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Nicole SJ Dryburgh

Western University, ndryburg@uwo.ca

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The Relation of Social Dominance Orientation to Moral Decision-Making Using a
Process Dissociation Approach

Nicole Dryburgh

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Department of Psychology
University of Western Ontario
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Thesis Advisors: Jim Olson, Ph. D. and Joel Armstrong (Ph. D. Candidate)

Abstract

Two studies were conducted to investigate the relation between individual differences in Social Dominance Orientation (SDO) and moral inclinations when responding to situations of moral conflict. In Study 1 the correlation between scores on SDO and deontological and utilitarian parameters was investigated. The results showed that SDO was significantly negatively related to deontological parameters, ($r(49) = -.354, p = .013$), and unrelated to utilitarian parameters ($r(49) = -.104, p = .479$). In Study 2 we attempted to replicate the results of Study 1 and investigate whether increasing the salience of harm in dilemmas would increase levels of deontological processing, particularly in individuals with lower levels of SDO. The results of Study 2 were mixed. The results of Study 1 were replicated, with scores on SDO being negatively related to the deontological parameter $r(143) = -.173, p = .039$, and unrelated to the utilitarian parameter, $r(143) = -.035, p = .682$, but increasing the salience of harm did not differentially affect deontological responses in participants, $\beta = -.191, p = .365$. The results of these studies extended the literature on both SDO and moral decision-making, and have implications for who may be best suited for making difficult decisions in the real world.

Acknowledgement and Dedication

This thesis is dedicated to my mother, who has shown more strength in the past few years than I could ever hope to show, and my father who has shown an incredible amount of his own.

While the last four years of my education have been dedicated to learning the world of psychology and experimental research, my family and loved ones have simultaneously taught me the value and power of love and hope. Thank you.

The Relation of SDO to Moral Decision-Making Using a Process Dissociation Approach

Researchers have discovered that group-based hierarchies exist in essentially every human society (Pratto, Sidanius, Stallworth, & Malle, 1994). The existence of group-based hierarchies significantly impacts how individuals within a society are treated. Due to differences in group status within a hierarchy, individuals in subordinate groups may have less access to resources and opportunities, and may even face limited access or no access to certain rights. Due to the implications of these hierarchies for the welfare of certain groups, it is important to study the factors that serve to maintain and legitimize this type of social structure.

The current research investigated the degree to which individuals endorse or prefer differences in equality between groups, and a potential mechanism that may drive this preference. Evidence suggests that this particular attitude contributes to the maintenance of hierarchies, and increases discrimination towards individuals of different group standings. As such, it is an important variable that deserves the attention of researchers. The current research also served to bridge the gap between the literature on attitudes towards group hierarchies and the literature on moral decision-making by investigating whether moral inclinations vary systemically between individuals as a function of their level of support for group based hierarchies. By bridging this gap in the literature, the current research will extend two lines of research, provide new interpretations for findings in each area, and further elucidate the influence of individual difference variables on the maintenance of hierarchical social structures.

Social Dominance Orientation

Social Dominance Orientation (SDO) is an individual difference variable that measures the degree to which a person prefers group-based hierarchies in society (Pratto, Sidanius, Stallworth, & Malle, 1994). If an individual is high in SDO, this suggests that they prefer

inequality between social groups, whereas an individual low in SDO should prefer groups to be equal. SDO was first introduced as a component of Social Dominance Theory (SDT), which sought to explain the observation that social groups are organized into hierarchies in every studied human culture (Pratto, Sidanius, Stallworth, & Malle, 1994). A group-based hierarchy describes a social system that consists of at least one dominant group and one subordinate group. The researchers proposed a systematic process by which these hierarchies might be created and maintained. They specified a number of factors and influences that are hypothesized to cause discrimination and prejudice at three levels: the level of the individual, the level of the group, and the level of society (Pratto, Sidanius, & Levin, 2006).

Various factors are proposed to contribute to discrimination at each level of the SDT model. At the level of the system, it is proposed that cultures and the individuals in them prescribe to widely accepted and shared ideologies that serve to either enhance or attenuate hierarchies (Pratto et al., 2006). Hierarchy-enhancing ideologies prescribe behaviours that maintain group inequality, whereas hierarchy-attenuating ideologies prescribe behaviours that reduce inequality (Pratto, Tatar, & Conway-Lanz, 1999). Examples of hierarchy-enhancing ideologies include notions of fate, beliefs in a just world, or internal attributions of poverty, all of which serve to justify inequality. Examples of hierarchy-attenuating ideologies include social democracy, egalitarianism, and human rights, all which serve to mitigate the dominance of certain groups, while reducing the subordination of others. As these ideologies are proposed to exist at the system-wide level, they are theorized to influence the actions of social institutions. Institutions are assumed to have a significant influence on the positioning of groups, as institutions have access to a vast number of social resources and control their allocation. Therefore, institutions can directly influence the status of social groups through the allocation of

resources. At the level of groups, social context is believed to influence the presence of discrimination, as does asymmetrical group behaviour (Pratto et al., 1994). Asymmetrical group behaviour can occur when members of subordinate groups (some of whom may have high levels of SDO), contribute to their own low status through actions such as supporting the dominant group (Pratto et al., 1999). At the level of the individual, both aggregated individual discrimination, SDO, and additional group orientations are proposed to contribute to group hierarchies. The person level, and specifically SDO, will be the main focus of the current research.

