

The Influence of Moral Disengagement on Responses to Climate Change

Short Title: Moral Disengagement and Climate Change

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Abstract

Notions of moral responsibility and ethical obligation pervade social and political discourse about climate change in Australia. But comparatively little is known about the importance of moral considerations in people's mitigative and adaptive behaviours. Here, we draw on Bandura's concept of moral disengagement to explore this issue. We conducted two nationally representative online surveys, 12 months apart. Participants were 5,030 Australian residents, of whom 1,355 participated in both surveys. We find levels of moral engagement mediate between i) opinions about the causes of climate change and pro-environmental behaviour, ii) individual response efficacy and pro-environmental behaviour, and iii) responsibility for causing climate change and pro-environmental behaviour. Moreover, people place more responsibility on groups and organizations, and less on individuals, for both causing and responding to climate change, regardless of their opinion on the causes of climate change. Longitudinal analyses showed those who became more sceptical about anthropogenic climate change also became less morally engaged. Relatedly, those who became less morally engaged reported feeling less guilty about climate change, though there was evidence suggesting this relationship is bidirectional. We suggest that moral disengagement is a key mechanism through which reductions in both effortful behaviour and guilt are achieved.

Keywords: moral disengagement; climate change; moral responsibility; pro-environmental behaviours; efficacy

“Climate change is... the great moral challenge of our generation. To delay any longer would be reckless and irresponsible for the economy and for our environment”

- Kevin Rudd, former Australian Prime Minister, on an Emissions Trading Scheme, 2007

The challenge of responding to climate change is often framed in moral terms. Morality is invoked by those in the environmental movement (Seabright, 2010; Wang, 2016), by politicians, and by religious leaders (Pope Francis, 2015). Some evidence suggests this is an effective approach; for instance, moral attitudes and a sense of moral responsibility have been demonstrated to be a better predictor of pro-environmental behaviour than perceived personal harm, emotional responses to climate change, and cognitive evaluations about the positive and negative consequences of taking climate change action (Leviston & Walker, 2012; Wang, 2016). Other research suggests the human judgement system is not naturally equipped to identify climate change as a moral imperative, and that communicators must deploy cunning strategies to bolster the likelihood that climate change will be viewed through a moral lens (Markowitz & Shariff, 2012).

In this paper we explore the role of moral considerations in shaping people's responses to climate change by drawing on the concept of moral disengagement proposed by Bandura (Bandura, 1990). We suggest that moral disengagement functions to reduce guilt and legitimise the avoidance of pro-environmental behaviours, and that these functions can operate independently of people's attitudes about climate change causation.

Climate change in the Australian context

Australia is expected to feel the impacts of climate change more severely than most countries; an expectation that extends to many countries in the Asia Pacific (Garnaut, 2011). Australia is the world's hottest and driest continent, and has already experienced a series of significant climate-exacerbated natural disasters in the last several decades, culminating most recently in the devastating 2019/2020 'Black Summer' bushfires. The climate is predicted to be even hotter and drier with reduced rainfall in most regions and up to an additional five degrees in temperature by 2090 (CSIRO and Bureau of Meteorology, 2015). Australia also

has the dubious distinction of being among the highest per-capita greenhouse gas emitters in the world, in part reflecting its position as one of the wealthier nations in the region and its reliance on emissions-intensive energy production and export (Hsu & Zomer, 2016). This confluence of characteristics has helped shape a contested and protracted political debate about Australia's moral responsibilities to its fellow-citizens, the region, and the world in relation to appropriate climate change responses. In this context, morality is invoked to urge both policy action and inaction.

Though a prevalent strategy, appealing to moral imperatives to address climate change in Australian political circles is fraught for those on both sides of the political spectrum. When the author of the opening quote, then Prime Minister of Australia, Kevin Rudd (centre-left party), failed to pass an Emissions Trading Scheme (ETS) in 2009, mainstream conservative media and online blogs reproduced his statement above to illustrate what to them was an act of intolerable moral hypocrisy ("The incredible shrinking man", 2010; Uhlmann, 2010). Indeed, political commentators have attributed Rudd's 2010 ousting from the Prime Ministership by his party colleagues in large part to his apparent moral 'transgression' in failing to pass climate change legislation (Howarth & Foxall, 2010; Suri & Lofgren, 2010). More recently, the then Prime Minister Malcolm Turnbull (centre-right party) received extensive criticism for his 'soft' position on climate change, a position seemingly at odds with his previous and much-publicised support for an ETS, and one that earned him accusations of 'selling out' on his convictions (Lord, 2015). In 2019, Turnbull was removed as Prime Minister in a leadership coup after he failed to negotiate a National Energy Guarantee through his own parliamentary cabinet. This marks the second time Turnbull has been removed from his party leadership position (once as opposition leader, once as Prime Minister) for advocating stronger greenhouse emissions reduction policies (Grattan, 2019).

Both this political and regional context makes understanding the role of moral considerations in the Australian community's response to climate change particularly relevant.

