

Kant be Compared: People High in Social Comparison Orientation
Make Fewer—not More—Deontological Decisions in Sacrificial Dilemmas

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Abstract

The current work tests whether the dispositional tendency to compare oneself to others—Social Comparison Orientation (SCO)—impacts decision in moral dilemmas. Past research offers two competing predictions for how SCO impacts moral decision-making: a) SCO increases deontological judgments because people high in SCO care especially about social norms versus b) SCO decreases deontological judgments because people high in SCO are competitive and thus unconcerned about causing harm to others. Four studies (two preregistered) find consistent support that SCO decreases deontological decision. This relationship was robust to employing conventional (Study 1) and process dissociation (Studies 2-4) dilemma analytic techniques. Furthermore, we find that psychopathy uniquely mediates decreased deontological decision among people high in SCO (Study 4). These results indicate that high-SCO people make fewer deontological decisions because they are less concerned with causing harm. Overall, the current research suggests there is a dark side to making social comparisons.

Keywords: Moral dilemma, social comparisons, social comparison orientation, psychopathy

How do people decide what is morally right or wrong? Philosophy and early moral psychology often assumed that people arrive at moral decisions mainly through private internal processing—either through reasoning, intuition, or emotional reactions. However, recent theories acknowledge that moral situations and judgments are often inherently social (e.g., Gray, Waytz, & Young, 2012; Greene, 2014; Haidt, 2001, 2003; Haidt & Graham, 2007; Kohlberg, 1969; Nichols & Mallon, 2006; Pizarro, 2000; Pizarro & Tannenbaum, 2012). This holds true for sacrificial dilemma judgments where causing harm maximizes overall outcomes: When people make dilemma decisions, the presence of others—real or imagined—impacts those decisions (Bostyn & Roets, 2017; Kundu & Cummins, 2013; Rom & Conway, 2018).

Building off the social nature of moral decisions, the current research explores how the chronic tendency to compare oneself to others influences dilemma decisions. Specifically, we focus on interpersonal differences in Social Comparison Orientation (SCO; Gibbons & Buunk, 1999): a well-established measure of the tendency to frequently engage in social comparisons (Festinger, 1954; for a recent overview, see Gerber, Wheeler, & Suls, 2018). Although SCO consists of two factors—comparisons of abilities and of opinions—they are highly related, so we follow the tradition of treating SCO as a unitary construct (Gibbons & Buunk, 1999). We considered two contrasting hypotheses: that people high in SCO refuse sacrificial harm more often versus less often than those low in SCO. Before unpacking these hypotheses below, we discuss moral dilemmas and process dissociation analyses.

Moral Dilemmas and Disentangling Deontological from Utilitarian Responses

We test how SCO affects sacrificial dilemma decisions where causing harm maximizes overall outcomes. The most famous example is the trolley dilemma where a trolley will kill five people unless the protagonist pulls a switch to move the trolley onto another track, killing one person instead (Foot, 1967). Each decision aligns with a philosophical position (even though the

lay psychology leading to such judgments involves processes very different from those discussed in philosophy, Conway, Goldstein-Greenwood, Polacek, & Greene, 2018; Kahane et al., 2018; Kahane, Everett, Earp, Farias, & Savulescu, 2015). Pulling the switch is consistent with deontological ethics that prohibit causing harm (Kant, 1785/1959); pulling the switch is consistent with utilitarian ethics that require maximizing outcomes (even if doing so involves causing harm, (Mill, 1861/1998)).¹

Conventional dilemma analyses treat deontological and utilitarian decisions as opposite ends of a single bipolar dimension, an approach we employ in Study 1. However, using dilemmas where causing harm fails to maximize outcomes allows researchers to disentangle refusal to cause harm (upholding deontology) from concern for outcomes (upholding utilitarianism), a technique called process dissociation (Conway & Gawronski, 2013). Sacrificing one to save five may reflect reduced harm-rejection, increased outcome-maximization, both, or a more complex pattern such as an increase in harm-rejection coupled with an even larger increase in outcome-maximization. We employed process dissociation to clarify how SCO influences dilemma decisions in Studies 2-4.

Social Comparison Orientation and Moral Dilemmas

Research on responses to sacrificial dilemmas can be divided into two streams. The original stream examined basic psychological processes involved in dilemma responding. The most notable work described a dual-process model where rejecting sacrificial harm primarily reflects affective reactions to harm, whereas accepting sacrificial harm primarily reflects cognitive evaluations of outcomes (e.g., Greene, 2007). Considerable work supports this basic

¹ Some research examines additional deontological concerns not examined here (Gawronski, Armstrong, Conway, Friesdorf, & Hütter, 2017), and sacrificial dilemma decisions fail to truly match utilitarian ideals because they assess only the belief that sacrificial harm is acceptable rather than mandatory (Kahane et al., 2018; Royzman, Landy, & Leeman, 2015). Thus, dilemmas do not capture the essence of philosophical thinking. Nonetheless, dilemma responses descriptively match the ideals of each philosophy; we thus employ these terms descriptively (Conway et al., 2018).

distinction, although there is also more complexity than originally theorized (Byrd & Conway, 2019; Conway & Gawronski, 2013; Körner & Volk, 2014; Reynolds & Conway, 2018).

A second stream of work examines how social influences shape dilemma judgments. Such work shows that dilemma responses also reflect social pressure, reputational concerns, and self-presentation (Bostyn & Roets, 2017; Kundu & Cummins, 2013; Monin, 2007; Rom & Conway, 2018). Notably, these studies suggest that decision-makers who reject sacrificial harm correctly expect others to view them as warmer, more moral, and more trustworthy, albeit less competent (Everett, Pizarro, & Crockett, 2016; Rom, Weiss, & Conway, 2017)—hence social pressure favors deontological decisions (Bostyn & Roets, 2017; Reynolds, Knighten, & Conway, 2019).