SDO has been extensively researched and correlates with a number of important variables. In Western countries, SDO has been shown to correlate positively with measures of sexism, racism, nationalism, conservatism, cultural elitism, support for the military and attitudes towards wars of dominance (Pratto et al., 1994; Sidanius, Pratto, & Mitchell, 1994). In contrast, SDO has been shown to correlate negatively with measures of support for gay rights and women's rights, social welfare programs, environmental policy, altruism, noblesse oblige, and ameliorative racial policy (Pratto et al., 1994). Therefore, the majority of SDO's correlates relate directly to the enhancement or reduction of inequality between groups. In addition, the broad range of groups represented in these variables demonstrates that SDO is a general attitudinal dimension towards social groups of differing group status, as opposed to a specific attitude towards particular groups.

Not only have these correlates been established in Western countries, but researchers have also found evidence that SDO predicts attitudes towards group inequality across a number of different cultures. For example, Pratto et al. (2000) found that SDO was positively correlated with measures of sexism in all of the surveyed cultures, and prejudice against local denigrated

ethnic groups, conservatism, and punitive action in most of the cultures (Pratto et al., 2000).

These results support the idea that, regardless of the specific groups that are targeted or ideologies that are endorsed in a culture, SDO serves as a reliable measure of attitudes towards group-based hierarchies.

SDO has been criticized for its similarity to other individual-difference variables. For example, some have suggested that SDO is redundant with Right-Wing Authoritarianism (RWA; Altemeyer, 1981). Despite the intention of both constructs to provide an explanation for prejudice and discrimination, the variables have been shown to differ both theoretically and empirically. Theoretically, RWA is conceptualized as a pathological state of a mind consisting of ego-defensive mechanisms, while SDO is conceived of as reflecting normal human variation (Sidanius, Pratto, Laar, & Levin, 2004). In addition, RWA involves one's relation to his or her in-group, while SDO involves general attitudinal variation towards hierarchies between groups, independent of one's own in-group status. Empirically, both variables have been shown to reliably predict prejudice against other groups, but each variable makes independent contributions to the prediction (Sidanius et al., 2004; Duckitt, 2003; Jackson & Esses, 2000). Henry, Sidanius, Levin, and Pratto (2005) demonstrated the discriminant validity of SDO and RWA by measuring attitudes towards terror and intergroup violence in students from the U.S. and Lebanon. The results showed that for U.S. students both RWA and SDO predicted higher levels of support for fighting Middle Eastern terrorists, as fighting terrorists both asserts the power of their in-group and maintains the dominant position of America. In contrast, for students in Lebanon higher levels of RWA predicted higher levels of support for violence against the U.S, while SDO was negatively predictive of this support. As SDO is independent of group membership, and those high in SDO support the maintenance of group-based hierarchies,

Lebanese students that were high in SDO were opposed to violence against the U.S., because it would represent a lack of support for the dominant group. Therefore, they were more supportive of actions that would maintain the current dominance structure rather than upset it. These results are consistent with the predictions of SDT that subordinate group members sometimes contribute actively to their own lower status. Although similar in a number of ways, RWA and SDO are separate and independent variables that provide unique contributions to the study of discrimination. In addition to its distinction from RWA, SDO has also been shown to be empirically distinct from the variables of interpersonal dominance, conservatism, and each of the Big Five personality traits (Pratto et al., 1994).

SDO and Fairness

Researchers have proposed that SDO may influence the use of fairness in decision-making (Armstrong, 2013; Pratto et al., 1999). According to Social Dominance Theory, group-based social hierarchies are consistently observed in all human cultures. Therefore, individuals high in SDO should believe in allocating resources in a way that maintains inequality between groups (Pratto et al., 1994). Furthermore, an individual's level of SDO should influence how they choose to allocate resources to different groups. SDO's correlates, such as its negative relation to Social Welfare Programs and negative attitudes towards disadvantaged groups (Pratto et al., 1994), suggest that SDO does relate to how people choose to distribute resources.

Pratto, Stallworth, Sidanius and Siers (1997) provided indirect evidence for the prediction that SDO influences the allocation of resources in a manner that serves to strengthen and maintain hierarchy. Across four separate studies, the researchers provided evidence that participants both selected and were selected for occupations that were congruent with their level of SDO. High SDO participants chose and were chosen for jobs that channeled resources to high

status groups, such as a fundraising job that served an elite university (Pratto, Stallworth, Sidanius, & Siers, 1997). Low SDO participants selected and were selected for jobs that tended to channel resources towards low status groups, such as a fundraising job for African American college students in need (Pratto et al., 1997). Therefore, the researchers concluded that SDO influences the way that individuals select career paths, and contributes to hiring biases. They proposed that these biases serve to match the values of an individual to the institution in which they would work. In this way, SDO indirectly influences the way in which resources are allocated. In addition, these findings explain how differences at the individual level contribute to hierarchy maintenance at the level of the institution.

Pratto, Tatar, and Conway-Lanz (1999) sought direct evidence for the idea that SDO is related to the differential allocation of resources in a way that serves to strengthen and maintain hierarchy, and did so by asking participants to choose how to distribute positive resources. Participants were given a choice to provide a resource of positive social value to a party that had either demonstrated merit or demonstrated need. Those who were higher in levels of SDO chose the meritorious, or more deserving, party over the needy party. Meanwhile, participants lower in SDO favoured the needy party over the party that demonstrated merit. The researchers therefore concluded that people with varying levels of SDO endorsed different ideologies that led them to allocate resources in attitude consistent ways (Pratto et al., 1999). Unfortunately, this study confounded the variables of merit and need with target status, such that meritorious parties were always of higher status and needy parties were always of lower status (Armstrong, 2013). Therefore, while providing direct evidence that high and low SDO individuals distribute resources differentially, further research was required in order to determine the mechanism by which this occurs.