Psychological functions of morality, and moral disengagement

Morality is central to most people's self-concept (Allison, Messick, & Goethals, 1989). A sense of 'being moral' functions in part at an intra-individual level to maintain self-esteem, but morality also has a social component. People are keenly aware of the social

stigma that accompanies having one's morality questioned (Ybarra, Chan, & Park, 2001), hence we are motivated to maintain at least the appearance of being moral. Communicating climate action as a moral challenge signals that if one isn't acting with the utmost urgency to mitigate climate change, one is failing to act morally. Such implicit reproaches of people's morality have been demonstrated to threaten people's positive self-images (Monin, Sawyer, & Marquez, 2008), and may even hamper societal-level shifts to more sustainable practices. For example, Kurz, Prosser, Rabinovich, and O'Neill (2020) posit that visible and effortful climate-relevant behaviours, such as cycling and veganism, implicitly signal moral judgements to those who do not partake in these behaviours, which in turn can lead to negative emotions, and even moral outrage, toward those exhibiting these practices.

The charge frequently levelled at politicians who promote climate action is that they are guilty of 'moral hypocrisy' (by not living up to the standards they espouse). Paradoxically, the accusation might extend from our own tendency to judge others more harshly than we judge ourselves (Valdesolo & DeSteno, 2007). That is, we ourselves are guilty of moral hypocrisy: the same immoral behaviours are deemed more acceptable when performed by the actor (or one's social group) than when performed by another person (or another social group) (Valdesolo & DeSteno, 2007). Moral hypocrisy, it is argued, arises because we are motivated to protect our own feelings of self-worth and preserve the integrity of the self.

Through mechanisms such as moral hypocrisy, one can maintain one's own self-worth while failing to live up to the standards demanded of others. Another, more comprehensive account of why we can consistently act in ways that contravene our own moral standards is the concept of moral disengagement.

Moral disengagement is an extension of Albert Bandura's (1990) Social Cognitive Theory. This agentic theory of human behaviour posits that we exercise control over our life through self-regulatory processes, and that this personal agency operates within a network of socio-structural influences (Bandura, 1991, 2006). An important feature of Bandura's Social Cognitive Theory is the exercise of moral agency. As individuals, we adopt internal moral standards of right and wrong, which are 'culturally situated' in our own social context. These internal moral standards guide or deter our conduct, as they allow us to anticipate, monitor, and judge our own actions. When we act in opposition to these moral standards, self-censure occurs. But moral standards and self-censure do not function unwaveringly. Moral self-sanctions can be selectively disengaged, leading us to act in ways that belie our usual ethical

standards. Moral disengagement frees us from our own self-sanctions and therefore from the attendant guilt arising from violating our internal moral standards.

Bandura's framework has been applied to numerous social phenomena, including decisions to support military action and political violence, organizational corruption, drug addiction, and attitudes to asylum seekers (Aquino, Reed, Thau, & Freeman, 2007; Greenhalgh, Watt, & Schutte, 2015; Moore, 2007; Newton, Havard, & Teesson, 2011; Paciello, Fida, Tramontano, Lupinetti, & Caprara, 2008). It has also been applied to ecological sustainability at a conceptual level (Bandura, 2007; Heald, 2017), and through qualitative exploration of media content (Woods, Coen, & Fernández, 2018). But most research to date has concentrated on the outcomes of moral disengagement rather than the activation of the mechanisms underlying it (Detert, Trevino, & Sweitzer, 2008).

The mechanisms of moral disengagement

Moral disengagement is thought to be accomplished through several mechanisms. These mechanisms operate at a 'recipient locus', an 'outcome locus', an 'agency locus' and a 'behaviour locus' (Bandura, 2007).

Recipient locus. At the 'recipient locus', the people with the most to lose are depersonalised and blamed for their predicament. In the case of climate change, this may manifest as derogation toward those most actively and visibly seeking to mitigate the effects of climate change on vulnerable peoples. The invectives aimed at the high-profile environmental activist Greta Thunberg from various sections of the commentariat serves as a recent example (Warren, 2019). Such derogation in turn increases the social stigma of these groups and their activities (Stuart, Thomas, & Donaghue, 2019; Uren, Dzidic, Roberts, Leviston, & Bishop, 2019). Ultimately, it may lead to blaming vulnerable communities such as climate refugees for their own predicament, or to dehumanising the most vulnerable groups (Baldwin, 2017). Important as these issues are for recipients, our focus in this paper is primarily on people's views of their own moral (dis)engagement with climate change, which concerns the other loci.

Outcome locus. At the 'outcome locus', the harmful effects of individual practices are minimised, disregarded, or distorted; there is a disputation of harm. One such distortion is to proclaim disbelief in any detrimental effects of one's behaviour. While we are motivated to appear moral, when this comes at some personal cost the tendency to give in to self-interest increases (Polman & Ruttan, 2012). Therefore, people are more likely to discount moral and

ethical imperatives in situations where the behavioural corollaries are difficult to perform. Many pro-environmental behaviours (such as opting for the bicycle instead of taking the car to work) require effort, and are counter to everyday self-interest; yet our desire to appear moral can arouse internal conflict if a self-interested choice is pursued (Sapiains, Beeton, & Walker, 2015).

If one is of the opinion that climate change does not exist, there is no moral imperative to respond, and no reason to perform behaviours that come at a cost to self-interest. Hence, we should expect scepticism about anthropogenic climate change to be related to reduced pro-environmental engagement, and for moral and ethical duty to respond to climate change to mediate this relationship (Hypothesis 1).

Agency locus. At the ‘agency locus’, people are absolved of accountability for their actions by displacement and diffusion of responsibility; what Bandura terms the denial of agency. Displacement and diffusion of responsibility operates by obscuring the relationship between one’s own actions and their consequences. Responsibility is instead shifted to others, in so doing sparing oneself from self-disapproving reactions (Bandura, 2007).

