think about issues of morality more and as a result, may feel morality is more important to their sense of self.

Furthermore, studying moral identity during emerging adulthood is especially important due to several possible changes that have been found to occur during this time. For instance, one previous study found that meaning in life declined during this time, however this decline was less for those who had higher moral identity two years prior (Han et al., 2018). In addition, interest in politics, current events, and civic duties has also been shown to dramatically decline during freshman year of college (Damon, 2008; Sax, 2004). As past research has suggested, there may be a significant link between political purpose and moral identity (Metzger & Smetana, 2009), so it may be reasonable to suggest that emerging adults who are able to sustain a sense of moral identity may be more politically inclined. This is important because significant political events have been shown to influence youth's attitudes about the future, and opportunities for youth to get involved socially and politically may help to buffer against possible depression and feelings of hopelessness that might arise following significant current events (Godfrey et al.,

2019). For instance, one previous study found significant increases in concern about the future, including worries about the world ending and not being able to create meaning in their lives, for high school seniors that identified as Democratic or Independent following the 2016 election (O'Brien et al., 2021). Since moral identity has been found to increase active engagement in the community such as volunteering (Winterich et al., 2013), having a sense of moral identity during emerging adulthood may be especially important to help cope with the many challenges that may arise during this time.

Thus, Study 1 seeks to answer the following research questions: How do different levels of influence in a student's life impact their change in moral identity when transitioning from high school to college? Specifically, how do parental, peer, school, and ethnic community factors influence moral identity when making this transition? This study seeks to provide new insights as to how moral identity might change during significant developmental periods in one's life by conducting a two-wave analysis with two years in between Time 1 and Time 2. In addition, this study will apply Bronfenbrenner's ecological model to moral identity formation, which has not been done before. This will provide valuable information regarding the many factors that influence students and how all these factors differently influence their moral identity. As Hardy et al. (2020) suggest, the process of developing moral identity is not an isolated event only happening within an individual, but rather the context of the individual's environment plays a significant role and needs to be considered. This makes Bronfenbrenner's ecological model particularly useful for considering moral identity.

Study 2

Although the benefits of having a purpose in life have been discussed for years, some people lack purpose or struggle to ever identify their purpose (Damon et al., 2003). For these

individuals, this may have several negative outcomes such as negatively impacting relationships and contributing to depression (Damon, 1995). Additionally, as the PYD approach emphasizes, this may be unfortunate for communities as well due to the potential for adolescents to positively contribute to the world. In this way, identifying factors that predict purpose may be important for both society and individuals.

Since Study 2 is interested in how moral identity and empathy might promote purpose that is concerned with others, it focuses on the beyond-the-self (BTS) motivation component of purpose. In addition, as previously mentioned, moral identity is often referred to as providing the motivation for one to behave morally, since it is motivating to act in accord with how one views themselves. Likewise, moral identity has been suggested as an important variable for maintaining a purpose in life (Damon, 2004). Due to this, Study 2 seeks to provide new insight as to how this specific type of motivation, BTS motivation, is related to moral identity. Additionally, previous research has not investigated how the two subcomponents of moral identity, internalization and symbolization, may differently relate to BTS. This is significant because previous studies have shown different behavioral responses based on levels of the two subcomponents (Gotowiec & Mastrigt, 2019).

Furthermore, there has also not been previous research looking at the relationship between empathic traits and BTS motivation. Decety et al. (2011) suggest that empathy is an antecedent to moral judgment due to the fact that it makes an individual feel the pain of others and this serves as an indication that something needs to be done. Because of this, it would make sense that empathy is closely tied with a desire to help the world beyond oneself. Furthermore, empathy has shown strong associations with prosocial behavior (Klimecki et al., 2016; Masten et al., 2011), which would also make it likely that it has a significant relationship with BTS

motivation. Similarly to moral identity, the various subcomponents of empathy have also not been studied in relation to BTS motivation. This is important since it has been established that distinguishing between cognitive and affective components of empathy, in addition to personal distress experienced through empathy, may explain variations in behavior and outcomes (Decety & Yoder, 2016). Finally, since moral identity and empathy may interact with each other, it is necessary to examine them simultaneously in order to comprehensively understand how they influence BTS motivation.

Thus, Study 2 seeks to answer the following research questions: How do moral identity and empathic traits predict BTS motivation? How do the two subcomponents of moral identity, internalization and symbolization, relate to BTS motivation? How do three subcomponents of empathy, empathic concern, perspective taking, and personal distress, relate to BTS motivation? By answering these questions, Study 2 hopes to add to understanding of how these three factors may work together to promote purpose that is concerned with helping others.

Study 3

Due to the limitations of self-report measures in investigating how moral identity contributes to processing moral situations, it may be beneficial to explore the matter on a neural level. Ideally, this may lead to a better understanding of the psychological processes associated with moral functioning. If fMRI methodologies can demonstrate that networks of the brain associated with selfhood influence how moral information is processed, this can provide valuable insight and validation for the important role of moral identity. Because of this, Study 3 seeks to answer the following research questions: How does connectivity between networks of the brain associated with selfhood change when presented with moral violations? More specifically, how does connectivity between the Medial Prefrontal Cortex (MPFC) and Posterior Cingulate Cortex

(PCC), two areas of the brain that have been associated with selfhood, change when presented with moral information? Finally, how does connectivity in these regions differ when presented with accidentally harmful scenarios versus intentionally harmful scenarios? This study hopes to add to the evidence that a) the MPFC and PCC are significantly involved with processing information related to the self and b) that this plays an important role in processing moral information. If this is the case, this would provide further evidence to support the argument that selfhood is closely intertwined with one's sense of morality for individuals that are particularly concerned with behaving morally.

Basic Empirical Approach

Bayesian methodologies, supplemented by frequentist methodologies, will be used as an attempt to address concerns related to classical analysis. Many of the concerns related to frequentist methods are due to problems surrounding p-values, such as p-values being commonly misinterpreted, and the ease at which they can be 'hacked' in order to achieve significant p-values (Han et al., 2018). Despite these concerns regarding the use of frequentist analysis, there is a lack of Bayesian statistics specifically in educational research. This is in contrast to other fields such as medicine, psychology, and organizational science (König & van de Schoot, 2018). The main strength that Bayesian statistics has is the fact that it takes into account existing knowledge when analyzing the current data at hand, as opposed to testing a null hypothesis (Marsman & Wagenmakers, 2017). König and van de Schoot (2018) argue that this approach makes it possible for the knowledge gained from educational research to become cumulative. Further, they suggest that Bayesian statistics' emphasis on the actual data being analyzed, as opposed to basing inferences off hypothetical parameters, makes it all the more suitable for educational research and informing educational practices. Finally, specifically for model

selection, using Bayesian analysis allows for multiple models to be tested using regression analysis in order to identify the best model, as opposed to testing only one model using frequentist analysis (Raftery, 1995).

Study 1

Literature Review

Moral identity and moral behavior have been shown to be significantly aligned for people that display an exemplary sense of morality (Colby & Damon, 1992) but much of the research on moral identity has a small to moderate effect size on moral behavior (Hertz & Krettenauer, 2016). Because of this, further research is needed to determine exactly how and when moral identity is able to promote moral behavior. First, however, it may be necessary to understand the various factors that influence the development of moral identity. The positive youth development (PYD) approach along with Bronfenbrenner's ecological model (Bronfenbrenner, 1979) emphasize the need to examine how multiple different aspects in an adolescent's life may contribute to their moral identity development. As Damon (2004) suggests, all the different factors in the lives of youth need to support something for the effort to show. From this perspective, it may make sense why studies looking at isolated factors related to moral identity result in small to moderate effect sizes for moral behavior. It is possible that some areas of their lives are supportive of a strong sense of moral identity while others are not. Therefore, it is necessary to examine how the many factors in the diverse dimensions in an adolescent's life influence their moral identity development.

Bronfenbrenner's Ecological Model

Bronfenbrenner's ecological model (1979) takes into account how individuals are affected by factors close to them, such as family, as well as factors further removed from them such as community. Hardy et al. (2020) suggest that this model may be helpful in understanding

moral identity development, since it is clearly not an individual process but rather impacted by an individual's surrounding environment. According to the model, there are four levels that impact an individual's development: microsystem, mesosystem, exosystem, and macrosystem. Level 1, or the microsystem, refers to the individual's immediate environment that most obviously affects them. This includes several factors such as parents, peers, school, and neighborhood. Level 2, or the mesosystem, refers to the interaction between the systems in Level 1. For example, what an individual is taught at school may conflict with what is taught by their parents, an interaction that Level 2 is interested in. Level 3, or the exosystem, refers to factors that do not necessarily influence the individual directly, but rather influence something closely connected to the individual. For example, stress at an individual's parent's job may influence the parent and therefore the individual. Level 4, or the macrosystem, refers to broad context that the individual is in, such as community, culture, and values.

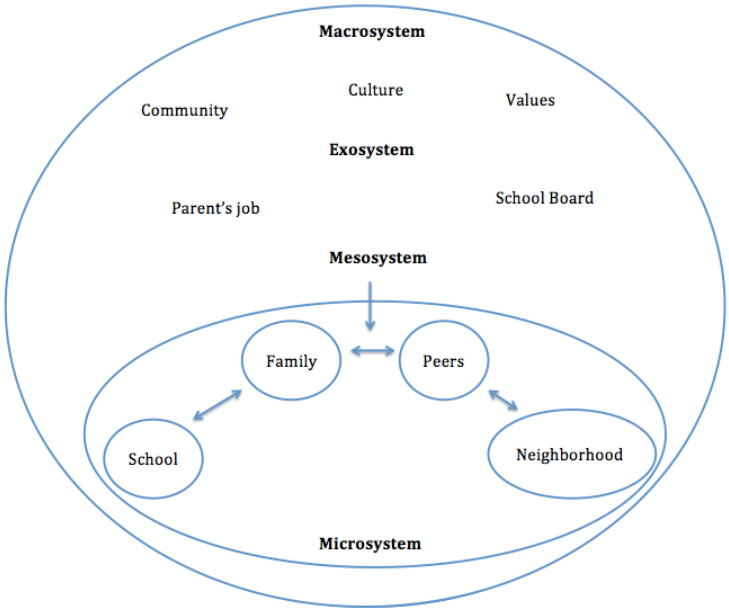


Figure 1. Diagram of the Levels of Bronfenbrenner's Ecological Model with Relevant Factors for Study 1

Although this model has not been applied to moral identity comprehensively in one study, how individual factors representing the different levels of the ecological model might influence moral identity has gained consideration. For instance, it has recently been suggested that the concept of moral identity is rooted in Western culture and in order to understand moral identity in other cultures, it may need to be conceptualized and measured differently (Jia & Krettenauer, 2017). Study 1 seeks to examine some of these individual levels together by exploring how parents, peers, school opportunities, attachment to the USA, and ethnic identity impacted participants' moral identity development during the transition from high school to one year after high school (college in most cases).

Parental Influence

There have been numerous significant findings from research investigating the relationship between parental influence and different aspects of morality in general. For instance, the authoritative parenting style, characterized by a loving relationship with open communication and high standards set for the child, has been shown to result in increased moral functioning and altruism for the child (Berkowitz & Grych, 1998). For moral identity development specifically, previous studies have primarily focused on parental influence when considering the different factors that may influence it. Patrick and Gibbs (2012) found that when parents expressed disappointed expectations while disciplining their children, there was a significant positive effect on moral identity, especially when children had a positive view of the discipline style. Importantly, the authors suggest that disappointed expectations let the child know they are capable of better and keep them in touch with their moral self. This suggests that parents' beliefs about their children's morality may significantly influence how children view themselves as moral beings. Along with this, authoritative parenting has also been found to be positively

correlated with adolescents' moral identity development (Hardy et al., 2010). This highlights how the style of parenting children are exposed to may significantly impact how they internalize their moral values and integrate them into their sense of self. Importantly, this internalized sense of morality along with the parents' expectation to be better may be a powerful source of encouragement to consistently engage in moral behavior in order to live up to those expectations as well as act in accord with the moral self.

Finally, Hart et al. (1999) found that time parents spent with their children significantly impacted their moral identity. However, they acknowledge the importance of considering other factors such as attachment to social institutions as well. The authors note that the influence a family has on a child's moral identity development is limited and other factors such as community, schools, and ethnicity also need to be explored. Although much more research investigating these other factors is needed, the following sections will review the previous research that has examined them.

School Influence

One model of moral identity emphasizes the importance of institutions to help students "observe, experiment with, and receive support for the enactment of moral action" to assist moral identity development (Atkins et al., 2004, p. 67). The authors highlight the role that school had in Nelson Mandela's moral identity development and how he was able to explore things like justice and fairness within the school. In addition, they note that school may have a significant impact on moral identity because students spend a great deal of time there, they form important relationships with adults, they are able to explore how their actions have consequences, and there is a moral environment in that schools are typically their own communities that teach values of fairness and justice. This goes along with Aldridge et al.'s (2016) suggestion that schools have

the opportunity to influence students' moral behavior by having a strong general agreement as far as what constitutes good and bad behavior. This is based on the idea that "high social consensus" about moral behavior requires less moral judgment (Reynolds & Ceranic, 2007).

However, it is possible that school influence is limited to an indirect effect on individuals, and peer influence is the main influential factor. For example, as suggested by Wang et al. (2019), students in the same school climate may either use moral disengagement or not as a result of the school climate, depending on their social connections. This was supported by their findings that school climate had a negative effect on cyberbullying for students who had friends with low moral identity, while this was non-significant for students with friends that had high moral identity. Importantly, this was due to the moderating role of friends' moral identity between moral disengagement and cyberbullying, but not between school climate and moral disengagement.

As for looking at the direct effect of school influence on students' moral development, the aforementioned study by Wang et al. (2019) found that school climate was not significantly associated with the moral identity of friends. Although they did not directly report school climate's association with individuals' moral identity, it is reasonable to assume this would not be a significant association either since they were all from the same pool of students. Taken together, these studies suggest that it is difficult to measure the effect of school influence on students' moral identity without also considering peer influence, a factor that will be discussed in the next section.

Peer Influence

As Wang et al. (2019) discuss, not all students are affected by school influence in the same way, which they attribute to peer influence and the social context of individuals in general.

Starting in adolescence, peers begin to have significant influence on morality in general, especially if those peers are considered deviant (Wang et al., 2020). However, these authors suggest that certain characteristics may affect how adolescents respond to the same environmental contexts, with one of these characteristics being moral identity. In fact, when they investigated the moderating role of moral identity, they found that although it did not moderate the direct association between deviant peer affiliation and bullying perpetration, it did moderate the indirect association via moral disengagement. This suggests that peer influence may be especially important for whether or not adolescents morally disengage, and as a result, behave morally or immorally. This goes along with another previous study that directly looked at the relationship between moral disengagement and bullying (Sijtsema et al., 2014). Results showed that starting in early adolescence, girls that had friends with low moral disengagement were less likely to bully but boys with friends high in moral disengagement were less likely to bully. The authors note that this discrepancy could be due to boys already showing increased bullying behavior.

These findings of high levels of moral identity buffering against the propensity to morally disengage is well-supported (Moore et al., 2012), however these studies extended these findings to include peer influence. Importantly, Wang et al. (2020) also found that moral identity was not significantly associated with deviant peer affiliation. This is in contrast to previous suggestions, therefore whether or not peers have significant influence on adolescents' moral identity needs further investigation.

Ethnic Identity Influence

Aldridge et al. (2016) suggest that ethnic identity is vital for the self-concept of people in minority groups. This is especially relevant for the sample in the current study, since the majority

of students were members of a minority group. Lapsley and Carlo (2014) highlight how there has been a shift from trying to understand morality from a universal perspective to understanding and acknowledging that different ethnic and racial groups may have a profound impact on individuals' moral development. They cite Knight and Carlo (2012) and de Guzman et al. (2005) which found that the values of youth's parents, ties to family, friends, and practices such as assigning chores influenced prosocial behavior. Importantly, these factors influenced prosocial behavior specifically due to the unique influence the specific cultures had on them.

From the previous studies on these many factors that relate to identity development, it is clear that many of the factors are related to each other and some overlap (Aldridge et al., 2016). Because of this, it would be beneficial to use the ecological model in order to consider all of these factors simultaneously and see how they contribute to the development of moral identity as a whole. As a result, the objective of the current study is to use school and neighborhood context, parent civic engagement, peer civic engagement, attachment to USA, and ethnic identity as predictors for moral identity at Time 2 and identify the best model.

Method

Participants and Procedures

Data for this study comes from the Civic Purpose Project, which is available at https://www.icpsr.umich.edu/web/civicleads/studies/36561?q=&sortBy=5. 1,578 high school seniors in three diverse regions in California were surveyed in the first wave before graduation. 480 of those participants (60.7% females; 40.4% Latino, 34.5% Asian, 4.7% Black, 6.1% white, 9.1% mixed ethnicity, 5.3% other ethnicity; 15.9% first generation immigrants) were surveyed 21 months later in the second wave and will be used for the final analysis. During Time 1, participants took an online survey during class time and 21 months later (Time 2) participants

were emailed a link and completed the survey again. Total scores will be used to measure each variable of interest in the surveys. They received twenty dollars in compensation for completing the survey at Time 2. In order to increase diversity of the sample, three different regions in California were selected based on having diverse populations of ethnicities, SES, and immigrants. 15.9% of participants were born outside of the United States. Additionally, 77.4% of participants' mothers were born outside of the United States and 77.9% of participants' fathers were born outside of the United States. Finally, 15.5% of participants said that they "Never" speak a language other than English in their home, while 38.4% responded "Always" and 46.0% responded "Sometimes."

Measures

Parents' Civic Engagement

Participants rated on a 5-point Likert-type scale how much they agreed with four statements regarding the civic engagement of their parents (*I talk to me parents/guardians about problems in society and political issues)*, Time 1 $\alpha = 0.83$.

School and Neighborhood Context

Participants rated on a 5-point Likert-type scale how much they agreed with nine statements regarding the opportunities they have in their school and communities (*Be involved in making decisions about my community)*, Time 1 $\alpha = 0.85$.

School Opportunities

Participants rated on a 5-point Likert-type scale how much they agreed with six statements regarding the opportunities available at their school (*At my school, there are opportunities to… Volunteer in the community)*, Time 1 $\alpha = 0.84$, Time 2 $\alpha = 0.86$.

Attachment to USA

Participants rated their level of agreement on a 5-poin Likert-type scale for five statements regarding feeling patriotic (*I feel strong, positive emotions when I see the American flag flying)*, Time 1 $\alpha = 0.85$, Time 2 $\alpha = 0.87$.

Moral Identity

Moral identity was measured using a subscale of a civic identity measure, in which participants rated how important six items were to their identity using a 4-point Likert-type scale (*willing to stand up for what I believe in)*, Time 1 $\alpha = 0.80$, Time 2 $\alpha = 0.83$. Since the moral identity scale within the civic identity measure has not been well validated, confirmatory factor analysis was conducted, which indicated excellent fit (χ^2 (9, N = 464) = 7.35, $p = .60$, CFI = 1.000, TLI = 1.007, RMSEA < .001, SRMR = .02). All factor loadings were ≥ .5.

Ethnic Identity

Participants rated their level of agreement on a 4-point Likert-type scale for twelve statements regarding ethnic identity (*I am happy that I am a member of the group I belong to)*, Time 1 $\alpha = 0.92$, Time 2 $\alpha = 0.92$.

Peer Civic Engagement

Participants rated their level of agreement on a 5-point Likert-type scale for three statements concerning the civic engagement of their peers (*I have close friends who do volunteer work in the community)*, Time 1 $\alpha = 0.70$, Time 2 $\alpha = 0.78$.