Armstrong (2013) conducted a study designed to address this confound. The researcher provided participants with patient files (that had been constructed for the purposes of this study) of either a low status or high status individual. Participants were informed that these patients were in need of an organ and were asked to assign each patient a wait list priority rating. The results showed that participants higher in SDO gave more favourable ratings to high status individuals, while participants lower in SDO gave more favourable ratings to low status individuals (Armstrong, 2013). As the ratings were almost all higher than dictated by the distribution guidelines provided, a more favourable rating towards a certain group represented a less fair rating. These results provided evidence that individuals with varying levels of SDO distributed resources in violation of prescribed fairness rules, in order to maintain or attenuate inequality in a manner congruent with their levels of SDO. In a second study, the organ allocations were negatively framed, as participants were told that the patients had previously received a high rating that now had to be lowered because of shortfalls in projected organ availability. The low SDO individuals demonstrated the same pattern of responses as in the first study, providing more favourable ratings to the low status targets than the high status targets. In contrast, instead of high SDO individuals simply giving preference to high status targets, they gave equal ratings to targets of different status, demonstrating greater adherence to the guidelines of fairness in these judgments. This research suggests that individuals who support group-based hierarchies may be better suited to make difficult decisions involving fairness. In addition, it raises questions about the mechanism driving the differences in these decisions.

The first possible mechanism that Armstrong (2013) proposed for this differential use of fairness was empathy. Researchers have suggested that since individuals who display high levels of empathy for others tend to be less prejudiced towards others, those that have high levels of

SDO could be expected to display less empathy (Pratto et al., 1999; Sidanius et al., 1994).

Research has supported this notion, as a negative correlation was found between SDO and scores on the Concern for Others subscale of Davis' (1983) Interpersonal Reactivity Index (Pratto et al., 1994). Similarly, Sidanius and Pratto (1999) demonstrated that individuals with higher levels of SDO showed less concern for the well-being of others. Duckitt (2001) even went so far as to propose that a lack of empathy might be partially responsible for the development of higher levels of SDO. Therefore, the research suggests that there is a relation between levels of empathy and levels of SDO. Armstrong (2013) measured trait empathy in a post-decisional questionnaire and, despite a relation between SDO and empathy, found no evidence that it influenced fairness ratings. Therefore, the evidence suggests that empathy did not drive the relation between SDO and applications of fairness rules. Armstrong (2013) proposed a second potential mechanism behind the relation of SDO to these decisions. He posited that differences in moral inclinations between high and low SDO individuals might account for their differential treatment of high and low status groups.

Moral Inclinations

Moral dilemmas, in which participants are asked to choose between one of two outcomes, has been the dominant paradigm used to study moral judgments for many years (e.g. Bartels, 2008; Greene, Nystrom, Engell, Darley, & Cohen, 2004; Petrinovich & O'Neill, 1996). One commonly used dilemma is called *the trolley dilemma*. In the trolley dilemma, participants are told that a trolley is headed down a track towards a group of five individuals. They can choose to either let the trolley continue on its course and allow it to kill five people, or they can pull a nearby lever, which will re-direct the trolley to a different path and kill one person instead of five (Foot, 1967). There are two approaches to take when answering this moral dilemma. *Utilitarian*

processing is based on the idea that the morality of an action depends on its consequences (Mill, 1861/1998). Meanwhile, *deontological processing* is rooted in the idea that whether an action is moral is an intrinsic quality of the action (Kant, 1785/1959). Psychologically, utilitarian processing involves a cognitive evaluation of outcomes (a cost-benefits analysis), while deontological processing is related to an affective aversion to harm (Conway & Gawronski, 2013). Therefore, in the trolley dilemma, the utilitarian choice would be to re-direct the trolley to hit a single person, and the deontological choice would be to avoid switching the lever and let it continue to hit five people. Historically, researchers presented participants with multiple scenarios similar to the trolley dilemma, measured their tendency to respond in a utilitarian or deontological fashion, and placed them somewhere on a unidimensional scale with deontological processing at one end and utilitarian processing at the other. Therefore, the deontological-utilitarian variable was conceptualized as a single, continuous dimension with each of these processes at opposite ends.

While the traditional approach to measuring moral inclinations contributed a number of interesting findings to the field, it also required problematic interpretations of data. One of the strangest of these empirical findings found that psychopathy is related to higher levels of utilitarian judgment (Bartels & Pizarro, 2011). As many theorists make the argument that utilitarian judgments are the most morally appropriate approach to decision-making (Baron & Spranca, 1997; Bennis, Medin, & Bartels, 2010; Bazerman, & Greene, 2010), researchers were surprised to find that psychopaths were demonstrating high levels of this prototypical moral behaviour. This posed a problem for theorists and researchers in regards to how these processes should be conceptualized.

Further evidence supported the idea that a new conceptualization of these processes was necessary. Greene (2007) demonstrated that when participants were considering moral dilemmas in which they were in direct contact or emotionally close with the victim, and when they made more deontological judgments, there were higher levels of activation in areas of the brain related to emotion. In addition, this research found that for dilemmas in which the participant was emotionally distant from the target, or when they made more utilitarian judgments, areas of the brain associated with cognitive processing were highly active (Greene, 2007). This research suggested that there might be two independent processes that are underlying these types of moral processing. Furthermore, Tanner, Medin, and Iliev (2008) completed a study in which they had participants complete a questionnaire with statements related to deontological and utilitarian principles. They asked participants to rate their agreement with each statement, and examined the correlation between responses. The results showed the participants' answers to the principles were uncorrelated. If the two types of processing were truly reflective of a continuous, unipolar dimension, then one would expect a negative correlation in regards to agreement with these principles. The lack of evidence supporting a negative relation between deontological and utilitarian principles suggests that placing them on a unipolar dimension does not accurately represent the underlying mechanisms.