Denial of agency may occur by discounting the cumulative impact of one’s own individual actions. Indeed, experimental research has shown that inducing lowered personal efficacy beliefs in people is associated with a reduced moralising of climate change (Salomon, Preston, & Tannenbaum, 2017). Even for those who accept the existence of climate change (whether as a natural or human-induced phenomenon), there is still the option of denying one’s own individual contribution in causing it. Moreover, we might expect those engaging in fewer pro-environmental behaviours to be more motivated to deny individual responsibility, and for this relationship to be mediated by a reduction in felt moral duty to act. Put another way, we should expect pro-environmental behaviour to be associated with a disavowal of both the personal efficacy of individual action, and personal responsibility for causing climate change. Both these associations should be mediated by moral disengagement (Hypothesis 2).

Relatedly, people tend to act more immorally when responsibility for acting is attributed to the collective level than when people hold themselves personally accountable for the outcomes of their actions (Bandura, 2007). The tendency to diffuse responsibility is more likely when the problem is a collective one, like climate change. Further, the more detrimental collectively shared acts are, the less personally responsible people feel for them

(Bandura, 1990). With regard to climate change, diffusion should manifest as a lowered responsibility of individuals to act to prevent climate change, with greater emphasis given to entities more psychologically distant to the individual (e.g., governments, groups, and organizations) (Hypothesis 3a). Moreover, as entities become more distant, the association between ratings of others' responsibility to act and moral disengagement should increase (Hypothesis 3b).

Behaviour locus. At the 'behaviour locus', people transform harmful practices into worthy ones, through moral justification and exonerative comparison. In cases where it might be difficult to mount a moral case for performing behaviours, such as emissions-intensive acts, there are several strategies through which their immorality might be dampened. For example, exonerative comparisons can allow people to justify their own behaviour morally by assuming they are at least better than many of their peers. Indeed, we have found elsewhere that people tend to perceive their own engagement in pro-environmental behaviour to be as good as, or better than, their peers (Leviston & Uren, 2020). This uniqueness bias may only partially excuse one's behaviour, however; cognitive reconstrual of the meaning and impacts of one's behaviour may be more effective. A major reconstrual would be to change one's opinion about the role of humans in contributing to climate change (or to begin to doubt whether it is real at all). Theoretically, those who shift toward a sceptical opinion over time should consequently become more morally disengaged from climate change, whereas those who shift toward acceptance of anthropogenic climate change should, presumably, start to (re-)engage with climate change as a moral issue (Hypothesis 4).

Finally, for Bandura, the ultimate function of moral disengagement is the reduction of guilt arising from breaches of one's internal moral standards; therefore, moral disengagement should drive reductions in a guilt response. If this is correct, we should expect to witness this by observing that, over two time periods, initial moral disengagement will be associated with subsequent guilt reduction to a greater extent than initial guilt will be associated with subsequent moral disengagement (Hypothesis 5).

The current study. Surveys undertaken with a representative sample of the Australian public at two time-points (12 months apart) will test the following hypotheses, drawn from the preceding discussion:

H1: Those sceptical about anthropogenic climate change will report lower levels of moral engagement, and engagement will mediate between scepticism and lower levels of pro-environmental behaviour (outcome locus: disputation of harm);

H2: Disavowal of both personal efficacy and responsibility for causing climate change will be associated with lower levels of pro-environmental behaviour. Again, these associations will be mediated by reduced moral engagement (agency locus: denial of agency; disavowal of responsibility);

H3a: More responsibility for causing and responding to climate change will be placed on distant entities than on normal individuals.

H3b: Associations between responsibility to act on climate change and moral engagement will decrease for groups more 'distant' from the individual (agency locus: diffusion of responsibility);

H4: Changes in climate scepticism will be associated with changes in moral engagement over time (behaviour locus: cognitive reconstrual).

H5: Initial levels of moral engagement will be associated with changes in guilt (guilt reduction).

Method

Participants and procedure

Data come from surveys of representative samples of Australians aged 18 and over on their opinions about climate change, conducted by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) in July 2010 and July 2011 (Leviston, Greenhill, & Walker, 2015). Participants consisted of 5,036 Australian residents in 2010 (Time 1 survey; "T1"), and 5,030 Australian citizens in 2011 (Time 2 survey; "T2"). A cohort of 1,355 respondents completed both surveys. Participants completed online surveys through the Online Research Unit (ORU) (<http://www.theoru.com/>). The ORU is a research-only internet panel provider with QSOAP Gold Standard and Global ISO 26362 accreditation. Ethics approval was granted prior to the administration of the surveys. Data were drawn from the T2 survey to test hypotheses H1, H2, and H3, while H4 and H5 were tested with data from both T1 and T2, using the 1355 respondents who completed both surveys.

Measures

Certainty in anthropogenic climate change. Certainty that climate change is happening was measured by a sliding scale with the instruction “Move the cursor to the place on the slide which best represents how sure you are that humans contribute to climate change”. The scale was labelled 1 = *sure that humans don't* to 100 = *sure that humans do*. A reference to the mid-point of this scale was also included: *unsure either way*.