Analysis

Data for this study was analyzed using R. First, cross-sectional analysis was done for all the participants who completed Time 1 surveys in order to examine the relationship between moral identity, parents' civic engagement, school context, attachment to the United States, peer

civic engagement, and ethnic identity. Next, Bayesian Model Averaging (BMA) was done for the participants who completed both Time 1 and Time 2 surveys to explore how the previously mentioned factors predicted moral identity at Time 2. BMA is an alternative to frequentist methods, which allows for model exploration that is driven by actual observations within the data (Hinne et al., 2020). To do this, the *BMS* package in R (Zeugner & Feldkircher, 2015) was used, while assigning prior probabilities of 50% for candidate predictors. This means that school opportunities, parent civic engagement, peer civic engagement, community climate, supports, attachment to the United States, and ethnic identity have a 50% probability of being included in the model. These variables were entered as predictors and the best model was chosen from multiple models with different combinations of these predictors. This resulted in identifying the simplest model for predicting moral identity at Time 2. Along with Han and Dawson (2021), the best models that were identified by BMA were also compared with full models, which include all predictors, by comparing the Bayes Factor, Akaike Information Criterion (AIC), and Bayesian Information Criterion (BIC) between models. Regression analysis was also used in order to determine the estimate coefficient for the individual factors.

Results

Descriptive Statistics and Correlation Analysis

The descriptive statistics can be seen in Table 1. Correlation analysis results for Time 1 are reported in Table 2.

Table 1.

Descriptive Statistics for Time 1 and Time 2 Variables

Variable	Mean Time 1	SD	Mean Time 2	SD
ATTUSA	3.18	0.79	3.24	0.84
MORID	3.20	0.58	3.21	0.59
ETHNID	2.95	0.56	2.92	0.59

PARCIV	2.62	0.88	-	-
PEERCIV	3.75	0.82	3.10	0.96
SCHLOP	3.59	0.73	3.48	0.73
CMMCL	3.19	0.88	-	-
SCHCL	3.68	0.73	-	-
SPPRT	3.59	0.74	-	-

Note. ATTUSA: attachment to USA; MORID: moral identity; ETHNID: ethnic identity; PARCIV: parent civic engagement; PEERCIV: peer civic engagement; SCHLOP: school opportunities; CMMCL: community climate; SCHCL: school climate; SPPRT: supports.

Table 2

Correlations for Time 1 Variables

Variable	1	2	3	4	5	6	7	8
1. ATTUSA								
2. MORID	.20**							
3. ETHNID	.19**	.34**						
4. PARCIV	.22**	.13**	.16**					
5. PEERCIV	.22**	.27**	.21**	.40**				
6. SCHLOP	.23**	.28**	.21**	.16**	.30**			
7. CMMCL	.18**	.13**	.10**	.27**	.16**	.25**		
8. SCHCL	.26**	.17**	.17**	.14**	.17**	.42**	.49**	
SPPRT	.25**	.20**	.18**	.26**	.22**	.40**	.76**	.72**

Note. M and *SD* are used to represent mean and standard deviation, respectively. * indicates $p < .05$. ** indicates $p < .01$.

Bayesian Model Averaging

The best model for predicting Time 2 Moral Identity was selected using Bayesian Model Averaging. Results showed the best model for moral identity at Time 2 included Moral identity at Time 1 (+, positive association) and ethnic identity (+).

Table 3

Coefficient Results for Predicting Moral Identity at Time 2 with Time 1 Variables

Variable	PIP	Post Mean	Post SD	Cond.Pos.Sign	IDX
Gender	1.000	1.107e-02	0.052	1.000	10
Ethnicity	1.000	3.332e-02	0.014	1.000	11
SES	1.000	-8.372e-03	0.013	0.000	12
MORID	1.000	3.762e-01	0.052	1.000	9
ETHNID	0.970	1.765e-01	0.058	1.000	2
SPPRT	0.163	1.105e-02	0.031	1.000	8
SCHCL	0.072	2.447e-03	0.015	0.896	7
PEERCIV	0.064	1.787e-03	0.011	1.000	4
COMMCL	0.060	-7.600e-04	0.012	0.645	6
ATTUSA	0.056	1.002e-03	0.001	1.000	1
SCHLOP	0.053	8.098e-04	0.010	0.857	5
PARCIV	0.049	4.655e-05	0.007	0.835	3

Note. PIP: Posterior Inclusion Probability; Post SD: Posterior Standard Deviation; Cond.Pos.Sign: probability of a positive coefficient when included in model; IDX: Index of variables in dataset.

The posterior inclusion probability for moral identity at Time 1 (1.00) and ethnic identity (.97) indicates that most (97%) models include both variables.

Table 4

Three Best Models for Predicting Moral Identity at Time 2

	Model 1	Model 2	Model 3
ATTUSA	0	0	0
ETHNID	1	1	1

PARCIV	0	0	0
PEERCIV	0	0	0
SCHLOP	0	0	0
CMMCL	0	0	0
SCHCL	0	0	1
SPPRT	0	1	0
MORID	1	1	1
Gender	1	1	1
Ethnicity	1	1	1
SES	1	1	1
PMP (Exact)	0.569	0.105	0.047
PMP (MCMC)	0.569	0.105	0.047

Note. PMP: Posterior Model Probability. For each variable, 1 indicates inclusion in model, 0 indicates exclusion.

The best model has a 56.9% posterior model probability and includes ethnic identity and moral identity at Time 1. The second-best model also includes school and neighborhood support while the third-best mode includes school climate, however the posterior model probabilities were 10.5% and 4.7%, respectively.

Full Model versus BMA Models

The best model identified by BMA was compared with the full model, which included all predictors (attachment to USA, ethnic identity, parent civic engagement, etc). The BIC and AIC for the two models were compared in order to identify which had the smaller AIC and BIC, which indicates the better model. BIC was smaller for the model identified by BMA (576.93) than for the full model (613.66.66). AIC was also smaller for the model identified by BMA

(549.22) than for the full model (558.24). In addition, Bayes Factors (BF) for the model identified by BMA was tested against the full model. The BF for the model predicting moral identity at Time 2 was 70,392.85 ($BF_{FULL} > 100$), therefore evidence very strongly supports the model identified by BMA.

In addition, the second- and third-best models identified by BMA were also compared with the full model. The BIC for the second-best and third-best models was 580.29 and 581.92, respectively, which are both smaller than the BIC for the full model (613.66). The AIC for the second-best model was 548.62 and 550.25 for the third-best model, which are both smaller than the AIC for the full model (558.24). Additionally, the BF for the second-best and third-best models were 20,590.53 and 11,960.34 ($BF_{FULL} > 100$) respectively, which again indicates very strong support for the models identified by BMA.

Discussion

Understanding the factors that influence change in moral identity over time is important for multiple reasons. First, although the significance of moral identity has been emphasized for years (Blasi, 1980), few studies have examined changes over time. Additionally, since other moral indicators such as moral judgment and perspective taking have previously been shown to be significantly influenced by factors in an individual's life as they mature (Maeda et al., 2009), it is likely that moral identity is similar. Because of this, it is important that the factors influencing it be understood in order to develop effective interventions and educational programs that encourage the development of moral identity. The present study was interested in applying Bronfenbrenner's ecological model to the study of change in moral identity from Time 1 (senior year of high school) to Time 2 (21 months later). The results showed that ethnic identity and moral identity at Time 1 were the most important factors for predicting moral identity at Time 2.

At the same time, although the posterior model probabilities were much smaller for the remaining two models, the results also showed school climate and school and neighborhood support as significant for predicting moral identity at Time 2.

Ethnic Identity and Moral Identity

Previous studies define ethnic identity as identifying how an individual feels about the ethnic group they are a part of, including how positively they feel towards it (Schwartz et al., 2007), in addition to their knowledge and perception of their ethnic group (Daha, 2011; Phinney, 1996). This definition aligns closely with the types of questions used in the present study, which investigated positive feelings towards the participants' ethnic group (i.e., "I have a lot of pride in my ethnic group") as well as the extent to which participants have intentionally learned about their ethnic group (i.e., "In order to learn more about my ethnic background, I have often talked to other people about my ethnic group").

Although previous studies have not looked directly at the relationship between ethnic identity and moral identity, ethnic identity has been associated with related concepts such as empathy and prosocial behavior (Belgrave et al., 2011). Belgrave et al. found that empathy was a protective factor against self-reported overt aggression and promoted self-reported prosocial behavior for African American adolescent girls while ethnic identity was a strong protective factor for African American adolescent boys, resulting in significantly lower levels of self-reported aggression and higher levels of self-reported prosocial behavior. A similar study with Hispanic adolescents found that self-esteem mediated the relationship between ethnic identity and positive psychosocial adjustment (Schwartz et al., 2007). The authors suggest that identifying with an ethnic group provides an individual confidence which then helps them to better adjust. Since positive moral emotions such as authentic pride have been found to be

positively associated with moral identity (Krettenauer & Casey, 2015), it may be that for some adolescents, having a strong positive relationship with their ethnicity may allow them to better thrive and develop other parts of their identity, such as moral identity.

An additional study that conducted interviews with Iranian students offered qualitative insights relevant to the present study (Daha, 2011). The author found that for Iranian American adolescents living in the United States, their ethnic identity often shifted depending on context. Participants were keenly aware of the perception that different people in the United States have on Iran, so they would often identify as Persian. However, when in Iran they reported not feeling aligned with adolescents living there, so they would identify as American. From this, it seems adolescents navigating multiple identities may require considering many different perspectives and empathizing with the person they are speaking to. As previous research has well established the link between perspective taking and morality (Decety & Cowell, 2014), this perspective taking ability may be one possible explanation for participants' ethnic identity in the current study predicting moral identity 18 months later.

Additionally, ethnic identity may be especially important for the current study due to the demographics of the participants. As previously mentioned, participants were selected from three different regions in California in order to increase ethnic, SES, and immigrant diversity of the sample. From the demographic information, many of the participants or their parents were born outside of the United States. Since many cultures outside of the United States have been found to have a stronger emphasis on morality, one possible explanation of the results of the current study is that depending on which ethnic group adolescents identify with, how much that group places value on moral development may significantly influence the development of moral identity.

Along with this, which ethnic groups an individual most identifies with may influence the context that moral identity most applies to for adolescents. For example, one previous study found that for Chinese undergraduate students, their moral identity was most important for community/society, while it was most important in the context of family for Canadian undergraduate students (Jia et al., 2019). This may have important implications for moral behavior especially as young adults get older and interact with the world outside of their families more and more. Taken together with the results of the current study, it is possible that adolescents who identify with a culture that emphasizes moral identity in the context of the community may sustain their moral identity as time goes on and their social context changes.

Furthermore, according to LaFromboise et al. (1993), it may be possible to maintain identification with one ethnic group while incorporating values with another, through processes such as alternation, which suggests that individuals can identify with two different cultures while maintaining their identity. This may be beneficial due to the possibility of strong identification with a given ethnic group resulting in nationalism or a strong emphasis on one's own ethnic group that lacks acceptance of others. Interestingly, one previous study investigated perspectives of teachers in South Korea and suggested that ethnic identity and multiculturalism can support each other (Chang, 2015). The author suggested that emphasizing ethnic identity without also educating students about other cultures may continue to lead to marginalization of other groups. However, if students have a strong ethnic identity and there is also an emphasis on multiculturalism in curriculum, this may promote equality and acceptance for various groups within a society. Because of this, in order for ethnic identity to positively contribute to the development of moral identity, it may be necessary to ensure students are also taught about various other cultures.

Support and Moral Identity

It has been suggested for many years that an adolescent's environment providing support may help them to develop their moral identity (Hart et al., 1998). These authors suggest that, just as adolescents are provided with opportunities to try different sports and other activities that may contribute to their identity, they should also be provided with opportunities to develop moral identity through institutions such as schools or churches. Interestingly, in the current study, support measured how much participants felt supported by adults other than their parents. This included having neighbors that cared about them, feeling like their school cared, and support from adults in general other than their parents. This may be related to the age of the participants at Time 1 (average age = 17). Adolescents at this age also spend more unsupervised time in their neighborhood, which may have implications for development (Hill et al., 2007).

Since the majority of participants in the current study reported that their household was in the low or middle SES range, neighborhood influence may uniquely contribute to their moral identity development. For example, one previous study found that low SES neighborhoods resulted in increased parental monitoring, which in turn reduced cigarette and alcohol use (Chuang et al., 2005). It is possible that living in lower SES neighborhoods, which might be associated with more risks and dangerous situations, results in parents becoming more involved with their children in order to protect them. On the other hand, another previous study that specifically investigated neighborhood influences for Latino adolescents found that feelings of belongingness in their neighborhood resulted in greater well-being and decreased levels of depression (Maurizi et al., 2013). However, there was also an indirect negative relationship with neighborhood belongingness and academic grades and values.

Further studies are needed to clarify the relationship between neighborhood influence and moral identity development specifically. The results of the current study suggest a positive influence of neighborhood that may be a source of support for adolescents. Increased well-being and a sense of community could positively contribute to moral identity formation, however since prosocial behavior and related indicators such as perspective taking may be associated with higher fluid intelligence (Guo et al., 2019), it may be important to make sure adolescents have other important sources of influence encouraging them to pursue their education.

Related to the influence that school support has on adolescents' moral identity development, although few studies directly examine moral identity development related to school influence, numerous studies have explored the impact that school climate has on various related aspects of an individual's development (Gerard & Booth, 2015; Tian et al., 2015). In a literature review aimed at exploring the effects of school on adolescents' identity development in general, it was concluded that schools often have an even greater effect on identity development than teachers and staff are aware of (Verhoeven et al., 2019). One study may be of particular relevance to the development of moral identity, which suggested that the expectations that students perceive their teachers have of them may influence their identity development (Edwards-Grove, 2008). This is consistent with previous findings that show parents' expectations of their children shapes their moral development, because it conveys the message to the child that the parent believes they can do better and be a moral individual (Patrick & Gibbs, 2012). If teachers either intentionally or unintentionally convey messages to students that they do not see them as moral individuals or believe that they may grow to be more moral, this may influence the adolescents' view of their own morality.

Additionally, another study specifically studied differences in teacher expectations based on ethnicity, and found that African-American and Latino students felt that their teachers had lower expectations for them (Aschbacher et al., 2010). Although teacher expectations were not measured in the current study, it is possible that support from students' schools included teacher support, which helped facilitate moral identity development. Hence, one interpretation of the results of the current study is that students who felt support from their school sensed that others around them believed in them and were able to develop a sense of moral identity that was sustained at Time 2.

This, combined with the finding of ethnic identity predicting moral identity at Time 2 has important implications for educational programs and interventions. Related to ethnic identity, the results of the current study suggest that encouraging students to learn about their ethnic background and develop pride in their ethnic group may have positive outcomes associated with moral identity. As previously mentioned, having knowledge of and pride in one's ethnic group may help them to develop better self-esteem and feel more comfortable in their overall identity. It may also be beneficial to help students identify positive aspects of their ethnic group that may be related to various moral causes and help them begin to make connections between behaving morally and groups they are a part of. This could potentially help them identify with not only being a moral person but also feeling secure in what they could uniquely contribute based on their background.

Limitations

Although the current study adds to the literature interested in exploring the development of moral identity, several limitations should be noted. First, the attrition rate for the current study was large due to difficulty getting in contact with students after they had left high school. This

introduces the possibility of a biased sample that may not represent the diversity that was originally intended when selecting different regions to participate in the study. Second, since many of the participants in the current study had a strong connection to countries outside of the United States, it is still unclear whether ethnic identity is equally as important in predicting change in moral identity for participants that only have strong ties to the country they reside in. That is, since this particular sample was intended to be diverse and consisted of mostly Latinx and Asian participants, it is possible that ethnic identity was uniquely important for participants in the current study. Future studies that investigate the role of ethnic identity in moral identity development for various ethnicities is needed in order to determine if these results can be generalized to people who identify with other ethnic groups. Along with this, the results of the current study support the need expressed by others in the field that more research on moral identity is needed in diverse cultures. Although the current study suggests that ethnic identity may be important for the development of moral identity, this relationship needs to be explored in various contexts and cultures.

Third, although the current study was informed by Bronfenbrenner's ecological model, the mesosystem was not able to be explored. That is, how different levels that represent various contexts in students' lives interact with each other was not explored. Future research to carefully examine these relationships is necessary since it is likely that an adolescent's family, peers, school, neighborhood, and culture meaningfully interact with each other. For instance, especially in the case of ethnic identity, it would be interesting to examine how the different contexts in an adolescent's life influence ethnic identity and how this impacts moral identity of the individual.

Finally, as with other studies utilizing self-report measures in morality research, a limitation of the current study is the possibility of social desirability bias as well as participants

having an inaccurate view of themselves (Batson et al., 1999; Mazar et al., 2008). However, other measures involved in the study such as school opportunities and peer civic engagement may be less susceptible to this. Even so, future studies that utilize various methodologies such as interview studies, implicit measures of moral identity, and neuroimaging studies in order to investigate the relationships identified in the current study would be beneficial. Interview studies would be especially beneficial to qualitatively study the connection between ethnic identity and moral identity. Along with this, since neuroimaging studies have provided valuable insights such as the different ways empathy is represented in the brain across cultures (Cheon et al., 2011), it would be interesting to see how moral identity is differently processed among various cultures.

Conclusion

The current study suggests that there may be many important factors to consider when exploring how adolescents develop their sense of moral identity. These include school climate, support from various social contexts, and ethnic identity. Results from model selection suggest that ethnic identity may be the most important factor to consider, especially for adolescents that have strong ties to a country outside of the United States while currently residing in the U.S. Although there has been a small number of previous studies looking at the role of culture in moral identity (Jia et al., 2019), much work is still needed to understand the relationship between ethnic identity and moral identity specifically. The results of the current study suggest that this relationship may be especially important for understanding the development of moral identity.

Finally, although future studies are needed in order to determine if this relationship between ethnic identity and moral identity exists for various ethnic groups, this study adds to previous suggestions that it is of great importance to study morality across different cultures. There is an estimated Hispanic population in the United States of 60.48 million and Asian

population of 18.64 million (U.S. Census Bureau, 2019), therefore even if this relationship is unique to Hispanic and Asian adolescents, it is important to understand the process of moral identity development for these individuals. Although the current study mainly consisted of Hispanic and Asian adolescents, this is also true for the millions of other adolescents in the U.S. who are part of a minority group that may affect their moral identity.

Study 2

Literature Review

In terms of understanding the gap between moral thought and moral action, the ultimate goal is to encourage individuals to act on what they think and know is the moral thing to do. This aligns with the concept of purpose due to the fact that "purpose […] manifests in the relationship between an individual and his or her environment because it is an aspiration to have a meaningful existence in the world" (Malin et al., 2014). Damon et al. (2003) outline three dimensions of purpose: stable and future-oriented intention, meaningful engagement in activity to realize that intention, and a desire to contribute to something beyond the self. Beyond-the-self Motivation (BTS) is described as "intentions and actions that make a contribution to the world beyond the self" (Quinn, 2016, p. 1).

BTS is particularly relevant to an individual acting on what they know to be moral since it focuses on people wanting to contribute to the world in a meaningful way that benefits others. In one previous study, when individuals with a strong sense of purpose were interviewed, some examples of BTS motivation included raising money to build drinking wells so that people in rural Africa could have the water they needed, as well as creating a recycling program for properly disposing of motor fluids in order to protect the environment (Damon, 2008). Related to Study 1, the author notes that through the interviews there was a common theme of individuals having meaningful conversations with people outside of their immediate family that inspired them to commit to work beyond themselves.