Conway & Gawronski (2013) recently proposed a new approach that resolves a number of these empirical and conceptual issues. The researchers proposed the use of a Process Dissociation Approach (PD; Jacoby, 1991) in measuring these moral inclinations. Jacoby (1991) created the PD approach in order to tease apart the independent contributions of recognition and recollection to memory. By taking this approach and applying it to moral dilemmas, Conway and Gawronski (2013) identified a way to look at utilitarian and deontological inclinations separately

within an individual. The specific procedure of the PD approach involves presenting participants with both “congruent” and “incongruent” moral dilemmas. Congruent dilemmas are situations where both moral inclinations should lead to the same outcome judgment. For example, participants should judge torturing a man in order to find out the location of a paint bomb as an inappropriate action, regardless of any differences in underlying moral processing (Conway & Gawronski, 2013). In contrast, asking participants if it is appropriate to torture a man in order to find the location of a real bomb and save the lives of many others should lead to different responses depending on the strength of the moral inclinations (Conway & Gawronski, 2013). In this situation, higher utilitarian inclinations should lead one to judge that this action is moral, as it will save more lives overall, and higher deontological inclinations should lead one to judge this action as immoral, as the act of torture itself is aversive. Using this technique, the relative strength of each inclination can be algebraically determined within an individual. Therefore an individual can now be high in both deontological and utilitarian inclinations, low in both inclinations, or demonstrate some combination of the inclinations.

Conway and Gawronski (2013) provided evidence for the convergent and divergent validity of their new approach to quantifying these variables, by demonstrating that utilitarian inclinations were correlated with measures of Need for Cognition, and deontological inclinations were correlated with measures of Empathy and Perspective-Taking (Conway & Gawronski, 2013). Furthermore, manipulations of cognitive load uniquely affected utilitarian inclinations, and manipulations of emotional impact uniquely affected deontological inclinations. Therefore, Conway and Gawronski (2013) provided experimental evidence that there are two separate underlying psychological processes that lead to either utilitarian or deontological decisions.

Another interesting finding provided further evidence for the usefulness of the PD approach to moral inclinations by resolving the previously described results regarding psychopaths. When tested using the PD approach, psychopathy was not positively related to utilitarian judgments, as the traditional approach would suggest. Instead, psychopathy was negatively related to deontological inclinations (Conway, Bartels, & Pizarro, in submission). Therefore this new approach to the study of moral inclinations has resolved a number of empirical and conceptual issues, and has offered a new and interesting perspective on the processes that underlie moral decisions.

The Current Research

The current research will attempt to bridge the gap between these two developing areas of research. In particular, the overall goal of this research will be to determine if a relation exists between an individual's level of SDO and each of the moral inclinations. In addition, an attempt will be made to determine whether increasing the salience of harm of responses to moral dilemmas will differentially affect the responses of individuals of varying levels of SDO.

If the results support a relation between SDO and moral decision-making, then they will have a number of important implications. First of all, the results will shed light on the factors that affect an individual's response in a situation of moral conflict, by demonstrating that certain people are more influenced by emotional processes in these decisions than others. If a manipulation of the salience of harm to a target is successful in altering participants' responses to moral decisions, then support will be given to the idea that attempts to induce empathy to change people's responses will be particularly effective for a subset of people. Furthermore, the results will allow us to understand the factors that make certain people better suited to making difficult decisions – including those that involve life or death. Therefore, this research will contribute to

the growing literature on SDO, fairness, and morality, while providing real-life implications for decision-making in the real world.

There are a number of predictions that will be tested in the current studies. The primary hypothesis is that SDO will be negatively related to deontological inclinations and unrelated to utilitarian inclinations. Therefore, those higher on SDO should show a decreased level of this affective aversion to harm when faced with moral dilemmas as compared to those lower on SDO, without showing differences in processing related to the cognitive evaluation of outcomes. This is the primary hypothesis of this program of research, and will be tested in both Study 1 and Study 2.

In Study 2 an experimental manipulation will be employed in an attempt to influence individuals' decisions on moral dilemmas. The main hypothesis for this study is that an interaction will occur such that increasing the salience of harm to the target will increase deontological inclinations, but to a greater degree for lower SDO individuals than those higher in SDO. The second hypothesis is that increasing the salience of harm to the target will have no effect on utilitarian inclinations. The third hypothesis is that the results of Study 1 will be replicated, such that SDO will be negatively related to deontological inclinations and unrelated to utilitarian inclinations.

Study 1

The current study was conducted to investigate whether a relation exists between SDO and moral inclinations. It was predicted that scores on SDO would be negatively related to scores on the deontology parameter, and unrelated to scores on the utilitarian parameter.

Method

Participants. The participants of the current study included 49 undergraduate students recruited from a first-year psychology course participation pool. Participants received credit in partial fulfillment of course requirements for their participation. The sample consisted of 32 females and 17 males, ranging from 17 years to 23 years ($M = 18$, $SD = .91$). Participants were tested on individual computers in groups of up to five people. One participant failed to complete a number of questions and was therefore excluded from the final analyses.

Procedure. Participants were given a Letter of Information outlining the purpose and tasks involved in the study, and informed consent was obtained. Participants were sat at a computer terminal where they completed the scales in the following order: demographic information, the battery of moral dilemmas, the Social Dominance Orientation-6 (SDO-6) Scale and the Global Belief in a Just World (GBJW) Scale. Participants were then fully debriefed and given credit for their participation. The entire procedure took less than 30 minutes to complete.

Materials.