Climate change opinion-type. Opinions about the existence and causes of climate change were assessed with the items: “Which of the following statements best describes your thoughts on climate change?” Respondents selected one of the following four statements: *I don't think that climate change is happening*; *I have no idea whether climate change is happening or not*; *I think that climate change is happening, but it's just a natural fluctuation in Earth's temperatures*; *I think that climate change is happening, and I think that humans are largely causing it*. These last two statements distinguished between different perceived causes of climate change: ‘natural’ (that is, non-human-induced) climate change, and human-induced, or ‘anthropogenic’, climate change. These statements are referred to as deny, *don't* know, natural, and human-induced for the remainder of the article.

Changes in opinion-type. Changes in opinion-type groups were constructed using the 1355 participants who completed both the T1 and T2 surveys. Those who selected the human-induced opinion statement at T1, but selected a different opinion statement at T2, were categorised as changing Away from acceptance ($n = 134$; 9.9%). Those who selected the human-induced opinion statement at T2, but selected a different opinion statement at T1, were categorised as changing Toward acceptance ($n = 92$; 6.8%). The human-induced opinion was selected as a benchmarking statement because it reflects the scientifically normative position.

Ratings of responsibility for causing and responding to climate change. Ratings of responsibility for causing climate change were measured by the item “Using the scale below, how much do you think each of the following groups are responsible for causing climate change?” Ratings of responsibility for responding to climate change was measured by the item: “Using the scale below, how much do you think each of the following groups are responsible for doing something about climate change?” The following eight groups were listed after each item: Multi-National Corporations, State Governments, Local Governments, Federal Governments, Big Polluting Countries, Global organizations (such as the UN), Wealthy Countries, and Normal individuals. Responses were recorded on a scale from 1 = not at all responsible to 5 = highly responsible, with 3 = partly responsible at the midpoint.

Moral (dis)engagement. Moral (dis)engagement was measured by combining and averaging two items: “I feel a moral duty to do something about climate change” (Whitmarsh, 2009) and “I feel it is my ethical responsibility to change my individual behaviour to combat climate change” ($\alpha = .77$). Responses were measured on 5-point Likert scales. For ease of reading, the results section refers to ‘Moral Engagement’: higher scores indicate moral engagement, and lower scores indicate moral disengagement.

Individual efficacy. Individual Efficacy was measured by combining and averaging two items: “There are meaningful things I can do to reduce the impact of climate change” and “Individuals can make a difference to climate change” ($\alpha = .74$). Responses were measured on 5-point Likert scales.

Guilt. Guilt was measured by the item “How does the issue of climate change make you feel?”, with guilty as one response item among 12 emotion descriptors. Responses to this item were measured on 5-point Likert scales, with higher scores indicating higher levels of guilt.

Pro-environmental behaviour. Sixteen items measured pro-environmental behaviour. These items were selected to encompass the following domains: home energy conservation, consumption, transportation choices, and activism (e.g., “I switch off lights around the house whenever possible”; “Where possible, I buy products that are locally made”; “I usually walk/cycle/carpool/take public transport”; “I have taken part in a political campaign about an environmental issue”). Participants were asked whether their engagement was mainly for environmental reasons or mainly for other reasons (e.g., for convenience or cost-saving). Those behaviours nominated as ‘mainly for environmental reasons’ received a score of ‘2’, those engaged in for other reasons a score of ‘1’, and no score was assigned if a behaviour was not performed at all. A pro-environmental behaviour index was calculated by aggregating the scores for each of the 16 behaviours, the highest possible score being 32, and the lowest 0.

Analysis

For all mediation analyses, multiple regression analyses were first conducted to assess each component of the mediation model. Mediation analysis was then conducted using the bootstrapping method with bias-corrected confidence intervals (Mackinnon, Lockwood, & Williams, 2004; Preacher & Hayes, 2004) using PROCESS. The 95% confidence intervals of the indirect effects were obtained with 5000 bootstrap samples (Preacher & Hayes, 2008).

Results

Descriptive statistics

Table 1 shows the correlation matrix for the main continuous variables. Moral engagement was strongly associated with high levels of individual efficacy and certainty in anthropogenic climate change, and moderately related to pro-environmental behaviour and guilt.

INSERT TABLE 1 ABOUT HERE

H1: Disputation of harm

H1: Those sceptical about anthropogenic climate change will report lower levels of moral engagement, and engagement will mediate between scepticism and lower levels of pro-environmental behaviour.

There were significant differences in moral engagement ratings based on opinion-type: $F(3, 5026) = 812.34, p < .001, \eta^2 = .33$. Post-hoc comparisons using the Tukey HSD test indicated that those of the deny opinion-type ($M = 2.17, SD = .05$) had lower moral engagement ratings than those who selected *don't know* ($M = 2.86, SD = 0.80$), natural ($M = 2.84, SD = 0.95$), or human induced ($M = 3.89, SD = 0.72$). The human induced group had higher moral engagement ratings than all other groups, while the *don't know* and natural groups did not differ significantly from one another.

To test the mediating influence of moral engagement on opinion-type and pro-environmental behaviour, it was necessary to substitute a continuous variable for the categorical opinion-type measure. Therefore a scale measuring certainty in anthropogenic climate change was used as a proxy for opinion-type. To test the measure's validity as a proxy, a one-way ANOVA was performed to test the association between certainty in anthropogenic climate change and opinion-type. There was a large significant difference based on opinion-type: $F(3, 5026) = 1701.94, p < .001, \eta^2 = .50$. Post-hoc comparisons showed that all four groups differed, with the human-induced opinion-type having the highest certainty ($M = 81.60; SD = 15.47$), followed by the *don't know* opinion-type ($M = 45.06; SD = 23.42$), natural ($M = 40.58; SD = 26.27$), and deny ($M = 21.17; SD = 25.39$).