Given the role of both social pressure and emotion in favoring deontological decisions independent of utilitarian decisions (e.g. Bostyn & Roets, 2017; Conway & Gawronski, 2013; Reynolds et al., 2019), SCO may be associated with *increased* deontological decision-making. People engage in social comparison partly to gain a more accurate view of social reality (Festinger, 1954). Therefore, high SCO people seek more information relating others to the self (Gibbons & Buunk, 1999; Schneider & Schupp, 2014; Van der Zee, Oldersma, Buunk, & Bos, 1998). Given that high-SCO people place greater weight on normative information and social pressure, they may prefer to reject sacrificial harm, upholding deontological ethics. Moreover, high SCO-people tend to attend carefully to their feelings and emotions (Gibbons & Buunk, 1999), so they may experience greater emotional aversion to causing sacrificial harm (Conway & Gawronski, 2013; Reynolds & Conway, 2018). Note that such theories remain silent regarding utilitarian decisions, which do not appear associated with processes that characterize SCO, such as reputational concerns or emotional processing. Hence, this perspective suggests that SCO will uniquely predict increased deontological responding.

However, the opposite prediction is also likely: that SCO will predict *reduced* deontological responding. This prediction follows from research suggesting that SCO involves reduced concern for others. For example, people high in SCO tend to experience stronger malicious envy and narcissistic rivalry, aggressively devaluing others (Bogart, Benotsch, & Pavlovic, 2004; Lange, Crusius, & Hagemeyer, 2016; Rentzsch & Gross, 2015; Zeelenberg & Pieters, 2007). Additionally, high-SCO people often react with anger towards others, and desire others to experience worse outcomes than themselves (Bogaerts & Pandelaere, 2013; Neff & Vonk, 2009). Importantly, reduced emotional concern for others is usually associated with reduced deontological responses, but not utilitarian decisions, when calculated independently via process dissociation (Conway & Gawronski, 2013; Conway et al., 2018; Gleichgerrcht & Young, 2013; Patil & Silani, 2014; Reynolds & Conway, 2018; Royzman et al., 2015). For example, antisocial or ‘dark’ personality traits, including psychopathy, are also associated with reduced deontological decision-making, and are either unrelated or even negatively related to utilitarian decision-making using PD (Bartels & Pizarro, 2011; Conway et al., 2018; Djeriouat & Trémolière, 2014; Reynolds & Conway, 2018). Hence, this perspective suggests that SCO will uniquely predict reduced deontological responding.

Again, such theories are largely silent regarding predictions of how SCO will relate to utilitarian responding, considering that dark personality traits are often unrelated to utilitarian responses. Nonetheless, we considered the possibility that high-SCO people may focus on emotions at the expense of careful deliberation (Gibbons & Buunk, 1999). Past work shows that heuristically focusing on rules or on ‘gut-feeling’ sentimental processing reduces utilitarian decisions, but is unrelated to deontological ones (Conway, Velasquez, Reynolds, Forstmann, & Love, 2020; Fleischmann, Lammers, Conway, & Galinsky, 2019). Hence, SCO may indirectly reduce utilitarian decision-making through increased endorsement of heuristic and sentimental

processing. Conversely, some research suggests that high-SCO people tend to engage in increased deliberation—such as seeking information about others (Gibbons & Buunk, 1999; Schneider & Schupp, 2014; Van der Zee et al., 1998) and comparing between options (Bosch, Buunk, Siero, & Park, 2010). Careful cognitive processing tends to primarily increase utilitarian (but not deontological) responding (Bartels, 2008; Conway & Gawronski, 2013; Patil et al., 2020). Hence, SCO may indirectly predict increased utilitarian responding through increased Cognitive Reflection (Frederick, 2005). If so, these effects should partially cancel out, or show mathematical suppression, for the effect of SCO on utilitarian responses. Therefore, we anticipated that any links between SCO and utilitarian responding would be weaker than between SCO and deontological responding.

The Current Research

Across four studies, we tested opposing theoretically-derived predictions suggesting that SCO predicts increased versus decreased deontological decision-making. We also examined exploratory hypotheses regarding how SCO predicts utilitarian responding. Study 1 tests how SCO affects participants' responses to conventional moral dilemmas that treat deontological and utilitarian responses as opposites. Studies 2 and 3 employed process dissociation to disentangle the relationship between SCO and deontological and utilitarian patterns independently. Finally, Study 4 tested multiple possible mediators to clarify the processes involved.

In the online supplementary material (OSM), we report the results of three studies experimentally manipulating social comparisons ($N = 835$). We examined whether experimentally inducing people to compare their abilities or opinions (Study 5) or to make general comparisons (Studies 6 and 7) impacts dilemma decisions. Significant effects on a manipulation check and increased competitiveness in the comparison condition suggested that our manipulations were successful. However, this comparison mindset manipulation did not have

an effect in any of the experiments, nor in a meta-analysis² across the experiments: deontological decisions, $\beta = .063$, $SE = 0.071$, $p = .373$, $CI_{95} [-.076, .202]$, utilitarian decisions, $\beta = -.080$, $SE = 0.071$, $p = .261$, $CI_{95} [-.218, .059]$. These results suggest that merely engaging in comparisons does not seem to influence decisions in moral dilemmas. Instead, the personality trait of SCO—a chronic orientation towards comparing—and its link to psychopathy is what seems to produce a decrease in deontological decisions. We return to these findings in the Discussion.