Demographics Questionnaire. Participants were asked to provide information regarding their gender, age, and estimated household income.

Moral Dilemmas. Moral inclinations were measured using the moral dilemmas provided by Conway and Gawronski (2013). Participants were asked to carefully read and respond to the battery of 20 dilemmas, composed of an incongruent and congruent version of 10 different dilemmas. Each participant was asked to respond with whether they thought that the proposed action was appropriate or not appropriate. For example, participants were asked whether torturing a man to find the location of an explosive bomb was appropriate (incongruent version) and then later asked whether torturing a man to find the location of a paint bomb was appropriate (congruent version). As discussed, in the congruent version participants should give the same

response regardless of the relative strength of moral inclinations they rely on. In the incongruent version, responses should differ based on whether the participant is relying on deontological inclinations or utilitarian inclinations to a greater extent.

Social Dominance Orientation. SDO was measured using the SDO-6 Scale (Pratto et al., 2006), consisting of 16 items. Participants were asked to rate their agreement with each item, ranging from *strongly disagree* (1) to *strongly agree* (7). The items included statements such as “Some groups of people are simply not the equals of others” and “Superior groups should dominate inferior groups.” The scale has been shown to have both good internal reliability ($\alpha = .83$) and test-retest reliability ($r = .81, p < .01$; Pratto et al., 2006). In our sample, the SDO-6 scale demonstrated high internal reliability ($\alpha = .93$).

Belief in a Just World. The last measure completed by participants was the GBJW Scale (Lipkus, 1991), consisting of 16 items. Participants were asked to rate their agreement with each item on a scale from *strongly disagree* (-3) to *strongly agree* (3). Examples of the items include “I feel that people get what they are entitled to have” and “I basically feel that the world is a fair place.” The scale has been shown to have acceptable internal reliability ($\alpha = .83$; Lipkus, 1991). In our sample, the GBJW scale demonstrated acceptable internal reliability ($\alpha = .63$).

Results

The current study was designed to determine whether participants’ scores on the SDO-6 Scale were correlated with scores on the deontology and utilitarian parameters. We hypothesized that SDO scores would be significantly negatively correlated with scores on the deontology parameter, and would not be correlated with scores on the utilitarian parameter.

Process Dissociation (PD) scores of the deontology and utilitarian parameters were calculated using the algebraic formulas given by Conway and Gawronski (2013). A total of two

participants with a utilitarian parameter score of zero were excluded from the analysis, as per Conway and Gawronski's (2013) method, as these scores act as a denominator. As such, a score of zero makes it impossible to complete the necessary calculations. The deontological and utilitarian scores were then standardized and these scores were used in the rest of the analysis.

A bivariate correlation was performed to determine the relation between SDO and the moral parameters. The relation between SDO scores and the deontology parameter was significant, $r(49) = -.354, p = .013$. This indicates that scores on SDO are negatively related to scores on the deontology parameter. The correlation between SDO scores and the utilitarian parameter was not significant, $r(49) = -.104, p = .479$. Therefore there was no relation found between SDO scores and scores on the utilitarian parameter. The results of the current study supported both of our hypotheses; SDO scores were negatively related to deontological scores and unrelated to utilitarian scores.

In order to assess group differences in SDO scores, a median split analysis was performed. The difference between the high SDO group ($M = 1.84, SD = .49$) and the low SDO group ($M = 3.89, SD = .62$) was significant, $t(47) = -12.92, p < .001$. Therefore, the scores of high SDO and low SDO participants differed significantly, despite the fact that SDO scores were not high in an absolute sense.

As previous research suggests that SDO is positively related to BJW and household income (Pratto et al., 1994), and is higher in males than females (Pratto et al., 1994; Sidanius, Pratto, & Bobo, 1994), we tested the relation between SDO scores and these variables. The results of the correlational analysis are displayed in Table 1. The expected relations between SDO, BJW, and household income were not found. An independent samples t-test was performed, and the difference between genders on SDO was also not significant, $t(47) = 1.822, p$

= .075. In addition, deontological scores did not significantly differ between males ($M = -.26$, $SD = 1.02$) and females ($M = .14$, $SD = .98$), $t(47) = -1.331$, $p = .190$. The utilitarian scores of males ($M = -.02$, $SD = .90$) and females ($M = .01$, $SD = 1.06$) also did not differ significantly, $t(47) = -.087$, $p = .931$. These results may suggest that more power is needed to find these relations by way of a larger sample size.

Discussion

The results from Study 1 provide support for our hypotheses, derived from Armstrong's (2013) study. Using the PD approach, it was found that those higher in SDO have lower levels of deontological processing than those lower in SDO when responding to moral dilemmas. It was also found that levels of utilitarian processing did not differ as a function of SDO. According to the model of moral processing introduced by Conway and Gawronski (2013), these results demonstrate that lower levels of SDO are associated with more affective reactions to harm in moral decisions when compared to lower levels of SDO. Meanwhile, cognitive deliberation about costs and benefits in moral decisions is consistent across levels of SDO.

Study 2

The current study investigated whether responses on moral dilemmas by individuals that differ on SDO would be differentially influenced by an experimental manipulation. Increasing the salience of harm to the target has previously been demonstrated to increase deontological inclinations (Conway & Gawronski, 2013). We hypothesized that a salience of harm manipulation would increase deontological responding to a greater degree for lower SDO individuals than higher SDO individuals. Increasing the salience of harm was predicted to have no effect on utilitarian inclinations. Lastly, we predicted that the results from Study 1 would be

replicated, such that SDO would be negatively related to deontological inclinations and unrelated to utilitarian inclinations.