Identifying a purpose in life shows great promise in encouraging moral behavior due to its strong motivating force, but it has also shown positive associations with indicators of well-being such as happiness (Robak & Griffin, 2000) and life satisfaction at three different stages of life: adolescence, emerging adulthood, and adulthood (Cotton Bronk et al., 2009). Negative indicators of well-being such as anxiety or apathy towards the future have also been associated with a lack of purpose (Damon, 2008). Transpersonal commitment, a construct highly related to BTS due to its emphasis on being dedicated to activities that benefit others, has also been shown to be positively correlated with participating in community service activities (Magen & Aharoni, 1991). Related to this, although engagement in political activities typically decreases during the transition from adolescence to adulthood (Snell, 2010), BTS has been shown to help sustain civic engagement over time (Malin, Han, & Liauw, 2017). The authors suggest that purpose gives meaning to individuals' goals and helps them remain future-oriented, which increases the likelihood of continuing to pursue their goals long term. Likewise, moral identity has also been found to be correlated with sustained political purpose over time (Han et al., 2019). The authors suggest that moral identity might promote a sense of purpose and involvement with political activities.

Moral Identity

Moral identity is typically defined as holding the view that being a moral person is important to somebody's self-concept (Hardy & Carlo, 2005). Blasi (1983) developed the self-model of moral functioning which had moral identity as one of three components necessary for bridging the gap between moral thought and moral action, along with judgment of responsibility and self-consistency. Darnell et al. (2019) states that here moral identity serves as the driving force to act on a moral judgment. Thus, if somebody believes that being a moral person is central

to who they are (moral identity), they will be motivated to act in accord (self-consistency) once they decide action is necessary (judgment of responsibility) and will have a negative reaction to behaving immorally because their view of themselves will be disrupted. Furthermore, moral identity is also suggested to be important for certain prosocial behaviors such as charitable giving (Winterich et al., 2012). Participants in the study by Winterich et al. increased their donations once the charity's values aligned with their own, but this was only true for participants that reported high internalization of their moral identity. This not only highlights the potential for moral identity to contribute to prosocial behavior, but also the importance of not just having moral values but incorporating them into a person's sense of self.

Moral identity has been shown to have strong ties to moral behavior in many studies. Colby and Damon (1992) found moral identity to be significant when they interviewed people who were considered moral exemplars in their community. They found that, for those individuals, their sense of self and their morals were extremely linked and thus they viewed being a moral person as important to their identity. It is important to note here that these exemplars were not explicitly asked about their moral identity, but rather spontaneously produced answers that aligned with having a strong sense of moral identity. This is important for the overall understanding of moral identity, because it has been noted that moral identity is defined by the individuals themselves and therefore is at risk of deception. In other words, it is possible that an individual claims that being moral is central to their identity, but only because they think that is the right thing to believe (Darnell et al., 2019). This is one possible reason why many studies find that it only explains some of the connection between moral thought and moral behavior, and fails to account for the whole picture, much like other single components that are proposed for bridging the gap.

Empathy

Although there are many different definitions of empathy, it generally refers to going beyond feeling concern for the experiences of others, as is the case with sympathy, but also having a "vicarious affective response to another person" (Hoffman, 2000, p. 29). Emphasis has been placed on different components of empathy in the past, however now it is generally accepted that empathy has multiple components which all need to be considered when studying it. Decety and Cowell (2014) note that emotional, motivational, and cognitive aspects are all important for the big picture of empathy. These go along with the four components of empathy proposed by Davis (1983) which are empathic concern (EC), perspective taking (PT), personal distress (PD), and fantasy (FS).

It is important to differentiate between these components when examining empathy because they have different mechanisms and functions, especially when looking at them in terms of morality. Personal distress (PD) in particular typically has quite different associations with moral behavior than empathic concern or perspective taking. It has been suggested that this is due to PD being a self-oriented emotion, meaning that somebody experiences anxiety or stress due to the experience of others, and so their focus becomes mitigating their own feelings of discomfort rather than helping the other person (Darnell et al., 2019). Support for this perspective comes from the finding that empathy prevents moral disengagement whereas PD promotes it (Paciello et al., 2013). The authors suggest that empathy (EC and PT) may provide a feasible option for preventing moral disengagement from occurring in reality.

Indeed, educational interventions that focus on developing the perspective taking and empathic concern components of empathy for students who bully in order to decrease their use of mechanisms of moral disengagement have been suggested (Lazuras et al., 2012). The authors

suggest that students with high levels of empathy may automatically act morally due to feeling that hurting others is unacceptable, whereas those with lower levels of empathy may engage in slower and more deliberate processing of possible actions to take, which increases their chances of moral disengagement. Due to this, they suggest it is necessary to explicitly teach students with lower levels of empathy these skills. Along with this, empathy has also been described as a "prerequisite to moral engagement" (Martineau et al., 2020, p. 14) that can help people make more ethical decisions even when the persons being considered are distant others.

In one previous study, participants who reported a desire to become more empathic, and who actually did become more empathic over a 15-week period, also became more concerned with moral values such as harm and fairness at the end of the 15 weeks (Hannikainen et al., 2020). This was true specifically for perspective-taking, which when analyzed along with empathic concern resulted in empathic concern being non-significant. The author suggests this is due to perspective-taking being much more malleable and empathic concern more stable over time. This has important implications for interventions since it may be more effective to design interventions around perspective-taking and capitalize on individuals' ability to improve their perspective-taking skills in a shorter amount of time.

Relationship between BTS Motivation, Moral Identity, and Empathy

Although there are overlaps in the concepts of moral identity, empathy, and beyond-the-self motivation, there are only a few previous studies that have investigated the relationship between them (Crocetti et al., 2014; Malin et al., 2014). First, all three concepts imply a concern for others that has been demonstrated through findings such as empathic concern being positively associated with moral identity (Leng et al., 2020) and empathy playing a crucial role in BTS motivation (Malin et al., 2014). This is because the desire to help others comes from

acknowledging what others are going through and imagining what it must be like. In other words, it may be difficult for someone to maintain purpose and BTS motivation focused on helping others if they lack the perspective to understand what might actually help others.

Conversely, there are distinctions between these concepts that have implications for behavior. For example, BTS motivation is heavily focused on the relationship with others in a person's environment and wanting to positively influence their lives. Although moral identity has a social aspect, especially when considering the symbolization of moral identity, it can also be a primarily private experience that exists internally and does not necessarily involve others. Finally, empathy involves this same concern for others but can also be an internal process that does not always get expressed or result in behavior. Since BTS motivation is an important source of motivation focused on helping others, it may be important for understanding what drives people to act on their moral intentions.

By further exploring how moral identity and empathy predict BTS motivation, it may be better understood how to utilize all three concepts to help people develop and sustain a purpose as well as behave morally. However, as previously mentioned, there have not been many previous studies exploring the relationship between these concepts. Although there have been some studies connecting empathy and BTS motivation (Malin et al., 2014), no previous studies have distinguished between the different subcomponents of empathy and their different relationships with BTS motivation. It is important to examine these relationships because there is ample evidence that the fantasy subcomponent of empathy is not important for social life (Mooradian et al., 2011) and the personal distress subcomponent is focused on the self and decreases helping behavior (Carrera et al., 2013; Israelashvili et al., 2020). Interestingly, one previous study found that a clear sense of self is crucial to having empathic concern resulting in

helping behavior (Krol & Bartz, 2021). This is supported by an fMRI study that showed a negative correlation between dorsal medial prefrontal cortex (dmPFC) gray matter volume and personal distress (Luo et al., 2018). The authors suggest that since dmPFC has been associated with the process of distinguishing between the self and others, it is possible that individuals who experience more personal distress have difficulties differentiating between a situation happening to others and a situation happening to oneself. This is important for the current study because it suggests there may be a significant relationship between moral identity and empathy, as well as significant implications for beyond-the-self motivation. It suggests that if somebody does not have a clear sense of self, they may be more likely to experience personal distress as a result of the suffering of others, and may be less likely to be motivated to help others.

Previous research related to both empathic traits and BTS is scarce, however empathic traits may be crucial to developing and maintaining BTS since understanding and feeling what others are going through can be a strong motivational force for wanting to help others (Magen & Aharoni, 1991). Importantly, these authors note that this relationship may work both ways, in that being dedicated to acting in service to those in need may increase empathy for those people and therefore lead to an increased desire to help others. Other studies with emphasis on constructs not covered in this study have briefly mentioned positive associations between empathy and purpose in life as well (Manczak et al., 2016). One previous study (Choi et al., 2016) reported that perspective taking was the only subcomponent of empathy that was positively associated with purpose in life, however the sample size was relatively small (N = 119), and purpose was measured using the Ryff's Psychological Well-Being Scales (Ryff, 1989) which is different from most studies of purpose.

Empathy was also found to be especially important for maintaining BTS motivation over time during the early adolescence stage of development (Malin et al., 2014). The authors suggest that empathy is actually the manifestation of BTS motivation at this stage. In other words, individuals who wanted to contribute to the world beyond themselves channeled this desire by having empathy for and wanting to help those in need. Importantly, individuals who lost their sense of purpose from Time 1 to Time 2 showed a significant decrease in their level of empathy. It is worth noting that a decreasing sense of purpose is not always due to factors within an individual's control. As Malin et al. mention, if individuals feel great empathy for others and then are unable to find opportunities to help others beyond themselves, their purpose may decline.

This study by Malin et al. (2014) used interviews to study purpose over a two-year period which offers unique and valuable information about how empathy affects purpose development. The authors mention one participant in particular who was able to maintain his BTS from Time 1 to Time 2, specifically from developing greater perspective taking. The findings of this study suggest that empathy may be extremely important for maintaining BTS. For example, empathic traits may allow individuals to see how they can actually realize their BTS goals, rather than genuinely wanting to contribute beyond themselves but lacking the insight to know how. However, the different subcomponents of empathy were not distinguished but rather empathy was examined as a more general concept. It may be important to examine how each individual subcomponent of empathic traits relates to BTS in order to fully understand how it can be maintained over time. For example, in this study by Malin et al., examples of having empathy included "wanting to help less fortunate people" (p. 191) and wanting to give homeless people homes, which demonstrates empathic concern and perspective taking. However, if an individual

experiences personal distress as well, they may be more likely to have self-oriented reasons related to their purpose. Because of this, it is necessary to examine how the subcomponents of empathy differently relate to BTS motivation.

In the case of moral identity and BTS, there is some evidence for a strong link since they can both be motivational sources for engaging in moral behavior. For example, in their study of moral exemplars, Colby and Damon (1992) found that these moral exemplars who had great harmony between their identity and their morality were often so dedicated to a cause that benefitted others that they sometimes regretted not spending more time with their families. This may suggest that when moral identity and BTS motivation are closely linked, it results in not only significant desire but also motivation to help. As Colby and Damon (1992) state, "[t]he exemplars expressed to use the kind of inner harmony characteristic of those who dedicate themselves to purposes beyond themselves" (p. 300).

Although previous research has not investigated the relationship between general purpose and moral identity, one previous study did investigate the relationship between moral identity and political purpose (Han et al., 2019), and another explored purpose and general identity (Sumner et al., 2015). The assumption behind Sumner et al.'s (2015) paper was that having a sense of purpose has the potential to provide individuals with direction and inform their sense of identity. The reverse can also be true in that having a strong sense of identity can help people figure out their purpose. For this reason, the authors found it important to study identity and purpose simultaneously to explore their implications for well-being.

It is likely that these same ideas may apply to moral identity and BTS as well, meaning that they both may help the other develop. Having a strong sense of moral identity may help individuals identify their purpose and intention to help others beyond themselves, and the desire

to help others beyond themselves may foster a strong sense of moral identity. Before understanding the nuances in this relationship, however, it is first important to understand the relationship between BTS and moral identity in general.

Multicomponent Approach

Taken together, these previous studies suggest that there may be a significant relationship between BTS motivation, empathy, and moral identity. In order to fully understand how all these variables relate to each other, however, it is necessary to study them simultaneously. A multicomponent approach to studying complex relationships related to morality, such as the gap between moral thought and moral action, has been suggested in several previous studies (Morgan et al., 2017; Walker, 2002). One reason for this is because when single components are considered on their own as the variable explaining the relationship between moral thought and moral action, the effect sizes are usually small to moderate.

Considering multiple factors together may also help to buffer against possible downsides of single components. Damon et al. (2003) suggest that developing a noble purpose may prevent youth from developing a purpose that is rooted in hatred, and in this way the individual may be so focused on the noble purpose that they are not motivated to act on any purpose that may be considered immoral. However, it may also be possible to develop purpose that is antisocial. Since morality and empathy also have a potential dark side that can result in behavior that harms others (Rempala et al., 2020; Workman et al., 2020), such that feeling intense empathy for one person can result in helping them while harming others (Bloom, 2017), or having a strong sense of moral identity may result in sabotage in response to injustice (Skarlicki et al., 2008), it may be helpful for these three factors to work together to produce moral behavior that does not harm

others. That is, moral identity and empathy may encourage a purpose that is rooted in goodness and a desire to help others.

Thus, while examining individual factors has proven beneficial, it is also important to consider the multicomponent perspective. That is, in order to fully understand how to encourage individuals to act on their moral thoughts, it may be necessary to understand how individual components that influence moral behavior interact with each other. In the long term, it may be necessary to investigate how multiple components interact with each other and study the effects on actual moral behavior, but first it is necessary to examine the relationship between relevant factors.

The current study takes this approach and explores the relationship between some of the most promising factors for encouraging individuals to care for others and behave morally; these are, moral identity (Fatima et al., 2020; Mulder & van Dijk, 2020; Reed II et al., 2016), empathic traits (Depow et al., 2021; Klimecki et al., 2016), and beyond-the-self motivation (Damon, 2008; Malin, Liauw, & Damon, 2017). As previously discussed, moral identity may be important for helping people to maintain motivation to behave morally (Reynolds & Ceranic, 2007) and empathic traits may be important for understanding what others are going through and how any given action may affect them (Sierksma et al., 2014). Meanwhile, BTS motivation encourages individuals to be actively engaged with the world by identifying their unique reason for being alive that is "meaningful to the self and consequential for the world beyond the self (Damon, 2008, p. 33).

One of the main reasons moral identity is proposed to potentially bridge the gap between moral thought and moral action is due to its motivational nature. It is suggested that if individuals have a strong sense of moral identity then they will be motivated to behave morally,

since it is uncomfortable to act out of accord with how one views themselves (Erikson, 1964; Reynold & Ceranic, 2007). In addition, Damon (2004) described moral identity as essential to positive youth development, with the ability to help people maintain their purpose for most of their lives. This suggests that moral identity and BTS motivation may work together to create strong and lasting dedication to help others. However, there has still been minimal research examining the relationship between these concepts (Han et al., 2021). For this reason, the current study examines the relationship between BTS motivation and the two subcomponents of moral identity, internalization and symbolization.

In addition, the current study will also examine the relationship between BTS motivation and three subcomponents of empathic traits. The fantasy scale component of the IRI was not included in the current study due to a lack of evidence for its relationship with moral indicators and an ambiguity about the meaning behind the subcomponent (De Corte et al., 2007; Nomura & Akai, 2012). This study will seek to extend previous findings related to BTS motivation and moral identity, in addition to identifying the simplest model to predict BTS motivation with empathy and moral identity using Bayesian Model Averaging.

Method

Further motivation for selecting the variables in the current study came from theoretical discussions of moral functioning focusing on the Four-Component Model. Two of the components, moral sensitivity and moral motivation, were investigated in the current study. Empathy is considered an important component of moral sensitivity, which refers to being aware of different possible actions to take and how they affect other people (Rest, 1983). Moral identity is considered a source of moral motivation since somebody considering being moral as central to who they are will motivate them to act morally (Hardy & Carlo, 2005). The current study was

interested in how these variables predict beyond-the-self motivation due to evidence suggesting they play an important role in motivating the desire to help others (Oceja et al., 2014; Patrick et al., 2018).

Participants

450 undergraduate college students (Mean Age = 23.8; Females = 410, Males = 40; 362 white, 57 Black or African American, 3 American Indian or Alaska Native, 5 Asian, 1 Native Hawaiian or Pacific Islander, 22 Other) were recruited using the Educational Psychology Subject Pool. Participants received a link for the survey after signing up online and then completed the measure via Qualtrics. Participants received course credit as compensation for completing the survey.

Measures

Interpersonal Reactivity Index (IRI)

The Interpersonal Reactivity Index (Davis, 1983) was used in order to test empathic traits including empathic concern (EC), perspective taking (PT), and personal distress (PD). EC is focused on the more traditional sense of the word empathy that refers to feeling concern for others who are experiencing difficulties. PT focuses on the cognitive aspect of empathy in which somebody is able to understand another's point of view. PD is considered a self-oriented emotion because it involves feeling overwhelmed by the experiences of others and therefore wanting to minimize personal feelings of discomfort. As previously mentioned, the Fantasy Scale (FS), which is focused on works of fiction and somebody's tendency to identify with the characters and stories, was excluded from the current analysis. The overall reliability of the index, which was estimated in terms of Cronbach's α was good, α = .79. The calculated Cronbach's α values of all subscales were acceptable, EC's α = .77, PT's α = .73, and PD's α = .70.

Moral Identity Scale (MIS)

Both the internalization and symbolization subscales of the Moral Identity Scale were used in order to measure moral identity (Aquino & Reed, 2002). Participants read a paragraph describing a person with certain moral characteristics and were then asked to respond to statements related to how much the characteristics aligned with themselves. The overall Cronbach α was good, α = 80. Cronbach's α values of both subscales were acceptable to very good, the internalization subscale's α = .80, and the symbolization subscale's α = .86.

Claremont Purpose Scale

The Claremont Purpose Scale (CPS) was used in order to measure the BTS orientation of purpose (Bronk et al., 2018). This scale measures all three dimensions of purpose (goal-directedness, personal meaning, and BTS) but only BTS will be included in the present analysis. Participants were asked 12 questions total, with 4 representing the BTS orientation (i.e., "how often do you hope to leave the world better than you found it?") and answered on a 5-point scale from "almost never" to "almost all the time." The Cronbach α for the BTS orientation was very good, α = 85.

Analysis

Bayesian Model Averaging

Bayesian Model Averaging (BMA) will be used in this analysis in order to identify the best model for predicting beyond-the-self motivation with moral identity and empathic traits. With this approach, estimates from various possible models are averaged based on the likelihood of each possible model (Wasserman, 2000). This is in contrast to model selection, which takes various possible models and selects one. Not having to choose one model is the major advantage of BMA, which allows for giving different weights to models based on the data (Wasserman,

2000). One previous study used BMA in order to identify the best regression model for predicting behavioral Defining Issues Test (bDIT) scores with five moral foundations (Han & Dawson, 2020). Using this method allowed for examining the relationships between each moral schema and each moral foundation, which could not previously be done using frequentist methods. For the present analysis, this method will allow for examining the relationship between BTS motivation and each subcomponent of empathy and moral identity.

This was done by using the *BMS* package in R (Zeugner & Feldkircher, 2015), which assigns prior probabilities of 50% for candidate predictors. For this study, moral identity internalization, moral identity symbolization, empathic concern, perspective taking, and personal distress all have a 50% probability of being included in the model. These variables were entered as predictors and the best model was chosen from multiple models with different combinations of these predictors. As a result, the simplest model for predicting BTS motivation was able to be identified. Along with Han and Dawson (2021), the best models that were identified by BMA were also compared with full models, which include all predictors, by comparing the Bayes Factor, Akaike Information Criterion (AIC), and Bayesian Information Criterion (BIC) between models. Finally, regression analysis was used to determine the estimate coefficient for the individual factors.

Results

Descriptive Statistics and Correlation Analysis

The descriptive statistics can be seen in Table 5. Correlation analysis results are also reported in the table.