We also report an internal meta-analysis to improve effect size estimates. We report all studies here; there is no file drawer. We treated SCO as a unitary construct (see OSM for secondary analyses on separate SCO subscales). We report how we determined sample size, all data exclusions (if any), all manipulations, and all measures in the study. Data for all studies are available here: osf.io/2e9aq/?view_only=a3f7c2a93ec944abb52d0bb4d8654996.

Study 1 – Conventional Dilemma Analyses

Study 1 tested how SCO relates to conventional sacrificial dilemmas decisions. We preregistered this study at aspredicted.org/blind.php?x=jz8h2p.

Method

Participants. Two-hundred-and-fifty-two American MTurkers (115 female, 136 male, 1 other, $M_{age}=35$) participated for \$1.20. Sample size was a priori set to 250 following Schönbrodt and Perugini (2013). **Procedure.** Participants completed the 11-item SCO scale (Gibbons & Buunk, 1999) on scales from 1(*strongly disagree*) to 7(*strongly agree*), Cronbach's $\alpha=.92$. Example items include “I often compare myself with others with respect to what I have accomplished in life” and “I always like to know what others in a similar situation would do”. Next, participants reported whether they would perform harmful actions that maximize outcomes

² For Study 5a, we compared two social comparison conditions against the control condition. For Study 5c, we calculated the basic effect for all participants, rather than just those high in SCO.

in fourteen moral dilemmas used by Bartels (2008) between 1(*No, most deontological*) and 4(*Yes, most utilitarian*). For example, one dilemma involved killing one injured submarine crew member to preserve air to save six other crew members. Another involved throwing one person off a life raft to save the other six people from sinking. Finally, participants completed demographics.

Results

As predicted, high-SCO people tended to accept outcome-maximizing harm, inconsistent with deontological ideals and consistent with utilitarian ideals, $r(250) = .220$, $p < .001$, $CI_{95} [.099, .334]$.

Study 2 – Process Dissociation

Although Study 1 provided first evidence that high-SCO people prefer utilitarian over deontological responses, it remains unclear whether this pattern reflects increased utilitarian concerns, decreased deontological concerns, or another pattern. Therefore, we replicated Study 1 employing process dissociation to independently estimate deontological and utilitarian inclinations (Conway & Gawronski, 2013).

Method

Participants. Two-hundred-and-fifty-two English native speakers from Prolific Academic (112 female, 140 male, $M_{age} = 35$) participated for £1.00. No participants indicated inattentive responding. Due to other research questions explored elsewhere, this sample contained only participants with supervisory duties at work³. We again set sample size to 250 a priori.

Procedure. As part of a larger battery of measures (see OSM), participants answered work-related questions, before completing the six-item short version of the SCO scale (Schneider

³ This sample included only people with supervisory work duties, who may feel particularly powerful, thereby impacting dilemma decisions (Lammers & Stapel, 2009; Lucas & Galinsky), but some research suggests no direct relationship between power and utilitarian or deontological decisions due to suppression (Fleischmann et al. 2019).

& Schupp, 2014), on a scale from 1(*strongly disagree*) to 7(*strongly agree*), Cronbach's $\alpha=.85$, two personality questionnaires (see OSM), the 20-item Conway and Gawronski (2013) dilemma battery in a randomized order (see OSM; see also Friesdorf, Conway, & Gawronski, 2015 for a meta-analysis), demographics, and an attention check. The dilemma battery includes ten moral dilemmas each with one incongruent and one congruent version. *Incongruent dilemmas* involve causing harm that maximizes outcome, so deontological and utilitarian responses oppose one another, as in conventional dilemmas. *Congruent dilemmas* employ parallel wording, except that causing harm no longer clearly maximizes outcomes, so deontological and utilitarian responses align. For example, one dilemma involves killing a baby to save hiding townspeople from being killed (incongruent version) or forced into hard labor (congruent version).

Table 1

Correlations, Means, and Standard Deviations of Social Comparison Orientation (SCO), Conventional Utilitarian versus Deontological Judgments, and Standardized Deontological and Utilitarian Process Dissociation (PD) Parameters, Study 2 (Top), Study 3 (Bottom).

Variable	1	2	3	4	<i>M</i>	<i>SD</i>
1. SCO	–	.165**	-.238***	.006	4.73	1.16
2. Conventional Utilitarian vs deontological judgments	.144*	–	-.704***	.676***	0.60	0.18
3. Deontological PD Parameter	-.106	-.624***	–	.007	0.00	1.00
4. Utilitarian PD parameter	.062	.649**	.139*	–	0.00	1.00
<i>M</i>	3.33	0.58	0.00	0.00	–	–
<i>SD</i>	0.78	0.18	1.00	1.00	–	–

Note. Values above the diagonal and vertical *M* and *SD* are from Study 2, values below the diagonal and horizontal *M* and *SD* are from Study 3 (replication).

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

Results

First, we examined the conventional analysis (incongruent dilemmas only). Replicating Study 1, high-SCO people tended to accept outcome-maximizing harm, $r(250)=.165$, $p=.009$, $CI_{95} [.042, .283]$ (see Table 1 top). However, process dissociation clarified this pattern: high-SCO people scored lower on the deontology parameter, $r(250)=-.238$, $p<.001$, $CI_{95} [-.351, -.118]$, but not higher on the utilitarian parameter, $r(250)=.006$, $p=.930$, $CI_{95} [-.118, .129]$. These two correlations differed significantly, $z=-2.785$, $p=.005$. Thus, SCO predicted reduced concerns about causing harm but not increased concerns about maximizing outcomes.