Method

Participants. The second study included 143 participants recruited from the online survey website Mechanical Turk. A total of 25 from the original sample were excluded, 13 because they had a utilitarian score of zero (which poses problems for the algebraic formulas used, as described above), one because of a failure to answer the attention check correctly, and 11 that did not complete the full set of questions required for analysis. The sample consisted of 84 females and 59 males, ranging from 18 to 72 years old ($M = 35.39$, $SD = 11.76$). Participants were able to read a short description of the study before signing up to participate, and were compensated financially (\$0.25) for their time. All of the tasks were completed individually on the participant's own computer.

Procedure. Participants were asked to read the Letter of Information and provide informed consent. All tasks were completed online, beginning with the Demographics Questionnaire, followed by the battery of Moral Dilemmas, the SDO-6 Scale, and the GBJW Scale. Participants were randomly assigned to one of two conditions, a *high salience of harm* condition and a *low salience of harm* condition. In the high salience of harm condition, an empathy-inducing picture of the apparent target accompanied the moral dilemmas. In the low salience of harm condition, there was no picture accompanying the dilemmas. The entire procedure took less than 30 minutes to complete.

Materials. The Demographics Questionnaire, SDO-6 Scale, and GBJW Scale were identical to the materials used in Study 1. The SDO-6 Scale again showed high internal reliability ($\alpha = .93$), as did the GBJW scale ($\alpha = .88$).

The difference between this study and the first was the salience of harm manipulation. For this condition, each moral dilemma was presented with a picture of the apparent victim (e.g. the man that will be tortured to find the location of the bomb). The pictures and procedure were identical to that of Conway and Gawronski (2013). Pictures of the victim were presented alongside the dilemma in order to induce empathy in participations, or to increase the salience of harm in the situation.

Results

The current study investigated whether manipulating the salience of harm in moral dilemmas would differentially affect the moral inclination scores of low and high SDO individuals. We hypothesized that an increase in the salience of harm would increase deontological inclinations, but to a greater extent in lower SDO participants than in higher SDO participants. Additionally, we hypothesized that the increase in salience of harm would have no effect on utilitarian inclinations. It was also hypothesized that the results of Study 1 would be replicated, and SDO scores would be negatively related to the deontology parameter, but unrelated to the utilitarian parameter.

The PD approach (Conway & Gawronski, 2013) was again used to calculate scores on the deontology and utilitarian parameters, which were then standardized and used in further analyses. The primary hypothesis was tested using a multiple regression analysis, in which the deontology parameter was regressed on the salience of harm, mean SDO scores, and the interaction of the salience of harm and SDO scores. As displayed in Figure 1, the analysis did not reveal a significant interaction between the salience of harm and SDO on deontology scores ($\beta = .113, p = .586$). Therefore, the prediction that salience of harm and SDO would interact to predict change in the deontological parameter was not supported.

Further analyses were performed as a manipulation check, to assess whether the salience of harm manipulation increased scores on the deontology parameter in the experimental condition compared to the control condition. An independent samples t-test was used to test the influence of the salience of harm manipulation. Levene's test of homogeneity of variances was not significant, so variances were assumed to be equal, Levene $F(1, 141) = 1.697, p = .121$. The results showed that there was not a significant difference in scores on the deontology parameter between the salience of harm condition ($M = .12, SD = 1.05$) and the control condition ($M = 0.14, SD = .92$), $t(141) = -1.560, p = .121$. Therefore, the deontology parameter scores showed no evidence of being affected by the salience of harm manipulation.

We tested our second hypothesis, that increasing the salience of harm would have no effect on utilitarian parameter scores, using a multiple regression analysis in which the utilitarian parameter was regressed on the salience of harm, mean SDO scores, and the interaction of the salience of harm and SDO scores. The analysis did not reveal a significant interaction between the salience of harm and SDO on utilitarian scores, $\beta = -.191, p = .365$. An independent samples t-test revealed that the utilitarian scores of those in the control condition ($M = .11, SD = .96$), and the salience of harm condition ($M = -.10, SD = 1.03$), did not differ significantly, $t(141) = 1.233, p = .220$. These results are consistent with previous research that demonstrates utilitarian scores are unaffected by an empathy-inducing manipulation (Conway & Gawronski, 2013).

Our third hypothesis was that the negative relation between SDO and deontological inclinations found in Study 1 would be replicated, and was tested using a bivariate correlation. The results showed that SDO scores were significantly and negatively correlated with scores on the deontology parameter, $r(143) = -.173, p = .039$, and were unrelated to scores on the utilitarian parameter, $r(143) = -.035, p = .682$. Therefore the third hypothesis was supported, and the results

of Study 1 replicated. This finding was supported by the results of the multiple regression analysis, as SDO scores were still a significant predictor of deontology scores after taking into account the variance due to the interaction, $\beta = -.182, p = .030$.

Additionally, in the current study, we found several of the expected correlations suggested by previous research that were absent in Study 1. As seen in Table 2, BJW was significantly positively correlated with SDO. Although household income was not related to SDO, it was significantly positively correlated with both BJW and the utilitarian parameter. Therefore, individuals with higher levels of household income are higher in just-world beliefs and demonstrate more utilitarian processing. In addition, when performing an independent t-test, males ($M = 2.62, SD = 1.11$) had significantly higher scores than females ($M = 2.20, SD = 0.97$), on the measure of SDO, $t(141) = 2.439, p = .016$. When testing for differences on moral inclinations, females ($M = .26, SD = .90$) had significantly higher scores than males ($M = -.37, SD = 1.02$), on the deontology parameter, $t(141) = -3.868, p < .001$. In terms of utilitarian scores, females ($M = -.05, SD = 1.03$) and males ($M = .07, SD = .96$) did not differ significantly, $t(141) = .668, p = .505$. These results are consistent with past findings in the literature on SDO and the literature on moral dilemmas.