Multiple regression analyses were conducted to assess each component of the proposed mediation model. First, it was found that certainty in anthropogenic climate change was positively associated with pro-environmental behaviour [$F(1, 5028) = 1559.43, p < .001$,

$R^2 = .49$, $b = .10$, $t(5028) = 39.49$, $p < .001$], as was certainty with moral engagement [$F(1, 5028) = 3813.30$, $p < .001$, $R^2 = .43$, $b = .02$, $t(5028) = 61.75$, $p < .001$]. Lastly, results indicated that the mediator, moral engagement, was positively associated with behaviour [$b = 2.73$, $t(5027) = 31.05$, $p < .001$]. The mediation analysis confirmed the mediating role of moral engagement in the relation between certainty and pro-environmental behaviour ($b = .06$; $CI = .055$ to $.064$, $Z = 27.73$, $p < .001$), although the direct effect of certainty on behaviour remained significant ($b = .04$, $t(5027) = 12.12$, $p < .001$; Figure 1).

INSERT FIGURE 1 ABOUT HERE

H2. Disavowal of responsibility

H2: Disavowal of both personal efficacy and responsibility for causing climate change will be associated with lower levels of pro-environmental behaviour. Again, these associations will be mediated by reduced moral engagement.

To test the mediating influence of moral engagement in the relationship between individual efficacy and pro-environmental behaviour, first, it was found that individual efficacy was positively associated with pro-environmental behaviour [$F(1, 5028) = 1916.55$, $p < .001$, $R^2 = .28$, $b = 3.18$, $t(5028) = 43.78$, $p < .001$], as was efficacy with moral engagement [$F(1, 5028) = 11595.97$, $p < .001$, $R^2 = .70$, $b = .86$, $t(5028) = 107.68$, $p < .001$]. Lastly, moral engagement was positively associated with behaviour [$b = 2.81$, $t(5027) = 23.11$, $p < .001$]. The mediation analysis confirmed the mediating role of moral engagement in the relation between efficacy and pro-environmental behaviour ($b = 2.42$; $CI = 2.20$ to 2.65 ; $Z = 22.60$, $p < .001$), although the direct effect of efficacy on behaviour was still significant ($b = .75$, $t(5027) = 6.07$, $p < .001$; Figure 2).

INSERT FIGURE 2 ABOUT HERE

To test the mediating influence of moral disengagement on reduced levels of responsibility for causing climate change and pro-environmental behaviour, first, it was found that ratings of individual responsibility for causing climate change was positively associated with pro-environmental behaviour [$F(1, 5028) = 1049.56$, $p < .001$, $R^2 = .17$, $b = 2.37$, $t(5028) = 32.40$, $p < .001$], as was responsibility with moral engagement [$F(1, 5028) = 3341.79$, $p < .001$, $R^2 = .40$, $b = .61$, $t(5028) = 57.81$, $p < .001$]. Lastly, the mediator, moral engagement, was positively associated with behaviour [$b = 3.14$, $t(5027) = 36.29$, $p < .001$]. The mediation analysis confirmed the mediating role of moral engagement in the relation

between responsibility for causing climate change and pro-environmental behaviour ($b = 1.92$; $CI = 1.81$ to 2.05 ; $Z = 30.73$, $p < .001$), although the direct effect of responsibility for causing on behaviour was still significant ($b = .44$, $t(5027) = 5.27$, $p < .001$; Figure 3).

INSERT FIGURE 3 ABOUT HERE

H3. Diffusion of responsibility

H3a. More responsibility for causing and responding to climate change will be placed on distant entities than on normal individuals.

For this hypothesis, response ratings for all categories but ‘normal individuals’ were combined to form average responsibility ratings given to ‘groups and organisations’. Ratings of responsibility of different groups for causing and responding to climate change were significantly lower for the group ‘normal individuals’ than for the other groups combined (causing: $t(5029) = 52.67$, $p < .005$, $\eta^2 = .36$; responding: $t(5029) = 39.20$, $p < .005$, $\eta^2 = .23$). These significant differences were observed for all climate opinion-types (Figure 4).

INSERT FIGURE 4 ABOUT HERE

H3b: Associations between responsibility to act on climate change and moral engagement will decrease for groups *more ‘distant’* to the individual.

Table 2 presents the bivariate correlations between moral engagement and the rated responsibilities for different groups to respond to climate change, in order of strongest to weakest. Significant differences between correlations are denoted by the subscripts in Table 2 (based on Z_{obs} values). The ordering is generally consistent with the notion that the association between moral engagement and responsibility to act decreases as responsibility ratings for responding moves away from the individual-level and toward groups more removed from the individual.

INSERT TABLE 2 ABOUT HERE

H4. Cognitive reconstrual

H4: Changes in climate scepticism will be associated with changes in moral engagement over time.