Study 3 – Replication

Study 2 replicated and clarified Study 1 using process dissociation, but the sample was restricted to supervisors and we only employed the short SCO scale. Study 3 addresses these limitations.

Method

Participants. Two-hundred-and-fifty-two American MTurkers participated for \$0.60. We again a priori set sample size to 250, but removed four inattentive participants and one whose parameters calculations included impossible division by zero, bringing our final sample to $N=247$ (126 female, 121 male, $M_{age}=37$).

Procedure. Participants completed the SCO scale from Study 1 (Gibbons & Buunk, 1999), Cronbach's $\alpha=.90$, the sense of power scale (for unrelated research, Anderson & Galinsky, 2006), the process dissociation moral dilemma battery (Conway & Gawronski, 2013), demographics, and an attention check.

Results

Again, the conventional analysis replicated Studies 1 and 2: SCO correlated with increased utilitarianism/reduced deontology, $r(245)=.144$, $p=.024$, $CI_{95} [.020, 0.264]$ (see Table 1

bottom). The process dissociation analysis largely replicated Study 2: High-SCO people scored lower than low-SCO people on the deontology parameter, albeit marginally $r(245)=-.106$, $p=.097$, $CI_{95}[-.228, .019]$, whereas SCO did not correlate with the utilitarian parameter, $r(245)=.062$, $p=.328$, $CI_{95}[-.063, .185]$. The two correlations differed marginally, $z=-1.90$, $p=.057$.

Study 4 – Mediation

Studies 2 and 3 demonstrate that high-SCO people show reduced deontological moral decision-making. Study 4 aimed to replicate this effect and test underlying processes. We use a multiple mediation design to simultaneously test four plausible mediators derived from theory (see Fiedler, Harris, & Schott, 2018). We theorized that high-SCO reduces deontological thinking because it reduces emotional concern for others. To test this mediation path, we measured differences in *empathic concern* and *non-clinical psychopathy*, a socially aversive personality trait associated with a callous disregard for others (Jones & Paulhus, 2014). Empathic concern predicts increased deontological responses, and psychopathy predicts reduced deontological responses (e.g., Conway et al., 2018; Reynolds & Conway, 2018). We also tested two other mediators we did not expect to be significant (see below).

Although SCO was not significantly related to the utilitarian parameter in Studies 1-3, it remains possible that it does so indirectly via indirect effects in opposite directions that suppress one another (see Fleischmann et al., 2019). Therefore, consistent with our predictions and the dual-process model linking utilitarian judgments to cognitive deliberation (Greene, 2007; Greene, Nystrom, Engell, Darley, & Cohen, 2004), we examined *analytic thinking style* (a tendency to reflect over one's decisions; Frederick, 2005; Pennycook, Cheyne, Koehler, & Fugelsang, 2016) and *rule adherence* (a tendency to heuristically and dogmatically adhere to moral rules in lieu of careful deliberation; Conway et al., 2020). People high in SCO search for comparative

information (e.g., Gibbons & Buunk, 1999; Schneider & Schupp, 2014), suggesting they might score higher on analytical thinking and lower on rule adherence. If so, these indirect effects may suppress one another, as analytic thinking increases utilitarian responses (Li, Xia, Wu, & Chen, 2018; McPhetres, Conway, Hughes, & Zuckerman, 2018; Patil et al., 2020; Paxton, Ungar, & Greene, 2012), whereas rule adherence reduces utilitarian responses (Fleischmann et al., 2019; Piazza & Landy, 2013). We preregistered this study at aspredicted.org/blind.php?x=77sm4d.

Method

Participants. Considering the meta-analytic correlation between SCO and deontological decisions from Studies 2 and 3, $r=-.174$, a sample size of 340 would provide ~90% power. We slightly oversampled: 345 American MTurkers participated for \$1.20. We removed seven who reported inattention, bringing our final sample to 338 (148 female, 189 male, 1 other, $M_{\text{age}}=35$).

Procedure. Participants answered the 11-item SCO scale (Cronbach's $\alpha=.91$) and four potential mediators: the seven-item empathic concern scale (Davis, 1980), Cronbach's $\alpha=.90$, the nine-item Psychopathy Scale of the Short Dark Triad (Jones & Paulhus, 2014), Cronbach's $\alpha=.84$, and the seven-item rule orientation subscale of the moral orientation scale (Conway et al., 2020; Fleischmann et al., 2019), Cronbach's $\alpha=.88$, each on 7-point scales. Participants also completed the three-question Cognitive Reflection Test (CRT, Frederick, 2005), Cronbach's $\alpha=.76$, scored as *correct* (1), *incorrect* (0) (averaged), the dilemma battery from Studies 2 and 3, demographics, and an attention check.

Results

Correlational analysis. Once again, conventional analyses showed that high-SCO people answered dilemmas tended to accept sacrificial harm, $r(336)=.113$, $p=.038$, $CI_{95} [.006, .217]$, (see Table 2), but process dissociation clarified that high-SCO people made fewer deontological decisions, $r(336)=-.108$, $p=.047$, $CI_{95} [-.212, -0.001]$, not more utilitarian decisions, $r(336)=-.009$,

$p=.869$, $CI_{95}[-0.116, 0.098]$, although these correlations did not differ significantly, $z=-1.48$, $p=.139$.

Mediation: SCO to Deontology. Next, we tested whether four potential mediators simultaneously carried significant indirect variance between SCO and deontological decisions via the Process macro (Model 4, 10,000 bootstrapping samples, Hayes, 2013). Including mediators reduced the direct effect to non-significance (see Figure 1, Table 3). As predicted, psychopathy significantly mediated the relationship between SCO and reduced deontological decisions, $b=-.047$, $CI_{95}[-0.082, -0.018]$. No other mediator was significant. As predicted, people high in empathic concern made more deontological decisions, but SCO did not predict empathic concern. Contrary to predictions, high-SCO people scored higher on rule orientation and lower on the CRT, but neither were significantly related to deontological decisions. Together, these results suggest that high-SCO people tend to make fewer deontological decisions due to emotional callousness associated with psychopathy.