Table 5

Means, Standard Deviations, and Correlations for BTS Motivation, Empathic Traits, and Moral Identity

Variable	*M*	*SD*	1	2	3	4	5
1. IRI_EC	3.96	0.66					
2. IRI_PD	2.69	0.65	-.04				
3. IRI_PT	3.66	0.62	.60**	-.08			
4. MIS_INT	4.54	0.66	.47**	-.06	.31**		
5. MIS_SYM	3.34	0.87	.14**	.09	.14**	.09	
6. CPS_bts	4.06	0.71	.38**	-.01	.37**	.30**	.29**

Note. M and *SD* are used to represent mean and standard deviation, respectively. * indicates $p < .05$. ** indicates $p < .01$. IRI_EC: Empathic Concern; IRI_PD: Personal Distress; IRI_PT: Perspective Taking; MIS_INT: Moral Identity Internalization; MIS_SYM: Moral Identity Symbolization; CPS_bts: Beyond-the-Self.

Bayesian Model Averaging

The best model for predicting beyond-the-self motivation was selected using Bayesian Model Averaging. Results showed the best model for BTS motivation included symbolization of moral identity (+, positive association), perspective taking (+), internalization of moral identity (+), and empathic concern (+).

Table 6

Coefficient Results for Predicting BTS Motivation with Empathic Traits and Moral Identity

Variable	PIP	Post Mean	Post SD	Cond.Pos.Sign	IDX
Sex	1.000	0.044	0.106	1	6
Age	1.000	-0.003	0.004	0	7
Ethnicity	1.000	-0.013	0.023	0	8

MIS_SYM	0.999	0.177	0.034	1	5
IRI_PT	0.994	0.261	0.071	1	2
MIS_INT	0.911	0.162	0.073	1	4
IRI_EC	0.658	0.112	0.097	1	1
IRI_PD	0.046	-0.001	0.010	5.238e-05	3

Note. PIP: Posterior Inclusion Probability; Post SD: Posterior Standard Deviation; Cond.Pos.Sign: probability of a positive coefficient when included in model; IDX: Index of variables in dataset.

The posterior inclusion probability for moral symbolization (.999) and perspective taking (.994) indicate that most (99%) models include both variables. Moral internalization is included in 91% of models and empathic concern in 66% of models. The Post Mean, which is the average of the coefficients for all of the models, indicates that perspective taking is the most important variable followed by symbolization.

Table 7

Three Best Models for Predicting BTS Motivation with Empathic Traits and Moral Identity

	Model 1	Model 2	Model 3
IRI_EC	1	0	1
IRI_PT	1	1	1
IRI_PD	0	0	0
MIS_INT	1	1	0
MIS_SYM	1	1	1
Sex	1	1	1
Age	1	1	1
Ethnicity	1	1	1
PMP (Exact)	0.538	0.325	0.084

PMP (MCMC)	0.538	0.325	0.084

Note. PMP: Posterior Model Probability. For each variable, 1 indicates inclusion in model, 0 indicates exclusion.

The best model has a 54% posterior model probability and includes empathic concern, perspective taking, moral internalization, and moral symbolization. The second best model does not include empathic concern, with a posterior model probability of 33%. Finally, the third best model includes empathic concern, perspective taking, and symbolization, with a posterior model probability of 8.4%. None of the top three best models include personal distress.

Full Model versus BMA Models

The best model identified by BMA was compared with the full model, which included all predictors (IRI_EC, IRI_PT, IRI_PD, MIS_INT, MIS_SYM). The BIC and AIC for the two models were compared in order to identify which had the smaller AIC and BIC, which indicates the better model. BIC was smaller for the model identified by BMA (897.13) than for the full model (903.19). AIC was also smaller for the model identified by BMA (860.15) than for the full model (862.09). In addition, Bayes Factors (BF) for the best model identified by BMA was tested against the full model. The result for the model predicting beyond-the-self motivation was 5.01 ($BF_{FULL} > 5$, therefore evidence strongly supports the model identified by BMA.

The other two models identified by BMA were also compared with the full model. For the second-best model, the BIC was 898.17 and the AIC was 865.30. The BIC was smaller than the full model which indicates it is the better model, however the AIC is bigger than the full model which indicates the full model is better. For the third-best model, the BIC was 900.89 and the AIC was 868.02. Again, the BIC for the third-best model indicates it is the better model, but the AIC indicates the full model is better. Finally, the BF for the second-best model was 1.53 and

0.42 for the third-best model, which both indicate weak evidence for the models identified by BMA.

Discussion

The current study aimed to identify the best model for predicting BTS using both subcomponents of moral identity, internalization and symbolization, as well as three subcomponents of empathy, empathic concern, perspective taking, and personal distress. Although these concepts are highly related in theory, previous research has seldom explored the relationship between them. Results of this study show that there are significant relationships between BTS and empathy as well as BTS and moral identity.

Best Model Predicting BTS

As expected, beyond-the-self motivation was positively associated with all of the moral indicators except personal distress. Since personal distress is the only subcomponent of empathy thought to be self-oriented (Hortensius et al., 2016), instead of other-oriented, it is not surprising that it was not related to BTS. This goes along with previous research indicating that personal distress results in less helping behavior, because it shifts people's focus to themselves and lessening their own suffering rather than helping the person in need (Darnell et al., 2019). Results of BMA showed that all moral indicators in the current study are important for predicting BTS motivation. Interestingly, in the top best model, PT had a much higher posterior inclusion probability than EC and in the second-best model, PT remained in the model instead of EC. This suggests that PT may be especially important for beyond-the-self motivation. This is significant because empathy has previously been discussed as contributing to BTS motivation (Malin et al., 2014), but it may be especially important to focus on perspective taking rather than empathic concern in this case.

In addition, while moral identity internalization was included in both the best and second-best models, moral identity symbolization was included in the top three best models. This again suggests that symbolization may play a significant role in different measures of morality, and should not be overlooked, such as in previous studies that exclude the symbolization scale (Ding et al., 2018) and suggestions that the connection between internalization and moral action is stronger (Krettenauer, 2020). Although there have been few previous studies looking directly at the relationship between beyond-the-self motivation and moral indicators, the results of the current study suggest that there is a significant relationship that may need to be further investigated. This relationship will be further discussed in following sections.

Empathy and BTS

Along with previous studies, correlation results showed a significant positive relationship between both moral identity internalization and symbolization and empathic concern and perspective taking. Additionally, there was also a positive relationship between BTS motivation and empathic concern and perspective taking. Although few previous studies have looked at this relationship between BTS and the different subcomponents of empathy, the results of the current study are in line with other studies looking at identity in general and empathy. For example, Smits et al. (2011) found that individuals who had an information-oriented style of identity, characterized by seeking out information in order to develop their identity instead of relying on others or being passive, scored higher on measures of helping focused on others. The authors explained this relationship as being partially mediated by empathy; the information-oriented identity style can encourage people to respond to others with empathy, and as a result may encourage other-oriented helping. The results of the current study indicate that moral identity and empathy may also be associated with other-oriented helping.

In the case of BTS motivation, the results of the current study along with previous studies suggest that empathic concern and perspective taking may encourage people to feel concerned with the suffering of others and result in a desire to help beyond oneself. As previously mentioned, there has been some evidence that empathy can sustain BTS motivation over time, and a decrease in empathy may shift one's orientation (Malin et al., 2014). In the previous study by Malin et al. (2014) perspective taking was especially important for sustaining BTS over time, which the results of the current study support. Although both EC and PT were significant in predicting BTS, PT may be slightly more important.

Taken together, this suggests that specifically fostering perspective taking and empathic concern may be essential to encouraging a sense of purpose oriented around improving the lives of others and sustaining that purpose. Additionally, although the association between personal distress and BTS was insignificant, it was negative and was not included in any of the best models predicting BTS, which is in line with previous studies showing a negative relationship between personal distress and moral indicators (Eisenberg et al., 2006). This suggests that it may be helpful to promote and teach people how to cope with overwhelming feelings related to the suffering of others so that they may be able to help rather than putting most of their energy into relieving their own suffering. If somebody is distressed by their own emotions then they may be unable to focus on others and contribute to the world beyond themselves.

Moral Identity and BTS

Internalization and symbolization of moral identity were both positively associated with BTS motivation. These results align with previous studies and suggestions that connect the two concepts theoretically. For example, BTS motivation has been associated with characteristics such as openness and wisdom (Bronk & Finch, 2010; Bronk et al., 2018; Glück et al., 2013) and

previous studies have found that having a strong sense of moral identity, especially internalized moral identity, increases an individual's circle of moral regard (Reed II & Aquino, 2003). Because of this, it makes sense that individuals who score high on moral identity would want to contribute to others beyond the self. In fact, Damon (2004) stated that interventions aimed at encouraging positive youth development were successful when they focused on individuals' sense of self and moral identity. This is because people that have a strong sense of moral identity are aware of the problems around them and are more likely to take on the responsibility to do something about them. From this desire, a sense of purpose is developed which fosters positive youth development.

When discussing the relationship between moral identity and BTS motivation, it is important to note the nuances that may influence behavior based on people's interpretations of what constitutes moral behavior. It is well-known that some people view certain acts moral that most other people consider to be immoral, such as acts of terrorism in which the person feels they are protecting their country and fighting against an evil out-group (Moghaddam, 2005). One previous study that was particularly interested in revenge and how some people view it as moral while others do not, explored the differences between moral symbolization and internalization (Barclay et al., 2014). They found a significant interaction between moral identity and negative reciprocity norm (NRN), which is characterized by feeling compelled to respond to an immoral act in order to show that the act was not right and will not be tolerated (Eisenberger et al., 2004). Importantly, for individuals that endorsed NRN, symbolization predicted revenge when the individual was the target of mistreatment, and internalization predicted revenge when the individual was the observer for mistreatment.

This distinction between moral symbolization and internalization is interesting when taken into consideration with the results of the current study. First, Barclay et al. (2014) argued that their results suggested that symbolization motivated revenge for the target of mistreatment because symbolization is more important for the individual protecting their own identity. However, if this were the case then we would expect symbolization to not be positively associated with BTS motivation because it is inherently concerned with others. It is possible that symbolization plays an important role for prosocial behavior and may not compel people to act on feelings of moral indignation so much that they seek revenge for the person mistreated. Internalization may on the other hand motivate people to behave morally no matter the type of moral action needed. Regardless, studies focusing on the effect of moral identity with moral behavior may need to carefully take into consideration and account for what individuals believe to be moral. Especially for individuals that feel a strong sense of BTS motivation, if they experience moral indignation this could have implications for their behavior depending on their moral identity internalization or symbolization. Barclay et al. (2014) suggest including normative frameworks in the study of moral identity to gain a better understanding of how the two interact to influence behavior.

Moral Identity Symbolization

The results of the current study related to moral identity symbolization suggest that studies of moral identity that exclude the symbolization subcomponent of moral identity may be missing valuable insights. Although previous studies have not explored the direct relationship between BTS and moral identity symbolization, several points connect the concepts in theory. Most obviously, symbolization of moral identity was originally described as social in nature, with the key characteristic being that it is important to one's sense of self that their actions reflect

their moral identity (Aquino & Reed, 2002). Because BTS is focused on finding purpose through a dedication to others besides oneself, it makes sense that a concept mainly focused on moral action, symbolization, would have a strong relationship with it.

Additionally, the positive relationship also makes sense given that the desire to help outside of oneself may result in strong motivation to act on that desire. The significance of symbolization is in line with previous studies that suggest it not only having equal importance to internalization, but possibly even more importance (Gotowiec & Mastrigt, 2019). Specifically related to prosocial behavior, one previous study found that participants high in moral symbolization and low in internalization were most likely to progress from an intention to display prosocial behavior to initiating prosocial behavior (Schaumberg & Wiltermuth, 2014). While some have argued that symbolization is only important for public displays of prosocial behavior that receive recognition (Winterich et al., 2013), Gotowiec and Mastrigt (2019) found that symbolization was important for both public and private displays of prosocial behavior. This contrasts with many other studies that emphasize the importance of internalization of moral identity (Hardy et al., 2015; Sage et al., 2006).

The current study adds to the suggestions that moral symbolization might play a unique and important role in understanding the relationship between moral identity and other moral indicators. Since it may be especially relevant for factors influencing moral action, future studies may benefit from considering the influence it has on variables such as BTS motivation. Additionally, there have been previous suggestions that symbolization results in moral behavior when people are motivated to be viewed as moral by others (Krettenauer, 2020; Schaumberg & Wiltermuth, 2014), but that they will stop the behavior once incentives no longer exist. However,

exploring the relationship between symbolization and BTS motivation may help to identify a prosocial motivation for symbolization that is other-oriented.

Internalization of Moral Identity

Although symbolization may play an important role in BTS, the results of the current study suggest that both symbolization and internalization play a key role in predicting BTS, so the importance of internalization needs to be considered as well. Since internalization is a private process that occurs within an individual in which they are deeply concerned with being a moral individual, it is not surprising that this would be associated with a desire to help others beyond oneself. However, there is some evidence that when somebody is high in internalization and low in symbolization, they may be less likely to act. For example, in the previously mentioned study by Barclay et al. (2014), individuals who observed mistreatment that were high in internalization and low in symbolization sought revenge for the situation that was more salient (i.e., blatant harassment) and did not seek revenge for the situation that was more morally ambiguous (i.e., unclear if mistreatment was warranted). Taken together with the results of the current study, it may be that internalization and symbolization work together to result in moral behavior. In fact, one previous study found that moral identity internalization significantly moderated the influence of symbolization on moral behavior for college students (Li et al., 2021). The authors suggest that symbolization is more important for moral behavior, however it is necessary to have high internalization as well so that moral traits are important to the self-concept. Since the current study found that both variables were in the best model predicting BTS motivation, it is possible that internalization provides the reflection and commitment to treating others morally and being a moral individual while symbolization helps propel individuals to action since it is more social

in nature. Future studies are needed to explore this possibility and better understand the relationship between the two and how they influence moral behavior.

Limitations

There are several limitations in the current study that future studies would benefit from addressing. First, as with most self-report measures of morality, there is the potential for non-morality in the measures used. For example, it may be possible for somebody largely considered immoral to score highly on the BTS motivation scale of the CPS. That is, somebody who is a part of a terrorist group may believe they are making the world a better place by inflicting violence on others. Future studies may need to investigate further the actual actions associated with BTS motivations and related moral indicators. Second, participants in this study were undergraduate students, so it is unclear whether these results would generalize to other populations. Since it is possible that undergraduate students are going through significant changes related to their moral identity, it would be helpful for future studies to explore the relationship between BTS motivation, empathic traits, and moral identity with older participants who may have a more solidified sense of moral identity. This may also be true for students who are much younger and are just starting to develop a sense of moral identity and empathy. Third, participants mainly consisted of females so it is unclear if the results of the current study are true for males as well. Since some previous studies have noted a difference in moral identity between males and females (Kennedy et al., 2017), future studies should address specifically how the variables in the current study predict BTS motivation for males. Finally, as with most studies investigating moral identity, there is the possibility that participants did not have an accurate perception of their own moral identity, or want to appear more moral than they actually are, i.e., moral hypocrisy (Dong et al., 2019). Future studies might benefit from using different measures

of moral identity, such as an implicit measure. Related to this point, since qualitative interview studies have been found to provide valuable insights related to moral identity (i.e., Colby & Damon, 1992), it would also be helpful to study the concepts in the current study using interviews.

Conclusion

In order to encourage individuals to have BTS motivation, it may be helpful to first foster perspective taking, empathic concern, and moral identity. Because BTS involves many factors such as being aware and understanding what others go through in addition to caring and having a desire to help, it makes sense that several aspects related to morality would result in BTS. Educational and intervention programs aimed at helping individuals develop BTS may need to start by teaching how to have a sense of moral identity and empathize with others before expecting strong BTS motivation. The current study also helps to distinguish between the subcomponents of empathy and suggests that perspective taking may be especially important to teach in order to develop BTS motivation as well as help sustain it over time, as previous research indicates (Malin et al., 2014). The results of this study are also another example of why it is important to study the subcomponents of empathy rather than treating it as one general concept.

Finally, specifically related to moral identity, the current study suggests that symbolization may be equally as important, if not more important, as internalization for predicting BTS motivation. Since both of these concepts are highly social in nature and action-oriented, it makes sense that they would be connected. Finally, the current study suggests that further research is still needed in order to fully understand the distinction between the internalization and symbolization subcomponents of moral identity. Much of the previous

research on symbolization would suggest that it would not be positively associated with beyond-the-self motivation, so it is important to further investigate. This finding suggests that there may be potential for symbolization to positively influence moral behavior and encourage people to care deeply for the well-being of others. If this relationship is further explored, it may be possible to develop interventions that focus on the social aspect of moral identity in combination with perspective taking in order to promote motivation to help others in the world outside of oneself.

Study 3

Literature Review

Moral identity relates to how important somebody considers having moral qualities included in their sense of self (Aquino & Reed, 2002). There has been growing interest in this concept for many years now, with research continuing to show its significance for various moral indicators and moral behavior, such as concern for members of out-groups and donations to charity (Reed II & Aquino, 2003; Winterich et al., 2013). However, since there are discrepancies in the ways that moral identity is measured, as well as concern that people do not always have an accurate perception of their own moral identity (Mazar et al., 2008), neuroimaging techniques have the potential to offer valuable insights on a neural level.

Although neuroimaging studies that directly explore the concept of moral identity are scarce, numerous previous studies have utilized various neuroimaging techniques to advance the field of moral psychology in general. In particular, functional Magnetic Resonance Imaging (fMRI) has contributed to a better understanding of how individuals process moral issues. For example, Greene et al. (2001) were able to demonstrate that regions of the brain associated with emotion are more active during moral personal dilemmas than for moral impersonal dilemmas. This was significant because prior to this study, emotion was relatively overlooked due to the emphasis on moral reasoning within the context of moral judgment (Kohlberg, 1971; Piaget, 1965).

Since then, fMRI studies have provided valuable clarification regarding how people process moral information. One study that has significant implications for moral behavior

investigated brain activity while participants imagined killing civilians versus soldiers while watching a video game depiction (Molenberghs et al., 2015). The authors found that activity in the lateral orbitofrontal cortex (OFC) was significantly different depending on who participants were imagining killing, which was associated with increased guilt when imagining killing civilians. In addition, PPI analysis results showed increased activity between the lateral OFC and temporoparietal junction (TPJ) for the civilian scenario but not the soldier scenario, which suggests that these areas work together to judge certain situations as morally wrong. This study is an example of how neuroimaging studies can help provide insights as to how people may justify certain acts on a neural level.

Furthermore, brain stimulation studies have also helped illuminate how stimulation in different areas of the brain may alter moral judgments. For instance, one previous study found that when anodal transcranial direct current stimulation (atDCS) was applied over the medial prefrontal cortex (MPFC) while participants were viewing moral violations, they judged the violation harsher than the group who did not receive atDCS (Yuan et al., 2017). This highlights the significance of the MPFC in making moral judgments, and its particular sensitivity to moral violations. Thus, in order to continue examining how issues of morality are processed in the brain, it is important to use fMRI and other neuroscientific methods to complement findings from behavioral and self-report studies. Since "moral identity development […] is the integration of self and morality" (Lapsley, 2015, p.165), in order to better understand moral identity on a neural level, it may be helpful to consider how areas of the brain associated with selfhood are activated when processing moral information. In fact, as will be explored in the followings sections, areas of the brain associated with selfhood such as the MPFC and posterior cingulate cortex (PCC) have been shown to activate when processing moral information (Han, 2017; Moll

et al., 2007). These areas are also part of the Default Mode Network (DMN), which is important for self-referential processing (Reniers et al., 2012). Taken together, this suggests that for investigating moral identity on a neural level, it may provide valuable insight to examine activation within the DMN and areas of the brain associated with selfhood when processing moral information.