To analyse change in moral engagement as a function of change in acceptance of anthropogenic climate change over time, a mixed between-within subjects analysis of

variance was conducted. The interaction between changes in moral engagement and changes in opinion-type was tested as it was expected that a move away from acceptance would result in a subsequent decrease in moral engagement, whereas a move towards acceptance would result in a subsequent increase in moral engagement. There was a significant moderate interaction effect for time and change in opinion, Wilk's Lambda = .88, $F(1, 224) = 30.38$, $p < .001$, $\eta^2_p = .12$.¹ The nature of the relationship between moral engagement and change in opinion is shown in Figure 5. The red line, indicating those who moved away from acceptance between the two surveys, slopes significantly downward, indicating that those who moved away from an accepting position decreased their ratings of moral engagement. By contrast, the green line, indicating those who moved toward acceptance of human-induced climate change, has a slight (but not significant) upward slope, indicating that these people's ratings of moral engagement remained stable. Together, the results support the notion that moral (dis)engagement varies as a consequence of changes in opinion about climate change.

INSERT FIGURE 5 ABOUT HERE

H5. Guilt reduction

H5: Initial levels of moral engagement will be associated with changes in guilt.

To test whether initial levels of moral engagement were associated with changes in guilt from T1 to T2, a cross-lagged panel analysis was undertaken in MPlus on the repeat participants from the T1 and T2 surveys (Kenny, 2005). Figure 6 suggests that initial levels of guilt significantly influenced subsequent levels of moral engagement (Estimate = .16; SE = .02). To a slightly greater extent ($p = .05$), initial levels of moral engagement significantly influenced subsequent levels of guilt (with higher initial levels of moral engagement associated with higher levels of guilt at T2) (Estimate = .21; SE = .03). This result lends support to the notion that moral disengagement functions to reduce levels of guilt, but also suggests the relationship is bidirectional.

INSERT FIGURE 6 ABOUT HERE

Discussion

¹ There was a significant moderate main effect for time, Wilk's Lambda = .93, $F(1, 224) = 15.95$, $p < .001$, $\eta^2_p = .07$, with those who shifted their opinion away from acceptance having significantly reduced moral engagement scores at T2. The main effect comparing the two opinion change groups was not significant, $F(1, 224) = .37$, $p > .05$, $\eta^2_p = .002$. However, due to the significant interaction effect, the use of main effects to explore relationships was not appropriate.

We sought to test the role of moral (dis)engagement in the Australian public's responses to climate change. Our results suggest that disengagement at least partially accounts for observed relationships between climate scepticism (disputation of harm), lack of personal efficacy (denial of agency), and lack of responsibility for causing climate change (disavowal of responsibility), with reduced engagement in pro-environmental behaviours. Moreover, people may morally disengage by diffusing responsibility for climate action to groups and entities more distant from the self. Finally, reconstruing the causes of climate change was linked to changes in moral engagement, and moral disengagement was in turn linked to a reduction in guilt responses.

Our findings support Bandura's (2007) proposal that moral disengagement, and the mechanisms through which it operates, is relevant to understanding barriers to ecological sustainability. They also complement previous work on climate change and morality. For instance, Thøgersen (2004) found that consistency in performing pro-environmental behaviours depended on the moral importance placed on each of those behaviours. Ferguson and Branscombe (2010) found that inducing a sense of collective guilt mediated beliefs and willingness to act. In summarising why appealing to the moral imperative is not always effective when motivating people to act to mitigate climate change, Seabright (2010) argues that for a dilemma to be treated as a moral one, it must have personal relevance. Any moral dilemmas perceived as impersonal will fail to be treated morally, and hence cognitive rather than emotive processes are used for decision-making and opinion-formation (and these cognitive processes are subject to distortions, reconstruals, and biased searching practices). Therefore, Seabright argues, resistance to moral appeals about climate change occur because climate change is construed as impersonal. This argument is supported by the current finding that climate change is above all the responsibility of other entities, and the more remote from the individual, the more responsible that entity becomes. The findings are also consistent with recent research demonstrating that people who link the harmful consequences of climate change with 'objects of care' (people and things of value to the individual) have stronger emotional responses to climate change, which in turn promote support for climate policy solutions (Wang, Leviston, Hurlstone, Lawrence, & Walker, 2018). Taken together, these lines of research suggest communication efforts conveying climate action as a moral challenge do so by appealing to its impacts on the people, places, and things that people value, in so doing weakening the cognitive availability of displacement and diffusion mechanisms.

The tendency to place greater responsibility on groups and organizations than on individuals was evident across the spectrum of opinions about the causes of climate change, suggesting this group-based version of moral hypocrisy is a general tendency for everyone and not limited to sceptical perspectives. But why should this disparity occur for those who hold scientifically normative attitudes to climate change causation? According to lay theories of moral judgements, an acknowledgement of both intentionality of one's actions, and recognition of the harmful outcomes of one's actions, are necessary preconditions for moral judgments to occur (Guglielmo, Monroe, & Malle, 2009). During this deliberation, justifications may be employed to decrease levels of blame toward the self (if no intentionality is recognised, justifications are not necessary). We are unlikely to search as hard for justifications to legitimise the actions of groups and organisations as we are for ourselves.