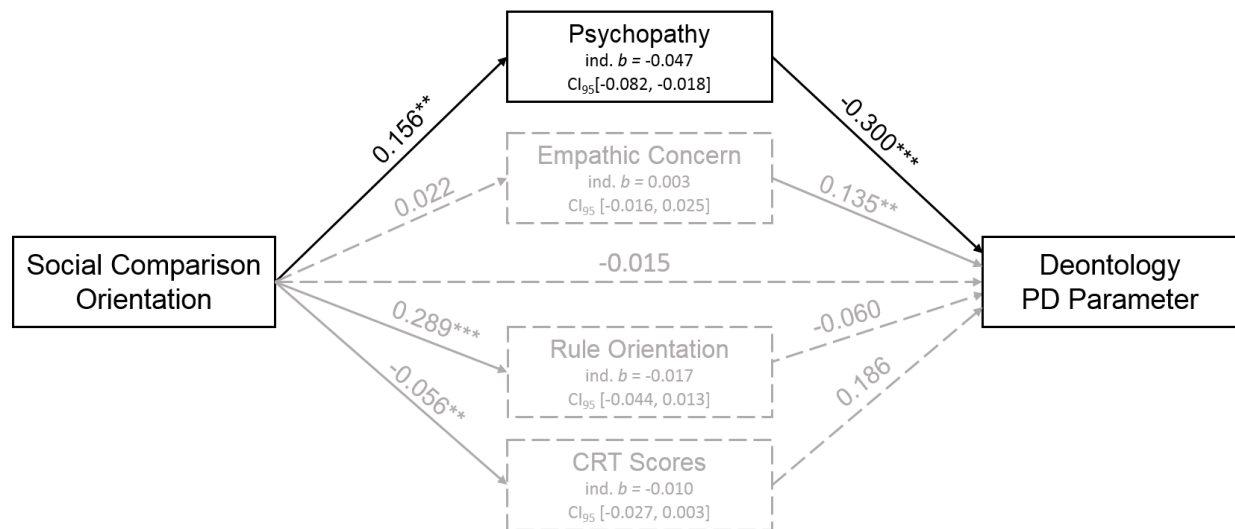


Figure 1. Multiple mediation model showing the relationship between social comparison orientation (SCO) and reduced deontological decision-making is mediated by psychopathy, but not empathic concern, rule orientation, or CRT scores. Bold lines indicate significant effects and dotted lines indicate nonsignificant effects. Significant indirect effects in black, non-significant in gray. Total effect of SCO on deontology = -0.086, $p = .047$.

Table 2

Correlations, Means and Standard Deviations of Social Comparison Orientation (SCO), Mediators, and Deontological and Utilitarian Process Dissociation (PD) Parameters in Study 4

Variable	1	2	3	4	5	6	7	8
1. SCO	–	.173**	.021	.283***	-.171**	.113*	-.108*	-.009
2. Psychopathy		–	-.395**	.137	-.174**	.175**	-.436***	-.295***
3. Empathic concern			–	-.007	.040	-.114*	.314***	.173**
4. Rule orientation				–	-.258***	-.013	-.148**	-.242***
5. CRT scores ^a					–	.044	.164**	.269***
6. Conventional utilitarian vs deontological judgments						–	-.640***	.536***
7. Deontological PD Parameter							–	.244***
8. Utilitarian PD Parameter								–
<i>M</i>	4.28	2.51	5.16	4.17	0.57	0.57	0.00	0.00
<i>SD</i>	1.25	1.13	1.31	1.27	0.41	0.21	1.00	1.00

^aCRT scores range from zero to one. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3

Mediation Model for the Relationship between SCO and Deontology by Psychopathy,

Empathic Concern, Rule Orientation, and CRT in Study 4

Path	<i>b</i>	<i>SE</i>	<i>p</i>	95% CI
Total effect	-0.086	0.043	.047	[-0.172, -0.001]
Direct effect	-0.015	0.041	.714	[-0.095, 0.065]
SCO to Mediators				
Psychopathy	0.156	0.049	.001	[0.061, 0.252]
Empathic concern	0.022	0.057	.696	[-0.090, 0.134]
Rule Orientation	0.289	0.053	<.001	[0.184, 0.393]
CRT	-0.056	0.017	.002	[-0.090, -0.021]
Mediators to Deontology				
Psychopathy	-0.300	0.048	<.001	[-0.394, -0.206]
Empathic concern	0.135	0.040	.001	[0.056, 0.215]
Rule Orientation	-0.060	0.041	.143	[-0.139, 0.020]
CRT	0.186	0.125	.137	[-0.059, 0.431]
Indirect effects through				
Psychopathy	-0.047	0.016		[-0.082, -0.018]
Empathic concern	0.003	0.010		[-0.016, 0.025]
Rule Orientation	-0.017	0.014		[-0.044, 0.013]
CRT	-0.010	0.008		[-0.027, 0.003]

Exploratory Mediation Analysis: SCO to Utilitarianism. To examine possible suppression, we ran an identical mediation model on utilitarian decisions (see Figure 2, see Table S1 in OSM). Although there was no direct effect of SCO on utilitarian decision-making, $b=-0.007$, $SE=0.044$, $p=.869$, $CI_{95}[-0.093, 0.079]$, upon adding mediators we found a significant direct effect, $b=0.093$, $SE=0.042$, $p=.028$, $CI_{95}[0.010, 0.177]$, as well as evidence of suppression. Specifically, SCO was associated with higher psychopathy, stronger rule adherence, and lower CRT scores, each of which reduced utilitarian responding: psychopathy, $b=-0.031$, $CI_{95}[-0.062, -0.012]$, rule adherence, $b=-0.044$, $CI_{95}[-0.086, -0.017]$, CRT scores, $b=-0.027$, $CI_{95}[-0.052, -0.010]$. These results suggest that high-SCO people might score higher in utilitarian responses, except that they also score higher on psychopathy, rule adherence, and lower in analytical thinking.