Selfhood and the Default Mode Network

A significant finding that has advanced understanding of moral psychology is the activation of the DMN when moral information is being processed (Immordino-Yang, 2016). The DMN was originally proposed by Raichle and Snyder (2007) and highlighted the fact that, even at rest, human brains are active. Specifically, brain regions associated with the DMN such as the posterior cingulate cortex, amygdala, and the lateral and medial frontal cortex (Reniers et al., 2012) have shown increased activation in response to making moral decisions. The authors suggest that the DMN is relevant to moral decision-making due to its importance for self-referential processing. Since moral identity requires thinking not only about others and how actions will affect them, but also one's self and how they would like to behave and have behaved in the past, this may also activate areas in the DMN. Furthermore, brain networks associated with selfhood have been suggested to be a part of the DMN (De Pisapia et al., 2019; Gutchess, & Kensinger, 2018). Both the MPFC and the PCC, two important structures within the DMN, have been suggested to play a significant role in individuals' sense of self (Li et al., 2014).

Medial Prefrontal Cortex and Selfhood

As previously discussed, there is ample evidence for a close association between processing information relevant to selfhood and moral behavior (Monin et al., 2007). Before the intertwined relationship between morality and self was studied on a neural level, ample support

for this relationship came from various studies using interviews and self-report methodologies (Colby & Damon, 1992; Narvaez & Lapsley, 2009). In general, these studies concluded that if sense of self and morality are aligned and share values, this may result in moral exemplars and consistent moral behavior. However, if someone's sense of self and morality are conflicting, this could stop them from behaving morally and instead act out of self-interest.

In neuroimaging studies investigating questions that deal with identity and selfhood, both related to morality and not, the MPFC has been shown to be closely associated with self-consciousness (Eisenberger et al., 2005) and processing information relevant to selfhood (Sui & Gu, 2017). Similar to the current study, Eisenberger et al. (2005) were interested in investigating why self-reported neuroticism tends to lack accuracy in predicting behavioral outcomes by investigating the relationship using neural correlates instead of relying on self-report measures. Likewise, exploring activity in areas such as the MPFC during moral tasks may be another way to investigate the importance of selfhood in morality as an alternative to self-report measures.

Additionally, Kelley et al. (2002) found that the MPFC was selectively engaged for judgments that were relevant to the self as opposed to relevant to others and case judgments. However, this is in contrast to many other studies, which showed that when considered as a whole the MPFC is often related to processing information related to others as well. Once previous research began to examine subcomponents of the MPFC, evidence emerged for the dorsal MPFC being specifically activated for processing information related to others and the ventral MPFC for processing information related to the self (Sevinc & Spreng, 2014). This distinction was further supported by one study that directly investigated activity within the MPFC and the specific functions related to self and other judgments (Denny et al., 2012). These authors used a gradient to analyze MPFC activity and found that the greater the ventral activity,

the greater the association with self-referential processing and the greater the dorsal activity, the greater the association with other-referential processing. Li et al. (2014) summarize this by suggesting that the vMPFC helps identify when information is relevant to the self and the salience of the stimuli, while the dMPFC distinguishes whether or not stimuli are relevant to the self or other.

Others who have found this key difference between the dorsal and ventral MPFC while processing self-referential information note that the dorsal MPFC is more closely associated with cognitive processing whereas the ventral MPFC with affect (Gusnard et al., 2001). This is supported by previous research showing that those who score high on measures of psychopathy have a decreased response to the pain of others in the vmPFC (Decety et al., 2013). However, even for tasks that are primarily cognitive, the ventral MPFC may show decreases in activity due to processing emotions related to the cognitive task at hand, such as emotional distress (Li et al., 2014). These previous studies may suggest that both the ventral MPFC and the dorsal MPFC may show change in activity during moral tasks, especially moral violations as in the current study, since reading and responding to the moral violations may engage both cognitive processing and affect.

Posterior Cingulate Cortex and Selfhood

Although there have not been ample studies looking directly at activity in neural networks associated with selfhood during morality related tasks, one meta-analysis that reviewed forty-three fMRI studies again found support for the role of the MPFC and PCC in processes related to the self (Han, 2017). Additionally, many studies that emphasize the role of the MPFC in processing self-referential information also note activation in the PCC (i.e., Denny et al., 2012, Li et al., 2014). It has been suggested to be specifically related to both explicit and implicit

emotional engagement in tasks (Leech & Sharp, 2014; Maddock et al., 2003) however, the PCC is more recently suggested to be involved with memory due to its close connection with the hippocampus (Rolls, 2019). As Han (2017) notes, although this makes it not entirely related to selfhood, reflecting on previous life experiences and therefore tapping into autobiographical memory is an essential part of moral reasoning. In order to make a moral decision, it is first necessary to reflect on whether or not the action reflects the individual's moral identity, and thus accessing memory is necessary (Narvaez, 2010). Because of this, it is suggested to be part of the self-related process when making moral decisions and will be used as a seed region for the current analysis.

Psychophysiological Interaction Analysis

The current study will consist of reanalyzing fMRI data using a psychophysiological interaction (PPI) analysis. PPI analysis establishes a seed region and then tests the hypothesis that activity in that region can be explained by the interaction between activity in another area and the stimuli (Chen et al., 2016). Additionally, a PPI "means that the contribution of one area to another changes significantly with the experimental or psychological context" (Friston et al., 1997, p. 218). Importantly, Friston et al. (1997) also note the potential for PPI to provide a model of modulation, as studies since have done. For example, Crockett et al. (2017) were able to use PPI in order to find that connectivity between the lateral prefrontal cortex (LPFC) and dorsal striatum (DS) was different based on whether somebody besides the participant was being harmed in a scenario or the participant was being harmed. These results were able to highlight that the LPFC modulated the DS response to profiting from a moral transgression.

According to Ashburner et al. (2014), PPIs are closely related to effective connectivity since they demonstrate how different brain regions interact with each other, however they are a

simple version due to the small number of source regions. The authors explain that PPIs can be thought of as extensions of factorial designs where the following formula is used for two regions in the brain (V1 and posterior parietal (PP) in this case):

$$y = V1\ \beta_1 + PP\ \beta_2 + V1\ X\ PP\ \beta_3 + G\ \beta_4 + \epsilon$$

Importantly, the PPI includes the main effects from the designated brain regions as well as an interaction between the two. Ashburner et al. (2014) lays out four steps that need to be done in order to perform a PPI analysis. The first step is conducting a standard General Linear Model (GLM) analysis. Second, the BOLD signal from the identified seed region needs to be extracted. They note that this step is more complicated due to the neural signal in fMRI data being convolved with the hemodynamic response function (HRF). The HRF must be deconvolved in order to get the neural signal. Third, the interaction term needs to be formed which, as previously mentioned, is the interaction between the neural signal of the seed region and the experimental condition. Finally, another GLM analysis needs to be done with the neural signals, interaction terms, and experimental conditions included.

By using a PPI analysis, Chen et al. (2016) were able to investigate the interaction between the chosen seed region, the amygdala, and other brain regions after testosterone administration and how it related to moral judgments. For the current study, PPI analysis will be used in order to explore the interaction between the seed regions, the MPFC and PCC, and other brain regions after reading moral violations. Once the neural underpinnings related to moral judgment are better understood, it may become more evident why there is often such a discrepancy between how individuals think about moral issues and how they actually end up behaving.

Since concepts related to morality, such as moral identity, are intertwined with sense of self (Lapsley, 2015), selfhood is an integral part of the current study. When it comes to neuroimaging studies investigating selfhood however, even the concept of self-related processing itself has been debated (Christoff et al., 2011; Northoff, 2011). For the purpose of this study, self-related processing will be defined as "processing requiring one to evaluate or judge some feature in relation to one's perceptual image or mental concept of oneself" (Christoff et al., 2011, p.187). Since examining moral identity at the neural level is the overall objective of this study, it is important that one's mental concept of oneself is emphasized.

In order to address the possibility of reverse inference in the current study, fMRI meta-analysis tools were used in order to provide additional support for the importance of the MPFC and PCC in selfhood. This was done using Neurosynth, which is an online database that takes activations found from published neuroimaging studies and outputs common activations found in the studies. Currently, there are 87 studies for the term "morality" and 166 studies for "self-referential." When searching for both terms separately, it can be seen that the MPFC and PCC are both activated for each term.

Additionally, whereas Neurosynth compiles data that has already been collected in previous studies, NeuroQuery (Dockès et al., 2020) predicts activation based on previous studies. Currently, there are 386 terms relating to "moral" and 1,139 terms relating to "self-referential" in the database. When entering both terms into the query, activation in both the MPFC and PCC is predicted. Dockès et al. (2020) acknowledge that this method is helpful in testing reverse inference but that it is not currently possible to explain each and every task humans perform quantitatively. Therefore, although there is evidence for the role of the MPFC and PCC in selfhood, this is certainly not their only function.

Method

Results from the previously mentioned studies will inform the reanalysis of an fMRI dataset titled, "Moral judgments of intentional and accidental moral violations across Harm and Purity domains" that can be found at https://openneuro.org/datasets/ds000212/versions/1.0.0. The study was funded by Alfred P. Sloan Foundation, Simons Foundation, and NIH Grant 1R01 MH096914-01A1. Three papers have already been published using this dataset (Chakroff et al., 2015; Koster-Hale et al., 2013; Wasserman et al., 2017).

Participants and Procedures

Reanalysis of the dataset consisted of 24 neurotypical undergraduate students (mean age = 28.64 years; 8 females). All participants had normal or corrected-to-normal vision, were right-handed, and native English speakers. Informed consent was originally collected from each participant following MIT guidelines and participants were compensated.

The scans took place as the participants read 60 different stories. The main task of interest for the reanalysis included moral judgments for different scenarios demonstrating various categories of violations. The four types of moral violations that were presented to participants were: physical harms (i.e., stabbing), psychological harms (i.e., insults), incest violations (i.e., sleeping with a sibling), and pathogen violations (i.e., drinking human blood). There were 12 scenarios for each of the four different violations or harms, as well as 12 neutral scenarios. Each type of violation or harm included both accidental and intentional scenarios. In other words, participants read 12 intentional harmful acts, 12 accidental harmful acts, 12 intentional impure acts, 12 accidental impure acts, and 12 neutral scenarios. Intent was conveyed through the following verbs equally throughout all the categories: "knew/thought," "realized/discovered," "saw/noticed."

For example, for the intentionally harmful condition, participants would read the following: “You are about to leave your friend’s house when the carbon monoxide detector sounds. You check the back of the detector to see what might be going on. You take a look, turn off the detector, and leave the house. The detector detects dangerous levels of carbon monoxide in your friend’s house. From the back of the detector, you knew that the detector was working properly.” For the accidentally harmful condition, the last sentence would be changed to “From the back of the detector, you thought the detector just needed new batteries.”

An example of a story for the intentional impure condition would be: “You are on vacation by yourself in a national park, hiking and camping. After a day or so, you run into someone who happens to be from the same city as you. A day later, you decide to have sex in your tent, using two forms of birth control to be safe. The person you have sex with in your tent is your first cousin. You came to realize you’re first cousins, as soon as you met and started talking.” For the accidentally impure condition the last sentence would be “You didn’t realize you’re first cousins, as you’re from estranged parts of the family.” Finally, for the neutral condition participants would read the following: “You are a new employee at a popular clothes store in the mall. You go in for your first day of work and meet your first costumer. They are looking for a new shirt. The customer tries on a few shirts but decides not to buy any of them. The customer leaves their shirts in the dressing room. You realized this and refold the shirts to be put back.” Once the participants read the stories, they made a decision on a 4-point scale regarding how morally wrong the story was from 1 (“not at all morally wrong”) to 4 (“very morally wrong”). Participants used a button box in order to make their moral judgment. Details showing how the scenarios were presented to participants can be seen in Figure 2.

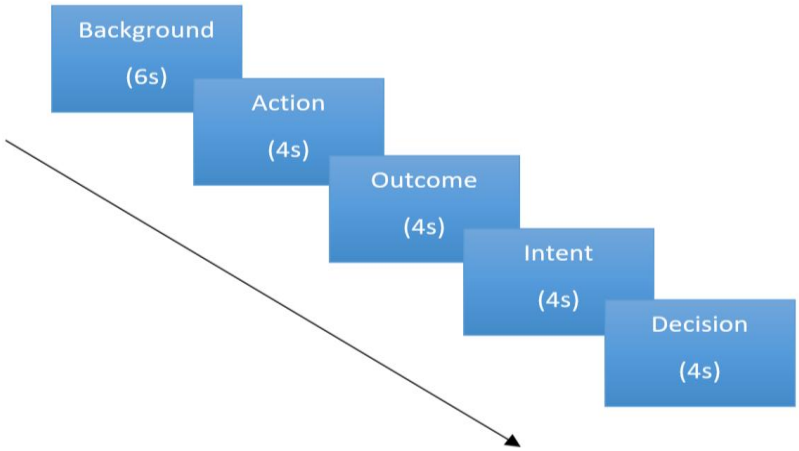


Figure 2. Sequence for Presenting Scenarios to Participants for Study 3

There were a total of six runs per participant for this part of the study. Each run was 5.5 minutes with a 10 second rest in between each story, resulting in a total time of 33.2 minutes. Ten stories were presented during each run. The stories were presented pseudorandomly so that participants never saw the intentional and accidental version of the same scenario, and so that the same condition was not repeated immediately after itself.

fMRI Data Acquisition

Data was originally collected in 2011 at the scanning facility in MIT. Participants in the reanalysis were originally scanned in a 3-Tesla Siemens Trio MRI scanner, with 26 4-mm near-axial slices for the whole brain, and in-plane slices at 3x3-mm, TR = 2 s, TE = 40 ms, flip angle of 90°.

fMRI Preprocessing and Analysis

Preprocessing was done using SPM 12 and MATLAB R2015a. Structural images were first coregistered to the mean functional image, segmented, and normalized. All 166 volumes of the functional images were slice-time corrected, realigned, and smoothed with a Gaussian kernel of 6-mm full-width at half maximum (FWHM).

First, behavioral data for each condition was compared in order to identify any differences in the amount of time it took for participants to respond to the scenarios. Additionally, a one-way and two-way ANOVA was conducted on behavioral data in order to determine any differences in how morally wrong participants thought each scenario was. Next, first-level analyses were conducted to examine the activations for moral versus non-moral conditions as well as intentional versus accidental and intentional harm versus accidental harm conditions using a general linear model. A design matrix was created that included ten regressors: five for the different conditions, which were convolved with the canonical Hemodynamic Response Function (HRF), and five for the six runs. Once the first-level analyses were complete, they were used to conduct a second-level analysis with thresholds of $p < .001$ uncorrected and cluster size ≥ 5, following the lenient threshold set by Chakroff et al. (2015). If no significant activations were found at $p < .001$, the value was changed to $p < .005$ for exploration purposes.

Finally, a psychophysiological interaction (PPI) analysis was done in order to examine the interaction between the different scenarios participants read and the associated activations between the MPFC and PCC while reading them (O'Reilly et al., 2012). ROI masks for the MPFC and PCC were constructed using MarsBaR 0.44 (http://marsbar.sourceforge.net). The MPFC was entered as a 3-mm radius sphere centered at MNI coordinates [-2, 52, 14]. The PCC was entered as a 3-mm radius sphere centered at MNI coordinates [-4, –56, 24]. These coordinates were determined using the previously mentioned meta-analysis tools NeuroQuery and Neurosynth, which provide MNI coordinates of the regions of interest in multiple previous studies.

Specifically for the PPI analysis in the current study, the areas of interest in the brain are those involved with selfhood. As previously mentioned, the MPFC and PCC will be used as the seed regions due to their close associations with self-related processes. For this particular dataset, changes in connectivity for these networks when comparing moral tasks versus non-moral tasks were examined. There were five PPI analyses for each seed region: moral versus non-moral, intentional versus accidental, harm versus impure, intentional harm versus intentional impure, and intentional harm versus accidental harm. In order to do this, the deconvolved time series was taken from the ROIs at the individual level, which was the physiological variable. The contrast between the previously mentioned conditions represented the psychological variable. Finally, an interaction term between these two variables was formed by using the contrast manager in SPM 12. The convolved regressors using canonical HRF were entered into a regression model. Once the individual analyses were complete, the resulting files were entered into a group-level analysis. For each condition, a t-test was conducted with the threshold again at $p < .001$ uncorrected, $k > 5$. If there was no significance at $p < .001$, $p < .005$ was used for exploration purposes.

The current study hypothesizes that the more morally wrong participants consider a given scenario, the greater the activation in areas such as the amygdala and fusiform area. In addition, the connectivity between the MPFC and PCC and other areas such as the amygdala and fusiform area is predicted to be greater for moral conditions than non-moral conditions. Finally, greater connectivity between these areas is predicted to be associated with judging a scenario as more morally wrong.

Results

Behavioral Results

Mean reaction times and responses to each scenario can be seen in Table 8 and Figure 3. One-way ANOVA for reaction times showed that there was no significant difference between response times between groups, $F(1,1238) = 0.03$, $p = 0.855$. One-way ANOVA for response key showed that all of the moral scenarios were judged as significantly more morally wrong than the neutral scenario $F(1,1238) = 358.6$, $p < .001$. Additionally, the accidental scenarios were rated as significantly less morally wrong than the intentional scenarios ($p < .001$). Finally, the intentional harmful scenarios were rated as significantly more morally wrong than the intentional impure scenarios ($p < .001$). A two-way ANOVA was then conducted after excluding the neutral scenario to measure intent versus harm. Results showed intent was significant [$F(1,988) = 537.48$, $p < .001$] as well as harm [$F(1,988) = 13.78$, $p <.001$]. Intent was the most significant factor (< 2e-16 vs. 0.0002 for harm). In addition, the interaction between intent and harm was also significant [$F(1, 988) = 14.76$, $p < .001$].

Table 8.

Average Reaction Time and Responses for Accidental Harmful, Accidental Impure, Neutral, Intentional Harmful, and Intentional Impure Scenarios

Scenario	*M* RT	*SD*	*M* Key	*SD*
Accidental Harmful	1.52	.99	1.61	.84
Accidental Impure	1.67	1.06	1.62	.86
Neutral	1.26	.84	1.02	.25
Intentional Harmful	1.52	.99	3.28	.88
Intentional Impure	1.58	.99	2.81	1.12

Note. M RT = Mean reaction time in seconds; *M* Key = Mean response key (1 = not at all wrong, 4 = very wrong)

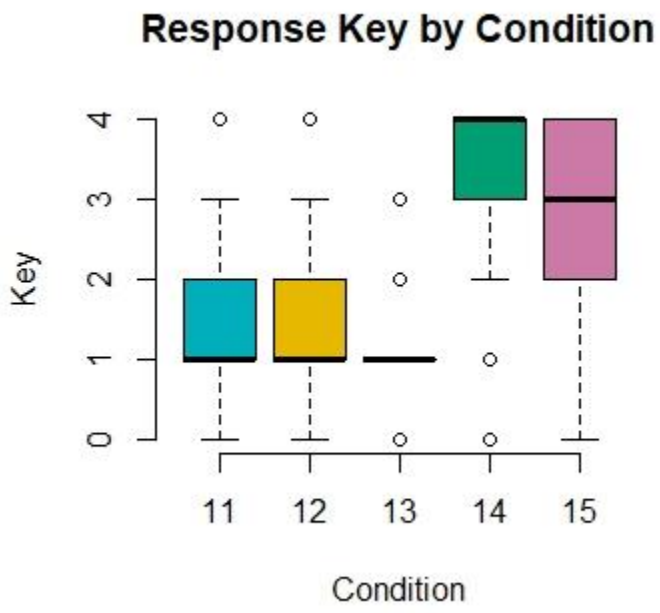


Figure 3. Mean Response Key for Each Scenario. Note: Key represents participants' response to scenarios. 1 = not at all morally wrong, 4 = very morally wrong. Condition represents type of scenario; 11: Accidental Harmful, 12: Accidental Impure, 13: Neutral, 14: Intentional Harmful, 15: Intentional Impure.

fMRI Results

Moral versus Non-moral

When activation for scenarios dealing with issues of morality was compared with neutral conditions not dealing with morality, activation was present within the middle frontal gyrus and superior frontal gyrus (Table 9 and Figure 4). For non-moral versus moral comparisons, activation was shown in the middle temporal gyrus, cuneus, and superior temporal gyrus.