Discussion

Results from Study 2 were mixed. Our hypothesis that manipulating the salience of harm would differentially affect the deontological inclinations of low and high SDO individuals was not supported. As the manipulation of the salience of harm did not have a main effect on deontological inclinations, the presence of an interaction cannot be determined. Further research will need to effectively influence deontological inclinations such that they are higher in the

experimental condition, and then further delineate the effects on the responses of low and high SDO individuals.

The results of Study 2, however, did support our primary hypothesis, that preferences for group-based hierarchies are related to differences in deontological inclinations and unrelated to differences in utilitarian inclinations. Therefore, the overall hypothesis suggested by Armstrong (2013) was supported, such that individuals higher in SDO show lower levels of deontological processing than those lower in SDO, though they do not differ in utilitarian processing.

General Discussion

The two studies discussed here provide support for the hypothesis that individuals who prefer group-based hierarchies demonstrate lower levels of deontological inclinations when faced with moral dilemmas than those that prefer equality between groups. In addition, there was no evidence found to indicate that levels of utilitarian inclinations differ between those that prefer inequality or those that prefer equality. Therefore, when making a moral decision, people who prefer inequality between groups are less inclined to rely on an affective aversion to harm than those that prefer equality.

The results of the current research provide a plausible mechanism by which to interpret the different decisions made by those in Armstrong's (2013) study. It is possible that people who preferred equality between groups relied more on an affective aversion to harm when making resource allocation decisions than those who preferred inequality. By relying less on an affective aversion to harm, people that preferred inequalities between groups were able to make a decision regarding a resource allocation that adhered more closely to prescribed fairness guidelines. By providing support for the proposed mechanism in Armstrong's (2013) study, the current research extends the literature on SDO and the factors that make certain people better suited to making

decisions. Specifically, these results suggest that a person's preference for inequality between social groups should be taken into consideration in situations where the extent of reliance on affect-based moral processing may influence the decision that is being made.

The results of the current research also extend the literature on moral decision-making. The approach introduced by Conway and Gawronski (2013) to study moral inclinations proved useful in differentiating between people of higher and lower SDO and helped to provide a new interpretation of past research findings. Interestingly, in the study by Conway and Gawronski (2013), the researchers demonstrated that utilitarian inclinations were related to measures of moral identity. These results suggest that when an individual is relying on utilitarian inclinations in decisions, they are still driven by genuine moral concern. As there was no evidence found for a difference between low and high SDO individuals in utilitarian inclinations, it is suggested that these groups do not differ in this genuine moral concern, but differ significantly in their levels of affective reaction to harm.

Implications

The most important real world implication of the current research is that certain individuals may be better suited to make decisions according to their preference for group-based hierarchies. When a difficult decision must be made but should involve a consideration for the harm that might be caused, then someone who shows a preference for equality between social groups should be chosen to make that decision. On the other hand, there are a number of difficult decisions that often have to be made without allowing emotion or affective reactions to interfere. One relevant example of this has been discussed, with regards to patients on an organ donation waiting list, in which the favourable treatment of one patient over another due to an emotional aversion to their suffering violates prescribed fairness guidelines. This suggests that someone

that demonstrates a preference for group-based hierarchies would be better suited to making this decision.

An interesting theoretical implication of this research is that it suggests that the attitudes that people hold may have implications in terms of their morality. This suggestion is supported by the correlates of SDO, such as a lack of support for the rights of minorities (e.g. gay rights, women's rights, and ameliorative racial policies). Therefore, decisions being made in regards to social policies should not be considered as purely cognitive and related only to people's attitudes and preferences, as they are additionally related to affective reactions to the suffering of these groups. Therefore, in addition to the implications for resource allocation decisions, these findings have implications for the relation between a person's attitudes and their morality.

Lastly, the current research has implications for the literature on SDO. It is possible to question the validity of the measure of SDO due to the relatively small differences obtained in regards to participants' scores. The current research indicates that small differences between groups at one end of the SDO scale are sufficient to uncover differences in other variables, in this case, moral inclinations. Though a median split in the first study revealed that the low SDO group and the high SDO group did not differ to a large degree in mean SDO scores, these differences were enough to find a significant correlation between SDO and deontological processing. Therefore the current study adds to the existing literature that provides evidence that the SDO-6 scale is useful in predicting differences on a wide range of measures (e.g. Pratto, Stallworth, Sidanius, & Siers, 1997).

Limitations and Future Directions

There are limitations of the current research that can be addressed in future studies on SDO and moral decision-making. The first limitation is the lack of support for the influence of

the salience of harm manipulation on deontological processing. Though other studies have used the same materials and procedure with success (Conway & Gawronski, 2013), the current research did not find an effect of empathy induction on deontological processing. One possible explanation for this may have been the high rate of dropouts in Study 2, particularly partway through completion of the moral dilemmas. If participants stopped the moral dilemmas due to feeling emotionally aroused by the situations, then it is possible that responses were not obtained from those most affected by the manipulation. Another possible explanation may be due to a limitation of the PD approach, which involves having to exclude participants with a utilitarian parameter score of zero. If the participants with a utilitarian score of zero in the salience of harm condition demonstrated higher deontological scores than those in the control condition, then it is possible that the exclusion of these participants could have skewed the results. Further research may seek to replicate the study with a higher incentive, or recruit undergraduate students as opposed to having it completed online, to reduce the number of participants who fail to complete the study. Alternatively, future research may look to induce empathy or increase the salience of harm in another way.