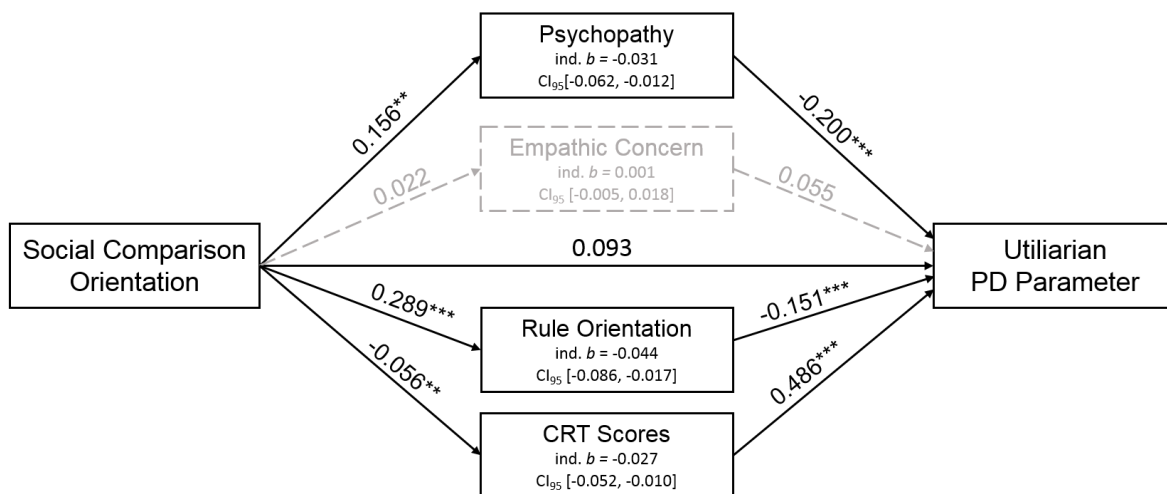


Figure 2. Multiple mediation model of the relationship of social comparison orientation (SCO) and utilitarian decisions. The effect of SCO on utilitarian decisions is suppressed by negative indirect effects through psychopathy, rule orientation, and CRT scores. Bold lines indicate significant effects and dotted lines indicate nonsignificant effects. Significant indirect effects in black, nonsignificant in gray. Total effect of SCO on utilitarianism = -0.007 , $p = .869$.

Meta-Analysis

To increase precision (e.g., Cumming, 2014), and because effects were not always significant, we computed three meta-analyses using the metafor package in R (R Core Team, 2017; Viechtbauer, 2010) on conventional analyses and each PD parameter. We included all studies in our lab and employed the same analyses for all studies (Vosgerau, Simonsohn, Nelson, & Simmons, 2018). As predicted, the meta-analysis on conventional dilemma analyses found that high-SCO people tended to accept sacrificial harm, consistent with utilitarian ethics and inconsistent with deontological ethics, $\beta=.158$, $SE=0.030$, $p<.001$, $CI_{95} [.100, .216]$ (see Figure 3).

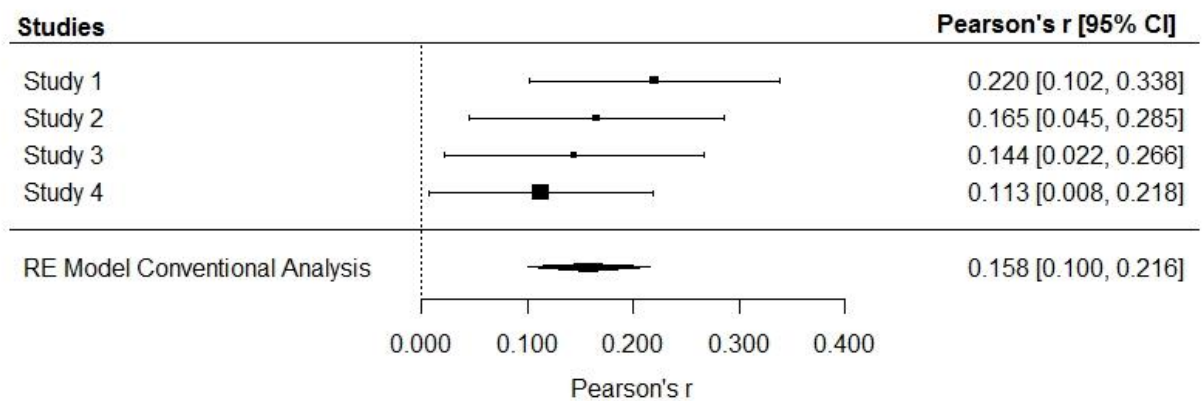


Figure 3. Forest plot of meta-analysis of relationship between social comparison orientation and conventional dilemma decisions showing that social comparison orientation predicts either increased utilitarian or decreased deontological responses.