Intentional versus Accidental

When scenarios dealing with both intentional harm and intentional impure acts were compared with scenarios dealing with accidental harm and accidental impure acts, activation was

present in the right superior temporal gyrus, left cuneus, and right cuneus. There were no significant voxels when comparing accidental versus intentional.

Intentional Harm versus Accidental Harm

Scenarios dealing with harm were compared based on intent. When intentional harm was compared with accidental harm, activation was present in the left middle temporal gyrus, left hippocampus, right supramarginal, right occipital sup, left precuneus, left superior frontal gyrus, left medial frontal gyrus, and right paracentral lobule. There were no significant voxels when subtracting intentional harm from accidental harm.

Table 9.

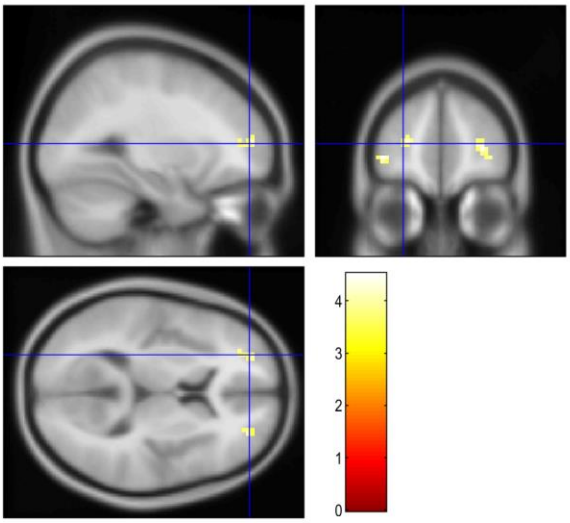
Contrast Results for Moral vs. Non-moral, Non-moral vs. Moral, and Intentional vs. Accidental

Condition/Region	X	Y	Z	k	t
Moral-nonmoral; p=.001					
L Middle Frontal Gyrus	-42	50	-1	10	4.36
R Middle Frontal Gyrus	30	50	5	29	4.50
L Superior Frontal Gyrus	-24	50	11	18	4.19
Nonmoral – moral; p =.001					
L Middle Temporal Gyrus	-51	-10	-13	44	4.98
L Cuneus	-21	-94	-1	984	10.17
L Superior Temporal Gyrus	-54	-31	2	7	3.86
L Superior Temporal Gyrus	-42	-49	20	63	5.57
Intentional – accidental; p =.001					
R Superior Temporal Gyrus	51	-37	11	9	4.14
L Cuneus	-21	-85	17	8	4.01
R Cuneus	6	-79	17	18	4.40
Intentional harm – accidental harm; p =.001					
L Middle Temporal Gyrus	-54	-4	-16	22	4.80
L Hippocampus	-30	-13	-13	5	3.92
R SupraMarginal	57	-34	26	8	3.75
R Occipital Sup	24	-82	38	8	4.31
L Superior Frontal Gyrus	-21	5	62	22	4.62

L Precuneus	-12	-43	74	22	4.32
L Medial Frontal Gyrus	-3	-28	65	11	4.00
R Paracentral Lobule	6	-37	71	6	3.81

Note. L: left side of brain; R: right side of brain; k: voxels.

A



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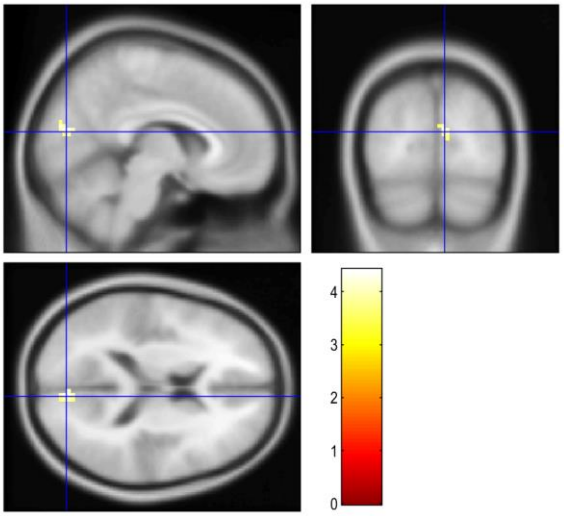


C

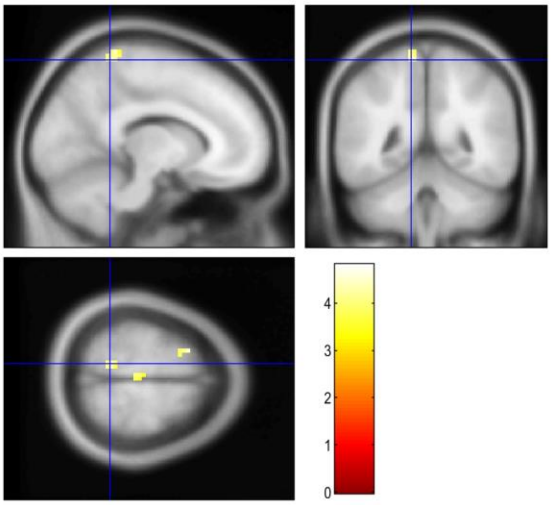


Figure 4. Contrast Results for Whole Brain Analysis. *Note.* A: Moral versus Non-moral; B: Intentional versus Accidental; C: Intentional harm versus Accidental Harm

PPI Results

Moral versus Non-moral Condition

When moral scenarios were compared with neutral scenarios, the MPFC showed significant connectivity with the right cingulum mid, while the PCC showed significant connectivity with the right paracentral lobule. There was also significant activation when comparing the neutral scenarios with the moral scenarios. For the MPFC, there was connectivity with the left calcarine, right and left middle temporal gyrus, and left middle occipital gyrus. The PCC showed significant connectivity with the right calcarine, left middle temporal gyrus, and right middle frontal gyrus.

Table 10.

Psychophysiological Interaction Analysis Results for Moral vs. Non-moral Condition

Condition/Region	X	Y	Z	k	t
Moral – nonmoral x mpfc; p =.001					
R Cingulum Mid	6	-25	44	14	4.18
Nonmoral – moral X mpfc; p = .001					
L Calcarine	0	-88	-4	324	6.23
R Mid Temporal Gyrus	54	-22	-13	10	4.45
L Mid Temporal Gyrus	-48	-25	-7	59	4.75
L Occipital Mid	-39	-88	-7	16	5.52
L Middle Occipital Gyrus	-33	-88	14	25	4.40
L Superior Temporal Gyrus	-48	-58	26	32	4.57
L Middle Frontal Gyrus	-30	17	59	55	4.90
Moral – nonmoral x pcc; p =.001					
R Paracentral Lobule	12	-31	50	5	4.44
Nonmoral – moral x pcc; p = .001					
R Calcarine	15	-91	-1	214	4.73

L Mid Temporal Gyrus	-51	-61	11	12	3.85
R Mid Frontal Gyrus	27	2	62	25	5.11

Note. L: left side of brain; R: right side of brain; k: voxels.

Intentional versus Accidental Condition

When intentional acts were compared with accidental acts regardless of type of scenario, the MPFC showed significant activity when accidental was subtracted from intentional. This resulted in interaction with the left middle frontal gyrus, and left angular gyrus, left superior frontal gyrus, and right precuneus. The opposite was true for the PCC; there was only significant activity when intentional was subtracted from accidental. This resulted in significant interaction with the left and right insula, right supramarginal, and right anterior cingulum.

Table 11

Psychophysiological Interaction Analysis Results for Intentional vs. Accidental Condition

Condition/Region	X	Y	Z	k	t
Intentional – accidental x mpfc; p =.005					
L Mid Frontal Gyrus	-33	56	8	28	4.26
R Angular Gyrus	51	-64	26	10	3.58
L Angular Gyrus	-54	-52	32	20	3.51
L Superior Frontal Gyrus	-24	41	23	12	3.89
R Precuneus	6	-64	44	11	3.45
Accidental – intentional x pcc; p =.001					
L Insula	-39	-13	5	10	5.33
R Insula (BA 13)	48	-22	14	11	4.14
R SupraMarginal	63	-28	26	16	4.45
R Anterior cingulum	3	20	29	14	5.08

Note. L: left side of brain; R: right side of brain; k: voxels.

Harm versus Impure Condition

When harmful scenarios were compared with impure scenarios regardless of intent, the MPFC showed interaction with the left inferior parietal lobule, right cingulum mid, and left superior parietal lobule. For the opposite comparison, the MPFC showed interaction with the left

parahippocampal gyrus, left fusiform area, and right lateral globus pallidus. The PCC showed significant interaction with the left precentral gyrus when subtracting impure scenarios from harmful scenarios, and interaction with the left hippocampus, left middle temporal gyrus, and right supramarginal gyrus for the opposite comparison.

Table 12

Psychophysiological Interaction Analysis Results for Harm vs. Impure Condition

Condition/Region	X	Y	Z	k	t
Harm – impure x mpfc; p =.001					
L Inferior Parietal Lobule (BA 2)	-51	-31	38	12	4.40
R Cingulum Mid (BA 32)	3	17	44	13	4.03
L Superior Parietal Lobule (BA 40)	-39	-43	59	8	4.03
Impure – harm x mpfc; p =.005					
L Parahippocampal gyrus	-33	-37	-13	6	3.25
L Fusiform	-30	-55	-4	6	3.44
R Lateral Globus Pallidus	21	-10	-4	6	4.13
Harm – impure x pcc; p = .001					
L Precentral Gyrus	-54	-1	35	7	4.29
Impure – harm x pcc; p = .005					
L Hippocampus	-27	-19	-16	5	3.66
L Middle Temporal gyrus	-48	-61	8	6	3.55
R Supramarginal Gyrus (BA 40)	63	-46	29	7	4.05

Note. L: left side of brain; R: right side of brain; k: voxels.

Intentional Harm versus Intentional Impure Condition

When comparing scenarios that were intentionally harmful with scenarios that were intentionally impure, the MPFC showed significant interaction with the right frontal inferior tri and left frontal sup. There was no significance for the opposite comparison. For the PCC, when subtracting intentional impure scenarios from intentional harmful scenarios, there was significant interaction with the right frontal mid, right supp motor area, and left precentral gyrus. When

subtracting intentional harmful scenarios from intentional impure scenarios, there was interaction with the right supramarginal.

Table 13

Psychophysiological Interaction Analysis Results for Intentional Harm vs. Intentional Impure Condition

Condition/Region	X	Y	Z	k	t
Intentional harm – intentional impure x mpfc; p =.001					
R Frontal Inf Tri	39	29	11	9	4.82
L Frontal Sup	-18	32	44	9	4.03
Intentional harm – intentional impure x pcc; p =.005					
R Mid Frontal Gyrus	39	17	38	8	3.62
R Supp Motor Area	12	2	50	5	3.79
L Mid Front Gyrus	-27	-4	56	8	3.26
Intentional impure – intentional harm x pcc; p=.001					
R Supramarginal Gyrus (BA 40)	63	-34	26	6	4.57

Note. L: left side of brain; R: right side of brain; k: voxels.

Intentional Harm versus Accidental Harm

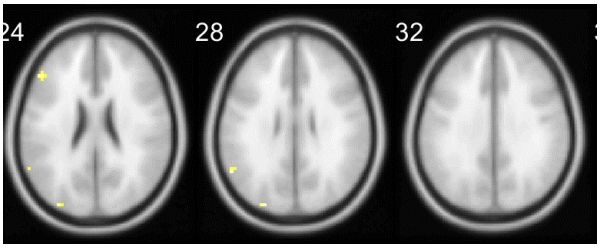
When comparing harmful scenarios based on intent, there was significant interaction when subtracting accidental harm from intentional harm for the MPFC. This resulted in interaction with the left frontal superior, left occipital mid, left angular, left frontal inf tri, right frontal mid, and left frontal superior. For the PCC, when subtracting accidental harm from intentional harm, there was significant interaction with the left frontal inf orb and left frontal inf tri. When subtracting intentional harm from accidental harm, there was significant interaction with the left insula and right and left supramarginal.

Table 14

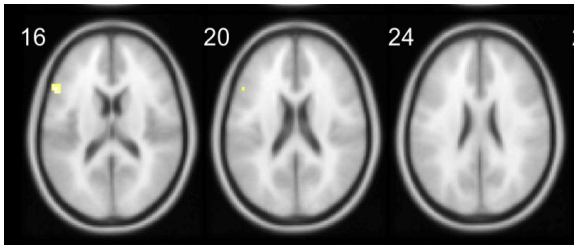
Psychophysiological Interaction Analysis Results for Intentional Harm vs. Accidental Harm Condition

Condition/Region	X	Y	Z	k	t
Intentional harm – accidental harm x mpfc; p =.001					
L Superior Frontal Gyrus	-24	50	2	7	4.08
L Occipital Mid	-30	-88	26	10	4.88
L Angular Gyrus	-57	-58	29	7	4.41
L Frontal Inf Tri	-51	29	23	8	4.19
R Frontal Mid	24	26	44	6	3.95
L Frontal Superior	-24	20	56	17	4.34
Intentional harm – accidental harm x pcc; p =.001					
L Frontal Inf Orb	-42	38	-4	9	4.23
L Frontal Inf Tri	-54	20	17	18	4.84
Accidental harm – intentional harm x pcc; p = .001					
L Insula	-42	-7	8	5	3.88
R Supramarginal Gyrus	66	-25	26	24	5.33
L Supramarginal Gyrus	-57	-25	38	8	4.36

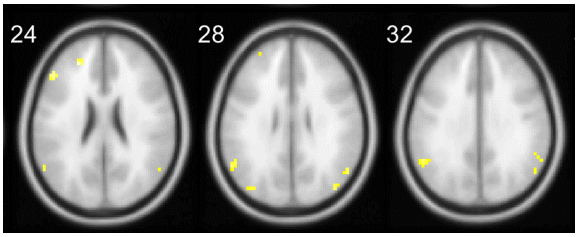
Note. L: left side of brain; R: right side of brain; k: voxels.



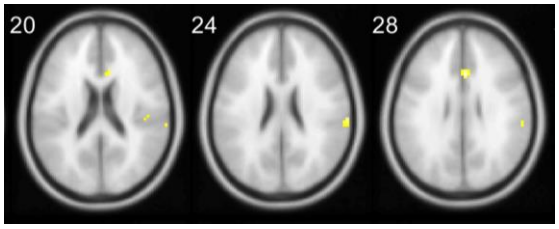
1) Intentional Harm – accidental harm x MPFC



2) Intentional Harm – Accidental Harm x PCC



3) Intentional – Accidental x MPFC



4) Accidental – Intentional x PCC

Figure 5. Psychophysiological Interaction Analysis Results Examining Interaction of Medial Prefrontal Cortex and Posterior Cingulate Cortex for Intentionality x Type of Violation

Discussion

The current study sought to investigate how participants differently responded to moral scenarios dealing with harm, purity, and intentionality related to the moral self. Behavioral results provided valuable insight as far as how morally wrong participants viewed the different scenarios. In additional, contrast results showed that different areas of the brain were activated when grouping the scenarios by moral scenarios, intentional versus accidental scenarios, and intentional harm versus accidental harm scenarios. Finally, results of the PPI analysis showed that connectivity between two areas of the brain associated with selfhood, the MPFC and PCC, and other brain areas associated with moral cognition significantly changed depending on type of scenario.

Behavioral results showed that while participants did not vary in their reaction times, their responses were significantly different based on type of scenario. As expected, intentional scenarios were rated as much more morally wrong than accidental scenarios. This aligns with numerous previous studies showing that intent matters greatly when people are processing morally relevant information (Ames & Fiske, 2015). Additionally, there was significant difference between participants' ratings of the two intentional scenarios. Participants rated intentionally harmful scenarios as more morally wrong than intentionally impure scenarios. Although impurity is related to morality (Graham et al., 2013; Jiang et al., 2020), some have argued that morality can be understood primarily through a lens of harm (Gray, 2014; Gray & Schein, 2012). The behavioral results of the current study align with the notion that harm may be more important than impurity for moral judgments. However, it is important to note that

intentionally impure acts were still rated significantly more morally wrong than accidental impure acts. This is significant due to recent discrepancies in findings related to moral judgment for impure acts based on intent. While studies such as Young and Saxe's (2011) found that intent did not matter when judging impure acts, Kupfer et al. (2020) recently suggested that this may be due to the stimuli typically used and that intent does influence judgment of impure acts.

Along with intentionally harmful scenarios being rated as the most morally wrong, when intentionally harmful scenarios were compared with accidentally harmful scenarios, there was significant activation in the middle temporal gyrus, hippocampus, supramarginal gyrus, superior frontal gyrus, precuneus, and medial frontal cortex. The middle temporal gyrus has previously been found to be involved in multiple aspects of processing moral information such as moral cognition, theory of mind, and empathy (Bzdok et al., 2012) while the precuneus has been found to be significant for autobiographical memory, especially in combination with emotion (Sommer et al., 2014). Additionally, the hippocampus has been shown to be involved with processing empathy (Stern et al., 2019) while the supramarginal gyrus has been found to be more associated with moral judgment (Han, 2017). Taken together, this suggests that in order to process intentionally harmful scenarios, participants may have employed multiple processes that engaged both cognitive and affective responses.

Additionally, while intentionally harmful and intentionally impure scenarios were rated as the most morally wrong, intentionally harmful scenarios were still rated as significantly worse than intentionally impure. This is interesting when taken into account with the different interaction between the MPFC and PCC and other regions during these conditions. For example, when comparing intentionally harmful scenarios to intentionally impure, the PCC showed activation with the middle frontal gyrus and right supplementary motor area (SMA). The middle

frontal gyrus has been associated with processing various moral information including right vs. wrong and moral dilemmas (Bryant et al., 2016) which may align with participants viewing the scenarios as morally wrong. Additionally, the right SMA has previously been found to have increased activation when processing empathy as well as processing painful situations that others are experiencing (Decety et al., 2008). This may suggest that the PCC helps differentiate self from others when processing moral scenarios and the SMA processes the pain that others may experience due to the harm.

When comparing the intentionally impure scenarios with intentionally harmful scenarios, the PCC showed significant activation with the right supramarginal gyrus. As previously mentioned, the supramarginal gyrus is more activated for moral judgment as opposed to moral sensitivity (Han, 2017), which may suggest that processing intentionally impure scenarios did not require empathy as the harmful scenarios did. Taken together, one possible explanation for participants judging intentionally harmful scenarios as more morally wrong could be due to an increased emotional reaction that resulted in empathy.

Furthermore, activity for the impure vs. harm and harm vs. impure conditions also highlights the differences in how these scenarios might be processed in the brain regardless of intent. First, when comparing impure vs. harm scenarios, the MPFC showed interaction with the parahippocampal gyrus and fusiform gyrus. The parahippocampal cortex has been thought to be important for memory and making associations between contexts (Sommer et al., 2014; Eichenbaum et al., 2008). Interestingly, in the previous study by Sommer et al. (2014), they found that the parrahippocampal was activated for adolescents but not adults while making moral judgments. Although the average age of participants in the current study was 28.6, this suggests that participants may have utilized past experiences at least when processing impure acts.