There are also limitations of the current research that are inherent in the use of moral dilemmas. Employing moral dilemmas in research forces participants to make a number of “closed world assumptions” when responding (Conway & Gawronski, 2013). For example, when a participant must decide whether to torture a man to uncover the location of a bomb, they must assume that the police have the right man and that torturing him would lead to the disclosure of the location. In addition, participants are subject to a forced-choice paradigm, which may not reflect the number of choices they would have if this situation were to occur in reality. Another limitation of the moral dilemmas is their hypothetical and potentially artificial nature. In order to

effectively respond to these dilemmas, participants must actively engage in the task and respond as though the consequences are real. If participants are not fully engaged in the dilemma, do not make the proper assumptions, or do not agree with the choices given, this may force them to make a response to the moral dilemma that does not accurately reflect their true inclinations. In addition, a participant that is not engaged with the scenarios would be indifferent to the salience of harm, which could account for the experimental manipulation failing to influence deontological inclinations.

Though the above criticisms of moral dilemmas do have some validity, the moral dilemmas used in this research are created this way to avoid a number of confounds and extraneous variables and to find relations between variables in a controlled task. These limitations leave open the possibility of future research to add additional variables and make these situations more complex and realistic, and perhaps eventually test these variables in field studies. Therefore, although the situations may seem artificial, their controlled nature allows researchers to discover relations that build and refine our understanding of both moral processes, and the variables to which they relate.

Conclusions

The current research has provided a new perspective on how two bodies of research are related. The literature on the individual difference variable of SDO has been extended, and a new interpretation for many past and future studies has been provided. The literature on a new method of conceptualizing moral inclinations has been extended, and the current results provide support for this method's usefulness and applicability. By combining these two lines of research and relating a general attitudinal variable to different types of moral processing, these studies have provided a number of exciting future directions for researchers, and have important

implications for understanding decision-making in many high-stakes, real-life situations including resource allocation and the creation of social policies.

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Table 1

Study 1: Correlations between Social Dominance Orientation, Moral Inclinations, and Demographic Items

Variable:		SDO	Deontology	Utilitarian	BJW	Income
SDO	Mean score on SDO-6 scale	-	-.354*	-.104	-.054	-.020
Deontology	Computed score on the deontological parameter	-.354*	-	.174	-.071	.041
Utilitarian	Computed score on the utilitarian parameter	-.104	.174	-	-.200	-.065
BJW	Mean score on the GBJW scale	-.054	-.071	-.200	-	-.083
Income	Approximate household income	-.020	.041	-.065	-.083	-

* Correlation is significant at the .05 level (two-tailed).

** Correlation is significant at the .01 level (two-tailed).

Table 2

Study 2: Correlations between Social Dominance Orientation, Moral Inclinations, and Demographic Items

Variable:		SDO	Deontology	Utilitarian	BJW	Income
SDO	Mean score on SDO-6 scale	-	-.173*	-.035	.367**	.056
Deontology	Computed score on the deontological parameter	-.173*	-	.087	-.033	-.017
Utilitarian	Computed score on the utilitarian parameter	-.035	.087	-	-.018	.184*
BJW	Mean score on the GBJW scale	.367**	-.033	-0.18	-	.189*
Income	Approximate household income	.056	-.017	.184*	.189*	-

* Correlation is significant at the .05 level (two-tailed).

** Correlation is significant at the .01 level (two-tailed).

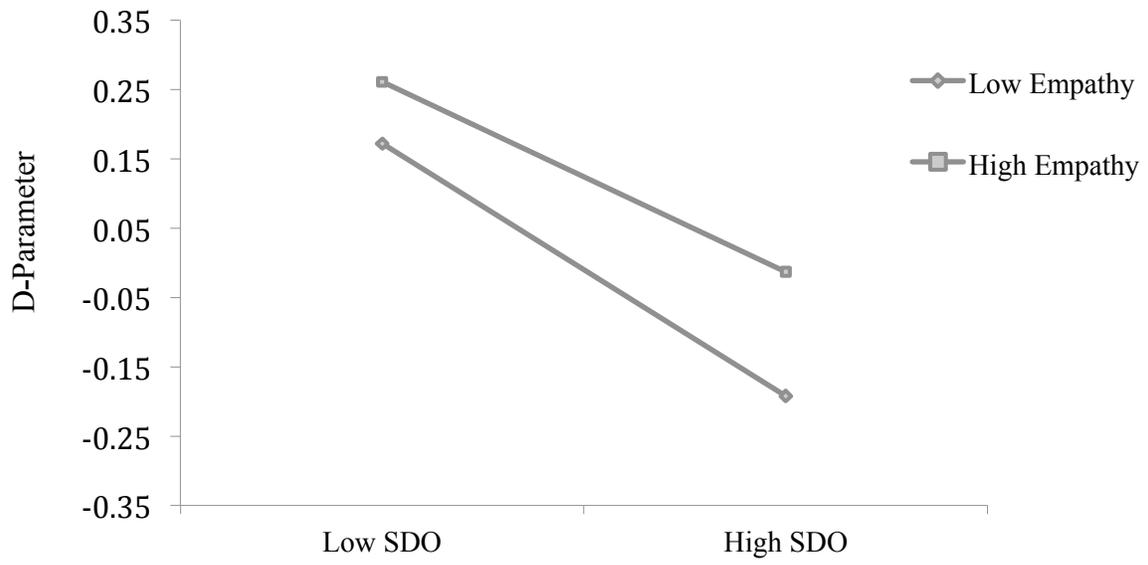


Figure 1. Results of regressing the deontological parameter on SDO, condition, and the interaction term.