In a similar vein, Bersoff (1999) argues that people redefine and reconstrue unethical behaviours (a process he termed 'neutralisation'), and that this process often precedes and fosters decisions to act in ways counter to one's attitudes. Reconstrual allows people to feel committed to pro-social norms, values, and actions, while concurrently engaging in behaviour that violates these standards. For Bandura, cognitive reconstruals can take the form of an opinion-shift, including outright denial of the harmful consequences of actions. Harmful actions (or in this case, a lack of climate-mitigating actions) are thus made socially acceptable. Our data suggest that reconstruals may not only take the form of changing one's opinion about the causes of climate change, but may also be achieved through more subtle means, such as through displacement and diffusion of responsibility. That others, far removed from oneself, are responsible for culpable acts, in combination with natural forces, relieves people of personal agency, responsibility, and any attendant guilt, in Bandura's terms. Exaggerating the influence other groups have over one's own goals is also thought to compensate for perceptions of reduced control over the environment; for example, people are more likely to attribute influence to a perceived 'enemy' when reminded of the risk posed by natural disasters (Sullivan, Landau, & Rothschild, 2010).

Limitations and future directions

A conceptual limitation of the current research was the assumed bipolarity in our measurement of moral (dis)engagement. It is plausible that 'moral engagement' and 'moral disengagement' might be distinct, though related, constructs rather than a bipolar construct. Further research should explore the dimensionality of engagement and disengagement,

particularly as strategies to prevent disengagement may be more beneficial in stimulating and maintaining pro-environmental behaviours than strategies designed to increase engagement.

We also note that, while there was evidence that moral disengagement was associated with subsequent changes in guilt reduction, our data also showed the reverse: guilt was associated with subsequent changes to moral engagement. Of course, the delay between moral disengagement and guilt reduction is unknown, and presumably varies from individual to individual. It may be an almost instantaneous process for some, whereas for others the change might be slow and incremental. It is reasonable to assume that moral disengagement with climate change is a gradual process, with some lag in the reduction of guilt, as the breach of moral standards involves the daily behaviours one performs (or fails to perform) that are relevant to climate change. Ongoing self-observation and reflection is presumably necessary before consistent moral transgression (and attendant guilt) is noted by the individual, particularly because of the indirect link of many of these behaviours to greenhouse gas emissions. It is also possible that the longitudinal associations between guilt and moral disengagement we observed are attributable to other, unmeasured variables.

Beyond self-report surveys, future experimental research might investigate whether direct moral appeals accentuate moral disengagement, and whether this is more likely when appeals are targeted to the individual than when made at a more general level. Whether any subsequent moral disengagement assuages threats to, or bolsters, self-image could also be measured. Further research might also unpack the role of group identification and moral responses to act on climate change. In the current research an assumption was made that people most closely identified with the 'individuals' as a collective, and less with groups that spanned higher-order geographical categories. This overlooks the possibility that some people identify more strongly with, say, global organizations than other people, and hence we should expect different patterns of responsibility placed on external agencies to be a function of these varying patterns of identification.

Another limitation is that the data come from surveys conducted in 2010 and 2011. We suggest, though, that they remain relevant to contemporary analyses of the moral dimensions of climate change debates. Nationwide polling over the last decade (e.g., from the Lowy Institute) reveals that variations on the climate change opinion groups described in this study persist fairly steadily (Kassam, 2019). Political debate about climate change and the need to act remains rooted in moral discourses. Moreover, the longitudinal nature of the results presented here are rare in the research literature.

What is not clear from the current research is whether the results we obtained are a product of Australia's unique geographical, ecological, and political contexts, or whether our results reflect more universal psychological processes. Australia is one of the few countries globally where the science of climate change is a matter of public contention, with climate scepticism levels comparable to those of the United States (Tranter & Booth, 2015). Along with New Zealand, Australia's proximity to the highly climate-vulnerable nations of the Pacific is unique among Western countries. Australia's regional responsibilities and relative wealth confer an additional moral impetus for decisive climate action. The extent to which this moral impetus is felt by its populous, whether this in turn activates moral disengagement mechanisms in relation to climate action, and whether such disengagement would extend to neglecting regional responsibilities more generally, remain empirical questions.

Relatedly, while the current findings lend support to the idea that moral disengagement can help make sense of responses to climate change, there was one 'locus' of moral disengagement we did not explore: the 'recipient locus', in which the people with the most to lose from climate change impacts are blamed for their plight, and even dehumanised. Understanding how and in what contexts this disengagement mechanism operates, and how it might be negated, will be increasingly important as environmental change displaces more and more communities. Specifically, understanding the role of intergroup hostility in a regional context, and how western overdeveloped countries such as Australia navigate their moral responsibilities to climate migrants within the region (especially to low lying Pacific Island nations) and beyond, is a key challenge for future researchers.

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Table 1. Correlation matrix for key variables (N=5030)

	1.	2.	3.	4.	5.	6.
1. Moral engagement						

2. Certainty in ACC	.66**					
3. Pro-environmental behaviour	.58**	.49**				
4. Individual efficacy	.84**	.62**	.53**			
5. Personal responsibility (causing)	.63**	.63**	.42**	.64**		
6. Personal responsibility (acting)	.63**	.53**	.44**	.64**	.67**	
7. Guilt	.51**	.46**	.34**	.45**	.44**	.33**

**** $p < .001$**

Table 2. Correlations for Moral Engagement to act on climate change with responsibility ratings of different groups to respond to climate change (N = 5030).