Additionally, previous studies have found the fusiform area to be activated when the moral emotions of disgust and indignation are evoked (Moll et al., 2002). Because of this, the MPFC showing interaction with the fusiform gyrus during impure vs. harm comparison may suggest discomfort possibly felt when reading impure scenarios. Furthermore, Moll et al. (2002) suggest that activation in the fusiform area may be due to the imageability of the situations that participants read. This may suggest that impure acts more strongly invoked images when participants read them, which may have worked together with the MPFC to differentiate the situation from the participants' view of self.

Conversely, when comparing harm vs. impure, the MPFC showed interaction with the cingulum mid, left inferior parietal, and superior parietal lobule. Activation in the inferior parietal lobule (IPL) aligns with previous studies that have found the IPL to be most activated for harmful situations as opposed to disgusting or dishonest scenarios (Parkinson et al., 2011). Meanwhile, the PCC showed interaction with the precentral gyrus, which is part of the default mode network found to activate when processing moral information vs. non-moral information (Han, 2017), including illegal vs. legal stimuli (Luo et al., 2006). This may again suggest the PCC interacting with other regions important for processing moral information while making the distinction between self and others. Taken together, these results suggest that harm and impurity may differently recruit brain regions to process the morally relevant information, and the regions that the MPFC and PCC interact with depend on the type of moral situation.

Another notable finding was the interaction between the insula and PCC for both the accidental harm versus intentional harm condition as well as the general accidental versus intentional condition. Previous studies have found significant associations between the insula and perception of others' pain, with activation in the insula being correlated with the empathic

concern subcomponent of empathy (Akitsuki & Decety, 2009). While some previous studies have found that the insula is more active for intentionally harmful situations than accidental, the current study suggests the PCC and insula may activate to process accidental harm as well. One explanation for this would be participants remembering their own experiences and empathizing with the person in the scenario genuinely not knowing about the impurity or harm present in the situation. This may also suggest that accidentally harmful scenarios may have been more relatable since most people try to avoid harming others, and thus harmful acts they have done previously may have been an accident. Therefore, reading accidentally harmful situations may result in remembering those accidentally harmful events and the pain associated with them.

As previously discussed, activity in brain areas located in the DMN has commonly been found to change while processing moral information. In the current study, various regions in the DMN showed significant activity such as the precentral gyrus, middle temporal gyrus, fusiform gyrus, parahippocampal gyrus, middle occipital gyrus, and precuneus. Also, the two main areas of interest in the current study, the MPFC and PCC, showed significant changes in interaction with other regions in the DMN and outside of it. The majority of these regions showed increased activity during harmful scenarios rather than impure scenarios, which suggests they may be more sensitive to moral information that deals with harm. However, as previously mentioned the parahippocampal gyrus and fusiform area showed increased interaction with the MPFC for the impure vs. harm scenarios. Taken together, these results support the important role of the DMN in processing moral information and suggest that activity in specific regions may be influenced by the type of moral situation. However, it is important to note that the relationship between the DMN and selfhood is complicated and should be interpreted with caution. One previous meta-analysis found that there was a 27% overlap between activation in self-related processes related

to moral functioning and the DMN, which the author found to be significant (Han, 2017). However, this still suggests that much of the activation does not overlap. Since the DMN is recruited for many other processes as well, such as mind-wandering and emotional processing (Taruffi et al., 2017), it is difficult to conclude definitively that the DMN is essential for information related to the self.

In general, these results support suggestions that selfhood may significantly influence the processing of moral information. This may add to support for investigating the role of moral identity in moral behavior as well as provide insights for moral education. For example, one previous study designed an intervention around this relationship by teaching students about moral exemplars that were closely associated with their sense of self (Han et al., 2017). Results indicated that these attainable and relevant exemplars were more positively associated with motivation to engage in moral behavior. This has the potential to be applied to many aspects of moral education, such as identifying moral causes that align closely with individuals' sense of self.

Limitations

There are several limitations to the current study and results should be interpreted with caution. First, the present study is a reanalysis of an fMRI study designed to investigate differences in moral judgment for scenarios based on harm, impurity, and intentionality. Future neuroimaging studies specifically designed to measure different aspects of moral identity should be conducted. Some previous studies that have done so have provided valuable insights. For example, one previous EEG study found that individuals with high moral identity had a reduced amplitude for the Early Posterior Negativity (EPN) component, which had previously been found to have a greater amplitude for prosocial scenarios (Pletti et al., 2019). The authors concluded

that individuals with high moral identity may be used to prosocial behaviors and require less effort to process prosocial stimuli. Additional neuroimaging studies may also help to investigate certain issues that are persistent in moral identity research, such as how accurately people report their explicit moral identity.

Studies designed specifically to investigate the role of self in processing moral information would also help to minimize the possibility of reverse inference (Poldrack, 2006), which is another possible limitation of the current study. Although meta-analysis tools such as NeuroQuery and Neurosynth were used in order to identify brain regions that have consistently been found to activate for fMRI studies dealing with morality and selfhood, it is still difficult to assign specific cognitive processes to the activations shown in the current study. Poldrack (2006) also suggests that one possible way to support findings based on reverse inference is to utilize behavioral data in combination with fMRI data. The current study attempted to use this method by examining reaction times and responses to the moral scenarios in combination with different activations found. However, future studies are still needed to investigate how selfhood and moral identity influence various processes on a neural level.

Lastly, there are two main limitations regarding participants in the current study. First, after excluding participants with incomplete data and participants who were not neurotypical, the sample size (n=24) was small which reduced the power of the current study. Future studies with more participants need to be conducted in order to confirm the results of the present study. Second, although the average age of participants was 28 years old, the minimum age was 19 and the oldest age was 50. Since moral judgment has been found to differ as adults get older (McNair et al., 2019), the significant age range of participants may have influenced the results of the current study.

Conclusion

Although further studies are needed to confirm the results of the current study, the results are generally consistent with previous studies examining neural correlates of processing moral information. For instance, the results support previous findings that suggest how people process moral information changes significantly based on whether harm is involved, and whether immoral acts were intentional or accidental. This was evident through activation in areas such as the precuneus and hippocampus when comparing intentional harm with accidental harm. These results, along with behavioral results judging intentional acts as more morally wrong, indicate that intentional moral violations are viewed as uniquely wrong. Additionally, PPI analyses support the important role of the MPFC and PCC when processing moral information. Significant interaction with areas such as the supplementary motor area, hippocampus, and supramarginal gyrus support the complex nature of processing moral information and how areas associated with selfhood may influence activity in regions dealing with emotion and moral judgment. Finally, the current study supports previous claims that the DMN is important for processing moral information, which may further support claims that selfhood is an integral part of morality.

General Discussion

Although previous studies examining the role of moral identity in promoting moral behavior have shown promise for at least being part of the solution to bridging the gap between moral thought and moral action, many aspects of moral identity research need further development. The current dissertation hopes to add to the literature by reporting results of a two-wave analysis of moral identity in order to offer insight as to how moral identity develops over time, exploring the relationship between moral identity and other related factors that have been understudied, and investigating neural correlates related to selfhood and moral scenarios. If the factors that influence moral identity development are better understood, more effective interventions can be developed in order to promote moral identity and eventually moral behavior. Ideally, an integrative approach may be developed that incorporates the variables that have a positive association with moral identity found in Study 2 into the different areas of an individual's life that influence moral identity identified in Study 1.

More specifically, Study 1 used Bronfenbrenner's ecological model in order to study different factors that might influence moral identity simultaneously in attempt to take a holistic approach that considers the many aspects of individuals' lives when developing interventions. Results showed that moral identity at Time 1 and ethnic identity were the best predictors for moral identity at Time 2. In addition, results indicated that school climate and school and neighborhood support may also be significant in predicting moral identity. While school influence as well as support from trusted adults, such as those found in schools and neighborhoods, have been established as influential for many things in an adolescent's life (Hurd

et al., 2009; Maxwell, 2002; van Hoorn et al., 2016), ethnic identity has gotten less attention. Since there have been previous suggestions that different aspects of identity are connected to each other (Lannegrand-Willems et al., 2018), it makes sense that fostering various identities may help to establish a sense of moral identity as well.

In addition to studying the factors that influence moral identity development, another aim of this dissertation was to study the relationship between moral identity and other related moral indicators. Study 2 took this approach by exploring the relationship between moral identity and empathy and BTS motivation. Results showed that all three factors are significantly positively associated with each other. In addition, the best predictors for BTS motivation were moral identity symbolization and internalization, empathic concern, and perspective taking. While these were all significant in predicting BTS motivation, moral identity symbolization and perspective taking were the most influential. This suggests that the social aspect of moral identity along with considering other people's point of views might be especially important for BTS motivation, which constitutes the basis of purpose development.

Finally, as previously mentioned, moral identity can be prone to self-deception or social desirability bias due to the thinking that having a strong sense of morality that is highly connected to sense of self is ideal. Thus, investigating how brain regions associated with selfhood are differently activated in response to various moral judgments can help to eliminate the issues that occur with self-reporting how important being a moral person is to participants' self-concept. For this reason, Study 3 sought to investigate the importance of moral identity for making moral decisions at the neural level. Results indicated significant differences at the behavioral level and neural level for intentional violations. Activation was also different when examining intentional harm vs. intentional impure acts, which makes sense given that individuals

have different priorities as far as what moral values they rely on when making moral decisions. In general, results indicate that intentionally harmful acts may be uniquely processed in the brain and judged more harshly than other types of moral violations. Additionally, since there was greater interaction between the MPFC and PCC and other areas during moral scenarios versus non-moral scenarios, this provides further evidence of the essential role that selfhood plays in processing moral issues.

As previously mentioned, once the relationship between different factors that are thought to influence moral behavior are understood, it may be possible to better help individuals develop moral identity and other related indicators in order to promote moral behavior. Study 3 offers valuable support for the important role of processing aspects of the self when dealing with moral information. Studies 1 and 2 may offer practical points of emphasis and places to start when considering possible educational programs and interventions to support moral development.

Educational Implications

These studies have several implications for educating youth about morality. First, these studies suggest that moral identity is a significant factor that relates to many different moral indicators used to understand moral behavior. Numerous studies have shown that variables that are thought to encourage moral behavior are only effective in the case that somebody has a high sense of moral identity. For example, one previous study found that ethical leaders were only seen as role models for participants that both identified with the leader and had a high sense of moral identity (Wang et al., 2021). This suggests that when designing interventions and educational plans to promote moral behavior, it may not be sufficient to only teach about moral values and reasoning, but may be essential to encourage students to incorporate moral values into their sense of self.

It may also be important to provide ample opportunities for students to participate in moral actions. In the study by Hart and Fegley (1995) in which they studied African American and Latin adolescents who demonstrated exemplary caring behavior in their communities, they found that institutions important in the adolescents' lives such as schools and churches helped to get them started participating in their respective moral actions. Additionally, a similar finding by Oliner and Oliner (1988) in which Christians who helped to hide Jews in Nazi Germany reported they were explicitly asked for help while most people who did not help were not asked. This suggests that if students are presented with various opportunities to help and practice moral behavior, they may be more likely to participate and this could result in a spark that propels them to seek out more opportunities.

Since some students grow up in less than ideal circumstances and experience what Hart (2005) refers to as "bad moral luck" (p.190), it is vital that institutions and schools do not rely solely on a student's personal environment (their family, home, neighborhood, etc.) to provide the opportunities to grow as a moral individual. In fact, Hart et al. (2007) found that for high school students who participated in community service, either required or voluntary, they were more likely to vote and volunteer as adults. This goes along with results of Study 1 showing that moral identity during the last year of high school significantly predicted moral identity two years later. Taken together, this suggests that high school and maybe even earlier may be a significant period in a student's life to expose them to opportunities to be moral and incorporate moral values into their sense of identity. Results of Study 2 indicate that having this sense of moral identity may promote caring for others and a concern for acting in a way that benefits those others.

One previous paper addresses the practical side of how to actually encourage purpose and moral identity in schools (Kiang et al., 2020). It is suggested that a holistic approach may be most effective rather than interventions that aim at any one factor. This again supports the multicomponent approach to morality and suggests that the effect of moral indicators may be stronger in the presence of other related indicators. The paper by Kiang et al. (2020) suggests that it may be important to help students explore their identity, including moral and general identity, in order to discover their purpose. The authors suggest that this could be accomplished through specific courses designed around purpose or supportive relationships with an adult that has identified their purpose, such as a mentor. The results of Study 1 also suggest that ethnic identity should not be overlooked and students should be encouraged to explore this alongside other identities. Along with this, it is also suggested that a school environment where the students have a sense of trust and can not only explore their purpose but act on it as well may be most effective for developing a sense of purpose. This is significant because some students may not automatically feel safe exploring their identity if they are part of a marginalized group. Because of this, it is important for any schools or programs to consider the diversity of the population they are working with when designing programs to encourage purpose and identity development.

Helping adolescents to identify a sense of purpose may be essential for their well-being due to numerous previous studies showing positive associations between a sense of purpose and factors such as satisfaction and negative associations with factors such as depression and anxiety (Bronk & Mangan, 2016; Burrow et al., 2014). As previously mentioned, moral identity is highlighted in several works describing how to help individuals develop a sense of purpose (Damon, 2004). Although Colby and Damon's (1992) study showed that adult moral exemplars

were committed to their cause no matter the difficulty, another study conducted with adolescents found that grit was not important for pursuing purpose, which the authors suggest may indicate that individuals pursuing purpose at this age may not be ready for quite as much challenge when pursuing their purpose (Malin, Liauw, & Damon, 2017). Further research is needed in order to support this claim, but until then it may be beneficial to help adolescents identify causes they care about that do not require great personal sacrifice.

One previous study that interviewed adolescents after they participated in a summer civics camp that lasted one week provides important insight for helping adolescents develop purpose (Bauml et al., 2021). The authors were able to identify four main factors that may be helpful in developing purpose; these are: meaningful interactions with knowledgeable adults, activities that are suitable for developmental stage and provide adequate challenge, providing diverse opportunities that are relevant to the many different identities present in any group of adolescents, and using an actions civic approach, which views adolescents as contributors to society. Importantly, some of the key components in the activities determined to be helpful during the summer camp required adolescents to develop greater perspective taking, develop a connection with the world beyond themselves, and participate in activities that were related to civic concerns connected with their identity. This again suggests an important relationship in which aspects of identity, empathy, and purpose work together to allow individuals to thrive.

The previously mentioned study by Bauml et al. (2021) also makes the important point that many minority students and low SES students are not given the same opportunities for civic education. This goes along with previous studies that report minority students felt the adults around them, mainly teachers, expected less out of them (Aschbacher et al., 2010). However, results from Study 1 indicate that moral identity and ethnic identity at Time 1 best predicted

moral identity two years later. This suggests that these students may have a strong sense of moral identity later in life if they are given adequate opportunities to develop a sense of purpose and are adequately challenged as well. In addition, it may be ideal to honor their background and ethnic identity while doing so. One possible way to do so is by helping individuals find activities to get involved with that honor their ethnic identity and contribute to a cause that addresses a concern related to their ethnic identity.

Additionally, another previous study found that marginalized students who participated in a Critical Civic Inquiry (CCI) program, which entailed inquiry-based learning focused on having important conversations about civic issues, reported increased ethnic identity and civic self-efficacy (Hipolito-Delgado & Zion, 2017). Importantly, those in the control group reported decreased ethnic identity and civic self-efficacy after the six months. Although the authors did not study the actual classrooms of the control group, they suggest that this difference may be due to the control group likely experiencing a teacher-oriented learning style. This suggests that it may be important to actively engage students to explore issues within the classroom, with the teacher and student both being active participants in the learning process. Results from Study 1 indicate that fostering this sense of ethnic identity may help individuals sustain a sense of moral identity years later.

Lastly, the study by Hipolito-Delgado and Zion (2017) also supports the importance of adolescents having meaningful adult relationships. In this study, high school students both had a positive relationship with their teacher and a graduate student was present in their classroom for the duration of the study. This again suggests that supportive adults who view adolescents as capable individuals that can positively contribute to society have the potential to foster a sense of moral identity in individuals. Although Study 1 did not find that parent civic engagement

significantly predicted moral identity at Time 2, it is still likely that support from parents, especially in adolescence, greatly contributes to the formation of moral identity.

Considering Different Definitions of Morality

Defining morality for different individuals has many implications for any educational program aimed at developing a sense of morality, because being moral could mean different things to different people. For example, if somebody is heavily focused on doing no harm to others, interventions designed to increase one's sense of moral identity in order to promote moral behavior may result in what is normally considered moral behavior. However, if somebody heavily focuses on loyalty to a group they belong to and respecting authority, instilling a strong sense of moral identity may in fact do more damage. Although the solution to this is far from simple, it is important for any educational programs to consider these issues.

Haidt and Josesph (2007) suggest that one of the reasons there has been such a heavy emphasis on harm and fairness in morality research is due to the fact that the field primarily consists of western, liberal researchers. They suggest that it is difficult to be impartial to one's own sense of morality when studying the concept, which has led to an idea that other values such as in-group loyalty and respect for authority may not be important for morality. However, the field is beginning to recognize the importance of studying morality in multiple diverse contexts and across different cultures, which may expand the way we think about morality. This expanded view of morality may result in emphasis on more values that could shift approaches to moral education. However, it is important to note that in most cases, the benefits of programs aimed at increasing moral identity and moral behavior outweigh the potential risks, as most people are highly opposed to harming others (Decety & Cowell, 2018). In addition, postconventional moral

reasoning has also been associated with the value of care and minimizing harm (Han & Dawson, 2021), which also suggests benefits of increased moral education.

Future Directions

Although these studies add insight as to the importance of moral identity and its relationship with other moral indicators, further research is necessary. First, more studies that use interviews and diary methods would provide valuable insight for the field of moral psychology. Since Colby and Damon (1992) conducted their interviews with moral exemplars, there have been limited studies that have utilized their methodology. Since this study is frequently cited and still provides important information about the relationship between sense of self and morality, it would be informative to conduct a similar study while taking into account the many changes that have occurred in society since that time. Additionally, these interviews were conducted with adults who were fairly settled in their identities and purposes. It would also be helpful for more studies in the future to conduct interviews with adolescents and emerging adults regarding their moral identity and purpose.

Specifically related to the Moral Identity Scale (Aquino & Reed, 2002), Study 2 indicates that more work is needed to clarify the differences between moral identity symbolization and internalization. There is evidence to suggest that both work in a positive way to motivate moral behavior, with internalization being more passive and symbolization being more active (Misch et al., 2021). However, since there have been some suggestions for the downfalls of symbolization in particular, it is important to carefully examine how various factors interact with symbolization before designing interventions. Related to this point, for future studies using the MIS, it would be helpful to include both internalization and symbolization in the study unless there is a justified reason for excluding one.

At the same time, further research that does not use the MIS may be necessary. One recent meta-analysis found that 65.3% of the studies in the study had used this measure (Hertz & Krettenauer, 2016). The authors suggest that this may limit our understanding of moral identity because the MIS is one conceptualization of moral identity. Further neuroimaging studies may be able to provide valuable insights as well as expand understanding of the concept. As previously mentioned, the study by Eisenberger et al. (2005) sought to explore an alternative to self-report measures by examining the neural correlates related to neuroticism and behavior. The authors compared self-report measures and brain activity related to neuroticism in order to better understand how behavior might be predicted. Studies such as this may be especially beneficial for the understanding of moral identity in order to explore aspects that may be difficult through self-report measures. For example, a similar method could be used that entails having participants take the MIS after participating in a related fMRI study. For the fMRI portion, various scenarios related to the MIS could be depicted, such as a person being helpful, honest, kind, etc. While participants viewed different scenarios, neural correlates of selfhood could be examined to investigate how much participants relate to the depicted scenes. Finally, results of the self-report MIS measure could be compared with fMRI results.