A meta-analysis of each process dissociation parameter⁴ (Studies 2-4) clarified that high-SCO people made significantly fewer deontological decisions, $\beta = -.148$, $SE = 0.034$, $p < .001$, $CI_{95}[-.214, -.082]$, but not utilitarian decisions, $\beta = .011$, $SE = 0.034$, $p = .759$, $CI_{95}[-.057, .078]$, see Figure 4. The two coefficients differed significantly, $\beta = .159$, $SE = 0.046$, $p < .001$, $CI_{95} [.070, .249]$, indicating that high-SCO people accepted sacrificial harm on conventional dilemmas because they have weaker aversion to causing harm, not stronger motivation to maximize outcomes.

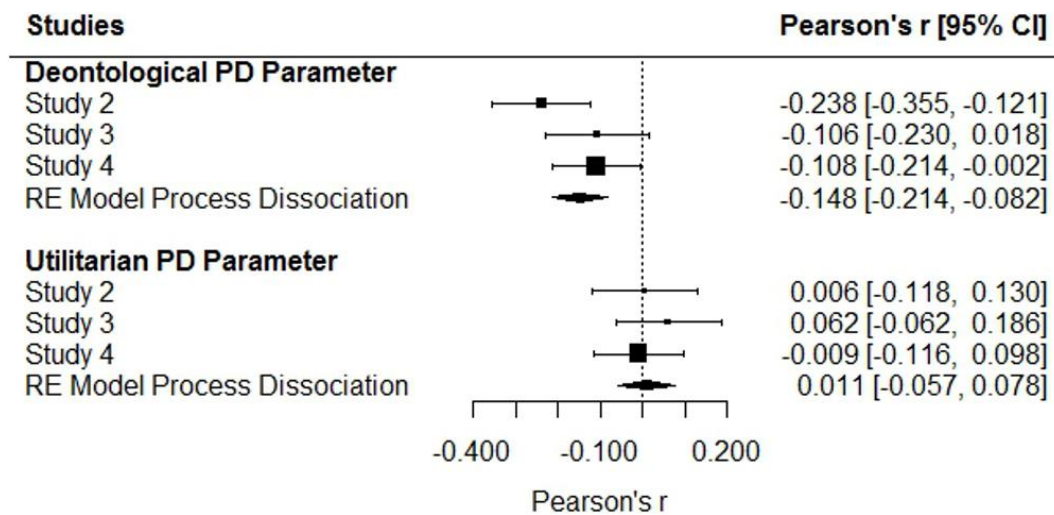


Figure 4. Forest plot of meta-analysis of relationship between social comparison orientation and the deontological and utilitarian process dissociation parameters showing that social comparison orientation predicts decreased deontological but not increased utilitarian responses.

⁴ To compare correlations, we used a moderator in a multivariate maximum likelihood (MML) random-effects model to account for statistical dependency. We calculated the covariances of the correlations according to Olkin and Finn (1990), and specified random effects for the moderator (D versus U process dissociation parameter). We conducted the same model for multiple endpoints to estimate the deontological and utilitarian parameter. For full analyses see osf.io/2e9aq/?view_only=a3f7c2a93ec944abb52d0bb4d8654996.

General Discussion

Across four studies, we found consistent evidence that people high in social comparison orientation (SCO), i.e., people who habitually compare themselves with others, tend to make different sacrificial dilemma decisions than people who compare less often. High-SCO people tended to accept sacrificial harm, consistent with utilitarianism, on conventional analyses that treat harm-rejection and outcome-maximization responses as opposites (Studies 1-4). However, process dissociation analyses (Studies 2-4) clarified that this finding obtained because high-SCO people make fewer decisions to reject sacrificial harm (deontological judgments), but do not differ from low-SCO people in the tendency to maximize outcomes (utilitarian judgments). Our fourth study identified a key mechanism: high-SCO people tend to have a more callous interpersonal orientation, scoring higher on non-clinical psychopathy, which facilitated allowing harmful action. SCO did not have a significant direct effect on utilitarian responding, but Study 4 suggested that this null effect is due to multiple mediators suppressing one another.

Theoretical Implications

The conclusion that SCO entails reduced harm-rejection is striking considering previous research showing that people high in SCO are rather interpersonally oriented, insecure, and tend to self-monitor (Gibbons & Buunk, 1999; Neff & Vonk, 2009; Soibel, Fong, Mullin, Jenkins, & Mar, 2012). From such work, one might predict high-SCO people would be more likely to bolster self-presentation by increasing deontological decision-making (Rom & Conway, 2018). Yet, we find no evidence of such self-presentation tendencies among high-SCO people. Instead, people high in SCO make fewer deontological decisions, and do not differ in utilitarian decisions, suggests they are overall less concerned about morality and how moral they appear. A similar pattern emerges for people high in egoism, selfishness, and willingness to commit ethical violations (Conway et al., 2018). This finding was mediated by psychopathy, which predicts

many immoral decisions beyond dilemmas (Glenn, Iyer, Graham, Koleva, & Haidt, 2009; Pletti, Lotto, Buodo, & Sarlo, 2017). Hence, our findings suggest that SCO reflects a ruthless, selfish concern for proving one is better than others, which involves decreased emotional concern for the well-being of others. Consistent with this argument, recent research finds that high-SCO people are more competitive and angrier towards others; they also are more envious, and narcissistic (Bogaerts & Pandelaere, 2013; Bogart et al., 2004; Lange et al., 2016; Neff & Vonk, 2009; Rentzsch & Gross, 2015).

The finding that psychopathy mediates the relation between SCO and reduced deontological decisions also sheds light on the puzzling positive relationship of utilitarianism and psychopathy using conventional dilemmas (Bartels & Pizarro, 2011; Gao & Tang, 2013; Patil, 2015; Pletti et al., 2017). Our results support that psychopathy is not, in fact, related to increased utilitarian judgments, but rather to decreased deontological ones (see also Conway et al., 2018; Reynolds & Conway, 2018). Thus, criticisms of dilemmas pointing to supposedly higher utilitarian responding among antisocial people reflect methodological rather than conceptual concerns (Kahane et al., 2015).

Studies 2 and 3 suggested that there is no direct relationship between SCO and utilitarianism, but Study 4 revealed some additional nuance. Specifically, the results showed that high-SCO people showed increased utilitarian thinking—consistent with their tendency to compare and deliberate—but this relationship was suppressed by other characteristics that distinguish them from low-SCO people. Specifically, high-SCO people scored higher on psychopathy and rule adherence, which reduced utilitarian responding, but lower in analytic thinking, which increased utilitarian responding, replicating previous studies (Bartels, 2008; Fleischmann et al., 2019; Gawronski et al., 2017; Li et al., 2018; McPhetres et al., 2018; Patil et al., 2020; Paxton et al., 2012). Hence, these studies reveal suppression effects, which suggest

complexity in the SCO-utilitarian relationship. However, these findings are based on exploratory analyses, so future research should replicate these results to increase confidence.

Some research suggests that following moral rules leads to increased deontological decisions, whereas analytical processing leads to increased utilitarian decisions (Bartels, 2008; Moore, Clark, & Kane, 2008; Nichols & Mallon, 2006; Patil et al., 2020; Paxton et al., 2012; Piazza & Landy, 2013). Yet, Study 4 showed that rule adherence is associated with decreased deontological decisions and analytic thinking style is associated with increased deontological decisions, although both are associated more strongly with reduced utilitarian decisions. Although seemingly counter-intuitive, these findings actually corroborate an emerging line of research demonstrating that people who endorse adhering to moral rules are not more deontological, but rather appear to be less utilitarian (Conway et al., 2020; Fleischmann et al., 2019; Maranges, Reynolds, Baumeister, & Conway, 2019). Similarly, recent research documents that cognitive deliberation sometimes increase deontological as well as utilitarian responses in dilemmas (Byrd & Conway, 2019; Gamez-Djokic & Molden, 2016; Gawronski et al., 2017; McPhetres et al., 2018). Thus, despite appearing counter-intuitive, both results align with current findings in the field. Furthermore, research linking rule adherence and analytic thinking to dilemma decisions has typically employed conventional analyses, treating deontological and utilitarian decisions as opposites. It is possible previous studies are consistent with our findings, as the stronger association of both variables with utilitarianism could explain previous results.

Strengths and Limitations

One interesting aspect of our research is that our correlational results and our experimental results were not consistent. In our correlational studies, we find that the personality trait of SCO is related to decreased deontological decisions in moral dilemmas. This association emerged consistently in conventional dilemma analyses, was significant in two out of three PD

analyses (and marginal in the third), and significant in the meta-analysis. Moreover, two of the studies preregistered these exact predictions. However, in our experimental Studies 5 to 7, we found that using experimental manipulations to create a temporary increase in social comparisons did not significantly influence deontological or utilitarian responding. This finding suggests that the simple act of comparing oneself to others is not the systematic driver of how social comparison orientation is affecting decisions in moral dilemmas.

Previous research has already found that people high in SCO tend to be competitive and envious (Bogaerts & Pandelaere, 2013; Lange et al., 2016), which, as our data demonstrate, produces a general disregard for harming others (i.e., SCO is connected to psychopath. As a result, high SCO individuals answer moral dilemmas similarly to people who score high on egoism, have a higher willingness to commit ethical violations, and have an aversion to experiencing personal inconveniences (e.g., Conway et al., 2020; Reynolds & Conway, 2018). In contrast, there is no evidence that asking people to compare themselves to others makes them more selfish or narcissistic. It is only when people typically compare themselves to others that leads to this pattern of decreased deontological thinking. We offer caution to this interpretation as these results are only correlational and do not speak to causation. Future research could employ a longitudinal design to test whether changes in chronically comparing oneself to others leads to changes in moral decision-making over time.

Our findings make a number of novel contributions to the existing literature. First, our results clarify which of two competing hypotheses is correct: Are people high in SCO insecure self-monitors, or are they callous disregards? Our findings indicate that the latter is true. Indeed, our pattern of results places people high in SCO in the same dubious moral company as egoists and psychopaths (e.g., Conway et al., 2020; Reynolds & Conway, 2018). Second, existing research has examined mostly how basic internal processes, like cognitive or affective processing

(e.g., Bartels, 2008; Greene, 2014; Greene, Morelli, Lowenberg, Nystrom, & Cohen, 2008; Patil et al., 2020; Valdesolo & DeSteno, 2006), or social factors, such as self-presentation, affect decisions in moral dilemmas (e.g., Bostyn & Roets, 2017; Kundu & Cummins, 2013; Rom & Conway, 2018). Our research moves beyond these findings to examine how an unrelated personality trait—the tendency to relate to the world by means of comparison—impacts dilemma decisions. Such findings help bridge the role of social factors (e.g., comparison) with basic processing (e.g., reduced emotional concern).

Conclusion

Although early research described dilemma decisions as resulting from internal processes such as deliberation and emotion, social processing also impacts dilemma decisions. The current research indicates that social comparison orientation consistently reduces deontological decisions, whereas it has no direct effect on utilitarian decisions (although it may indirectly influence utilitarian responding via a complex array of processes that cancel out). Hence, people who frequently compare themselves with others find it more acceptable to cause harm (independent of whether doing so maximizes outcomes or not). Consistently comparing oneself to others seems to involve reduced emotional concern for others.

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