In addition, although Study 1 included a two-wave analysis of moral identity, many more studies that follow the development of moral identity over time are necessary. This is especially important because, as many previous studies have noted, it is difficult to know whether moral identity helps to develop things like BTS motivation, whether the relationship is reversed, or how various factors interact without longitudinal studies that follow the development of moral identity.

It would also be beneficial to conduct experiments to study actual moral behavior related to moral identity in order to eliminate relying on prediction to understand how moral identity influences behavior. Because many previous studies are interested in the role moral identity plays in prosocial behavior, it would greatly benefit the field to have more studies that investigate this link in the real world. Some studies that have experimentally manipulated moral identity indicate that making moral identity more salient in the moment does result in more moral behavior (Smith et al., 2014). However, future studies may need to explore how to make moral identity more salient while individuals are in their natural environments.

Finally, it would also be valuable to further study moral identity directly in educational contexts as well. For example, since there has been a significant push for social and emotional learning (SEL) in classrooms in recent years, there have been some discussions about the practicality of implementing such lessons in reality due to time constraints of teachers and various demands and objectives they are trying to meet. One previous paper reviewing SEL in classrooms suggested that not only would it be more practical to have these lessons interwoven into various lessons in the classroom, but this strategy might be more effective as well (Jones & Bouffard, 2012). Related to moral identity and other relevant moral indicators, it may be more feasible and effective to weave moral lessons into situations that occur in the classroom without explicit moral education. It would be beneficial for future studies to examine what moral lessons are being taught in classrooms implicitly and how this relates to the moral identity of students.

Conclusion

Together, the three studies in this dissertation sought to examine the importance of moral identity in the field of moral psychology, while considering how it might impact moral behavior. Although future studies are greatly needed in order to study moral behavior in reality rather than

making predictions, the results of the studies suggest that it is possible to help adolescents sustain their moral identity into young adulthood if there is emphasis on certain factors such as helping them develop other aspects of their identity, namely, their ethnic identity. Additionally, many future studies are necessary to understand how moral identity differently interacts with beyond-the-self motivation together with empathy, however Study 2 suggests that these relationships are worth exploring and have a strong association. Finally, Study 3 suggests that even though the concept of moral identity has faced criticism, selfhood and morality may be connected even at the neural level. If this is the case, educational programs and interventions may be designed to embrace this and encourage individuals to develop their sense of moral identity in order to promote moral behavior. As a result, this may help them to discover what they care about in the world beyond themselves and develop a deep sense of purpose. This may in turn help to alleviate anxiety, depression, and other negative indicators of well-being that have been associated with lack of purpose and meaning. Instead of individuals' sense of self and morality being in conflict with each other, it is possible for the two to be in harmony, which may result in positively contributing to society via factors such as beyond-the-self motivation and empathic traits.

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Appendices

Appendix A

Moral Identity Scale

Listed below are some characteristics that may describe a person:

Caring, Compassionate, Fair, Friendly, Generous, Hardworking, Helpful, Honest, Kind

The person with these characteristics could be you or it could be someone else. For a moment, visualize in your mind the kind of person who has these characteristics. Imagine how that person would think, feel, and act. When you have a clear image of what this person would be like, answer the following questions using a 5-point scale (1 = Strongly disagree, 5 = Strongly agree).

	Strongly disagree 1 (1)	2 (2)	3 (3)	4 (4)	Strongly agree 5 (5)
1. It would make me feel good to be a person who has these characteristics. (1)	o	o	o	o	o
2. Being someone who has these characteristics is an important part of who I am. (2)	o	o	o	o	o
3. A big part of my emotional well-being is tied up in having these characteristics. (3)	o	o	o	o	o

4. I would be ashamed to be a person who has these characteristics. (4)	o	o	o	o	o
5. Having these characteristics is not really important to me. (5)	o	o	o	o	o
6. Having these characteristics is an important part of my sense of self. (6)	o	o	o	o	o
7. I strongly desire to have these characteristics. (7)	o	o	o	o	o
8. I often buy products that communicate the fact that I have these characteristics. (8)	o	o	o	o	o
9. I often wear clothes that identify me as having these characteristics. (9)	o	o	o	o	o
10. The types of	o	o	o	o	o

things I do in my spare time (e.g., hobbies) clearly identify me as having these characteristics. (10)					
11. The kinds of books and magazines that I read identify me as having these characteristics. (11)	o	o	o	o	o
12. The fact that I have these characteristics is communicated to others by my membership in certain organizations. (12)	o	o	o	o	o
13. I am actively involved in activities that communicate to others that I have these characteristics. (13)	o	o	o	o	o

Appendix B

Interpersonal Reactivity Index

The following statements inquire about your thoughts and feelings in a variety of situations. Indicate how well each item describes you by choosing the appropriate number on the scale. READ EACH ITEM CAREFULLY BEFORE RESPONDING. Answer as honestly and accurately as you can.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)
1. I daydream and fantasize, with some regularity, about things that might happen to me. (1)	o	o	o	o	o
2. I often have tender, concerned feelings for other people less fortunate than me. (2)	o	o	o	o	o
3. I sometimes find it difficult to see things from the "other guy's" point of view. (3)	o	o	o	o	o
4. Sometimes I don't feel very sorry for other people when they	o	o	o	o	o

are having problems. (4)					
5. I really get involved with the feelings of the characters in a novel. (5)	o	o	o	o	o
6. In emergency situations, I feel apprehensive and ill-at-ease. (6)	o	o	o	o	o
7. I am usually objective when I watch a movie or play, and I don't often get completely caught up in it. (7)	o	o	o	o	o
8. I try to look at everybody's side of a disagreement before I make a decision. (8)	o	o	o	o	o
9. When I see someone being taken advantage of, I feel kind of protective towards them. (9)	o	o	o	o	o
10. I sometimes feel helpless when I am in	o	o	o	o	o

the middle of a very emotional situation. (10)					
11. I sometimes try to understand my friends better by imagining how things look from their perspective. (11)	o	o	o	o	o
12. Becoming extremely involved in a good book or movie is somewhat rare for me. (12)	o	o	o	o	o
13. When I see someone get hurt, I tend to remain calm. (13)	o	o	o	o	o
14. Other people's misfortunes do not usually disturb me a great deal. (14)	o	o	o	o	o
15. If I'm sure I'm right about something, I don't waste time listening	o	o	o	o	o

to other people's arguments. (15)					
16. After seeing a play or movie, I have felt as though I were one of the characters. (16)	o	o	o	o	o
17. Being in a tense emotional situation scares me. (17)	o	o	o	o	o
18. When I see someone treated unfairly, I sometimes don't feel very much pity for them. (18)	o	o	o	o	o
19. I am usually pretty effective in dealing with emergencies. (19)	o	o	o	o	o
20. I am often quite touched by things that I see happen. (20)	o	o	o	o	o
21. I believe that there are two sides to every question and try to look at	o	o	o	o	o

them both. (21)					
22. I would describe myself as a pretty soft-hearted person. (22)	o	o	o	o	o
23. When I watch a good movie, I can very easily put myself in the place of the leading character. (23)	o	o	o	o	o
24. I tend to lose control during emergencies. (24)	o	o	o	o	o
25. When I'm upset at someone, I usually try to "put myself in his shoes" for awhile. (25)	o	o	o	o	o
26. When I am reading an interesting story or novel, I imagine how I would feel if the events in the story were happening to me. (26)	o	o	o	o	o
27. When I see someone who badly needs help in	o	o	o	o	o

an emergency, I go to pieces. (27)					
28. Before criticizing somebody, I try to imagine how I would feel if I were in their place. (28)	o	o	o	o	o

Appendix C

The Claremont Purpose Scale Complete List of Items

Meaningfulness (α = .924)					
1	How clear is your sense of purpose in your life?				
	Not at all clear	*A little bit clear*	*Somewhat clear*	*Quite clear*	*Extremely clear*
2	How well do you understand what gives your life meaning?				
	Do not understand at all	*Understand a little bit*	*Understand somewhat*	*Understand quite well*	*Understand extremely well*
3	How confident are you that you have discovered a satisfying purpose for your life?				
	Not at all confident	*Slightly confident*	*Somewhat confident*	*Quite confident*	*Extremely confident*
4	How clearly do you understand what it is that makes your life feel worthwhile?				
	Not at all clearly	*A little bit clearly*	*Somewhat clearly*	*Quite clearly*	*Extremely clearly*
Goal orientation (α = .862)					
5	How hard are you working to make your long-term aims a reality?				
	Not at all hard	*Slightly hard*	*Somewhat hard*	*Quite hard*	*Extremely hard*
6	How much effort are you putting into making your goals a reality?				
	Almost no effort	*A little bit of effort*	*Some effort*	*Quite a bit of effort*	*A tremendous amount of effort*
7	How engaged are you in carrying out the plans that you set for yourself?				
	Not at all engaged	*Slightly engaged*	*Somewhat engaged*	*Quite engaged*	*Extremely engaged*
8	What portion of your daily activities move you closer to your long-term aims?				
	None of my daily activities	*A few of my daily activities*	*Some of my daily activities*	*Most of my daily activities*	*All of my daily activities*
Beyond-the-self dimension (α = .917)					
9	*How often do you hope to leave the world better than you found it?*				
	Almost never	*Once in a while*	*Sometimes*	*Frequently*	*Almost all the time*
10	How often do you find yourself hoping that you will make a meaningful contribution to the broader world?				
	Almost never	*Once in a while*	*Sometimes*	*Frequently*	*Almost all the time*
11	How important is it for you to make the world a better place in some way?				
	Not at all important	*Slightly important*	*Somewhat important*	*Quite important*	*Extremely important*
12	How often do you hope that the work that you do positively influences others?				
	Almost never	*Once in a while*	*Sometimes*	*Frequently*	*Almost all the time*

Appendix D

Measures of School Influence

School and Neighborhood Climate (snclimate)
Think about your life now or in the past 3 months. I have...
(5-point scale: Strongly disagree—Strongly Agree)
1. A school that gives students clear rules. (snclimate_1)
2. A safe neighborhood. (snclimate_2)
3. Good neighbors who care about me. (snclimate_3)
4. A school that cares about kids and encourages them. (snclimate_4)
5. Teachers who urge me to develop and achieve. (snclimate_5)
6. Support from adults other than my parents. (snclimate_6)
7. Neighbors who help watch out for me. (snclimate7)
8. A school that enforces rules fairly. (snclimate_8)
9. A school where I feel safe (snclimate_9)
Subscales:
Community Climate (commclim: 2, 3, 7)
School Climate (schclim: 1, 4, 5, 8, 9)
Support (support: 3, 4, 6)
Boundaries and Expectations (boundexp: 1, 5, 7, 8)

School Opportunities (Schoolopps)
How much do you agree or disagree with the following? At my school, there are opportunities to…
(5-point scale: Strongly disagree—Strongly Agree)
1. Be involved in making decisions about the school (Schoolopps_1)
2. Take on leadership roles in clubs and organizations (Schoolopps_2)
3. Volunteer in the community (Schoolopps_3)
4. Work on social issues or causes such as the environment or human rights (Schoolopps_4)
5. Get involved in political activities (Schoolopps_5)
6. Participate in student government (Schoolopps_6)

Appendix E

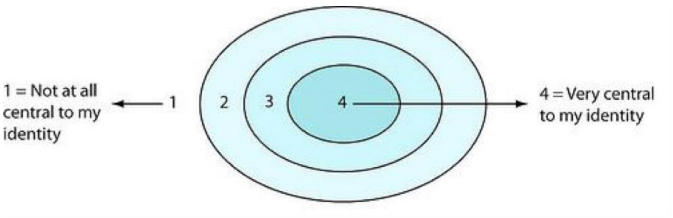
Measure of Patriotism

How much do you agree or disagree with the following statements?
(5-point scale: Strongly Disagree—Strongly Agree)
1. Being an American is very important to me. (Patriotism_1)
2. When I talk about Americans, I find myself saying “they” rather than “we.” (Patriotism_2)
3. I feel strong, positive emotions when I see the American flag flying. (Patriotism_3)
4. “American” is an important word to describe who I am. (Patriotism_4)
5. If I criticize the United States, I do so because I love my country. (Patriotism_5)
6. I oppose some things the United States government does because I care about my country and want to improve it. (Patriotism_6)
7. I feel strong, positive emotions when I hear the Star Spangled Banner. (Patriotism_7)
8. There is too much criticism of the US in the world, and American citizens should not criticize it. (Patriotism_8)
9. People who do not wholeheartedly support America should live somewhere else. (Patriotism_9)
Subscale: Attachment to USA (attachUSA: 1, 3, 4, 5, 7)

Appendix F

Measure of Moral Identity

Imagine that the drawing below represents you. In the middle circle (4) are things that are very central to who you are as a person. The next circle (3) is the things that are quite central to who you are, and the outer circle (2) is things that are somewhat important to who you are. Things that are not part of your identity belong outside the circles (1). Please think about this drawing when you answer the next question. First, read all items, and then go back and decide how central each of them is to your identity. Even if something seems good but isn't an important part of who you are, you should answer "Not central to my identity."



How central are each of the following to your identity?
(4-point scale: Not at all central to my identity—Somewhat central to my identity—Quite Central
to my identity—Very central to my identity)
1. Spiritual or religious (civID_1)
2. Smart (civID_2)
3. Concerned about international issues (civID_3)
4. Being fair (civID_4)
5. Willing to stand up for what I believe is right (civID_5)
6. Involved in solving community problems (civID_6)
7. Creative or imaginative (civID_7)
8. Politically involved (civID_8)
9. Compassionate, concerned about all kinds of people (civID_9)
10. Honest (civID_10)
11. Concerned about government decisions and policies (civID_11)
12. Rebellious (civID_12)
13. Concerned about justice and human rights (civID_13)
14. Responsible, someone others can depend on (civID_14)
15. Outgoing (civID_15)
16. Athletic (civID_16)
Subscales:
Political Civic Identity (3, 6, 8, 11, 13)
Political Identity (3, 8, 11)
Moral Identity (4, 5, 9, 10, 13, 1

Appendix G

Measure of Ethnic Identity

How much do you agree or disagree with the following statements?
(4-point scale: Strongly Disagree – Strongly Agree)
1. I have spent time trying to find out more about my ethnic group, such as its history, traditions, and customs (ethnicID_1)
2. I am active in organizations or social groups that include mostly members of my own ethnic group. (ethnicID_2)
3. I have a clear sense of my ethnic background and what it means for me. (ethnicID_3)
4. I think a lot about how my life will be affected by my ethnic group membership. (ethnicID_4)
5. I am happy that I am a member of the group I belong to. (ethnicID_5)
6. I have a strong sense of belonging to my own ethnic group. (ethnicID_6)
7. I understand pretty well what my ethnic group membership means to me. (ethnicID_7)
8. In order to learn more about my ethnic background, I have often talked to other people about my ethnic group. (ethnicID_8)
9. I have a lot of pride in my ethnic group. (ethnicID_9)
10. I participate in cultural practices of my ethnic group, such as special food, music, or customs. (ethnicID_10)
11. I feel a strong attachment to my own ethnic group. (ethnicID_11)
12. I feel good about my cultural or ethnic background. (ethnicID_12)

Subscales:
Ethnic Search (ethsearch: 1, 2, 4, 8, 10)
Ethnic Community (ethcomm: 3, 5, 6, 7, 9, 11, 12)

Appendix H

Measure of Parents' Civic Engagement

How much do you agree or disagree with the following statements?
(5-point scale: Strongly Disagree – Strongly Agree)
1. My parents/guardians are active in the community. (Parciv_1)
2. My parents/guardians are active in local politics (e.g., school board, city council). (Parciv_2)
3. My parents/guardians do volunteer work in the community. (Parciv_3)
4. I talk to my parents/guardians about problems in society and political issues. (Parciv_4)

Appendix I

Measure of Peers' Civic Engagement
How much do you agree or disagree with the following statements?
(5-point scale: Strongly Disagree – Strongly Agree)
1. I talk to my friends about problems in society and political issues. (peerciv_1)
2. I have close friends who participate in political activities. (peerciv_2)
3. I have close friends who do volunteer work in the community. (peerciv_3)

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NOTICE OF APPROVAL FOR HUMAN RESEARCH

DATE:	December 19, 2018	
TO:	Choi, Yeeun, Educational Studies in Psychology, Research Methodology & Counseling	
	Kuntz, Aaron, Educational Research, Han, Hyemin, Ed Studies Psy/Res Method/Counsel	
FROM:	Graham, Jeanelle, MPH,Research Compliance Specialist, NM Expedited	
PROTOCOL TITLE:	Character Strengths (VIA), Morality, and Eudaimonic Well-being	
FUNDING SOURCE:	NONE	
PROTOCOL NUMBER:	18-10-1633	
APPROVAL PERIOD:	Approval Date: December 18, 2018	Expiration Date: December 17, 2019

The Institutional Review Board (IRB) for the protection of human subjects has reviewed the protocol entitled: Character Strengths (VIA), Morality, and Eudaimonic Well-being. The project has been approved for the procedures and subjects described in the protocol. This protocol must be reviewed for renewal on a yearly basis for as long as the research remains active. Should the protocol not be renewed before expiration, all activities must cease until the protocol has been re-reviewed.

If approval did not accompany a proposal when it was submitted to a sponsor, it is the PI's responsibility to provide the sponsor with the approval notice.

This approval is issued under University of Alabama's Federal Wide Assurance 00004939 with the Office for Human Research Protections (OHRP). If you have any questions regarding your obligations under Committee's Assurance, please do not hesitate to contact us.

Please direct any questions about the IRB's actions on this project to:

Graham, Jeanelle

Graham, Jeanelle

Approval Period:	December 18, 2018 through December 17, 2019
Review Type:	FULLBOARD
IRB Number:	03

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NOTICE OF APPROVAL FOR HUMAN RESEARCH

DATE:	July 30, 2021	
TO:	Han, Hyemin, Ed Studies Psy/Res Method/Counsel	
	Kuntz, Aaron, Educational Research	
FROM:	Graham, Jeanelle, MPH,Research Compliance Specialist, NM Expedited	
PROTOCOL TITLE:	Character Strengths (VIA), Morality, and Eudaimonic Well-being	
FUNDING SOURCE:	NONE	
PROTOCOL NUMBER:	18-12-1842	
APPROVAL PERIOD:	Approval Date: July 28, 2021	Expiration Date: July 27, 2022

The Institutional Review Board (IRB) for the protection of human subjects has reviewed the protocol entitled: Character Strengths (VIA), Morality, and Eudaimonic Well-being. The project has been approved for the procedures and subjects described in the protocol. This protocol must be reviewed for renewal on a yearly basis for as long as the research remains active. Should the protocol not be renewed before expiration, all activities must cease until the protocol has been re-reviewed.

If approval did not accompany a proposal when it was submitted to a sponsor, it is the PI's responsibility to provide the sponsor with the approval notice.

This approval is issued under University of Alabama's Federal Wide Assurance 00004939 with the Office for Human Research Protections (OHRP). If you have any questions regarding your obligations under Committee's Assurance, please do not hesitate to contact us.

Please direct any questions about the IRB's actions on this project to:

Graham, Jeanelle

Graham, Jeanelle

Approval Period:	July 28, 2021 through July 27, 2022
Review Type:	FULLBOARD
IRB Number:	03