	Moral Engagement
Normal individuals	.63** _a
Local Governments	.59** _b
State Governments	.58** _{b, c}
Federal Governments	.56** _{c, d}
Wealthy Countries	.55** _{d, e}
Global organizations	.53** _e
Multi-National Corporations	.49** _f
Big Polluting Countries	.43** _g

**** $p < .001$**

Subscript letters denote significant differences between correlations based on z_{obs} values

Figure Captions:

Figure 1. Indirect effect of certainty in anthropogenic climate change on pro-environmental behaviour through moral engagement. Figure in parentheses indicates the total effect before controlling for the mediator. Coefficients are unstandardized. * $p < .05$; ** $p < .001$

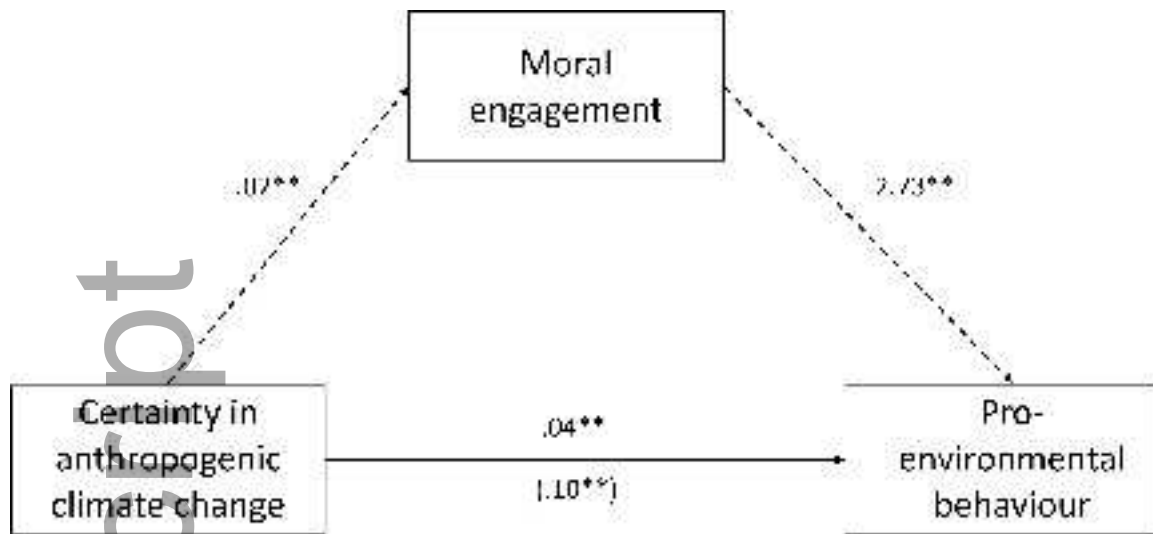
Figure 2. Indirect effect of individual efficacy on pro-environmental behaviour through moral engagement. Figure in parentheses indicates the total effect before controlling for the mediator. Coefficients are unstandardized. * $p < .05$; ** $p < .001$

Figure 3. Indirect effect of individual responsibility for causing climate change on pro-environmental behaviour through moral engagement. Figure in parentheses indicates the total effect before controlling for the mediator. Coefficients are unstandardized. * $p < .05$; ** $p < .001$

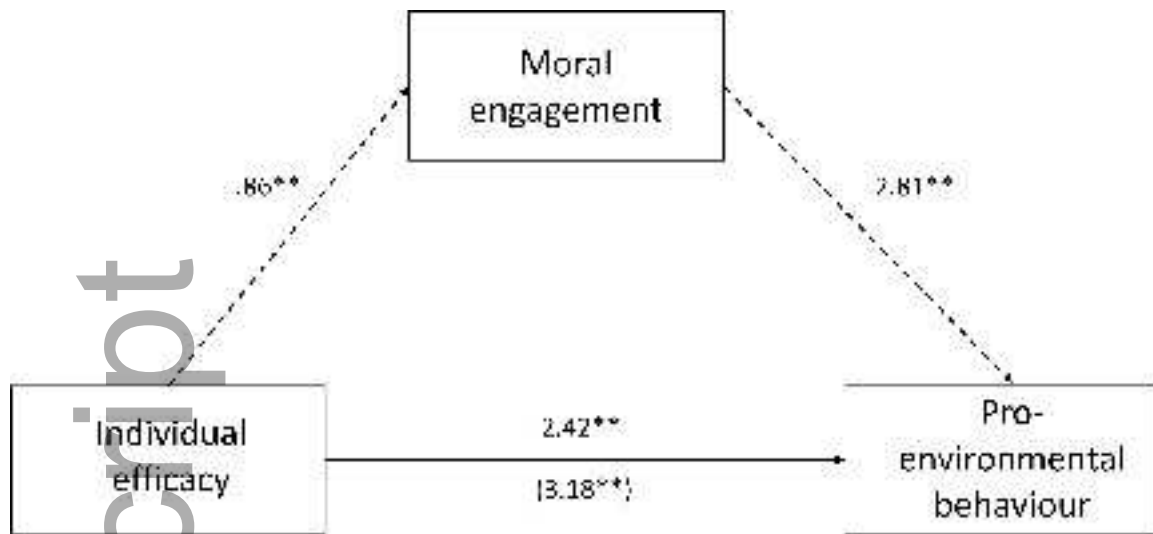
Figure 4. Ratings of responsibility for causing and responding to climate change by opinion-type (N = 5030).

Figure 5. Estimated marginal means for moral engagement by change in opinion-type over time (n = 226).

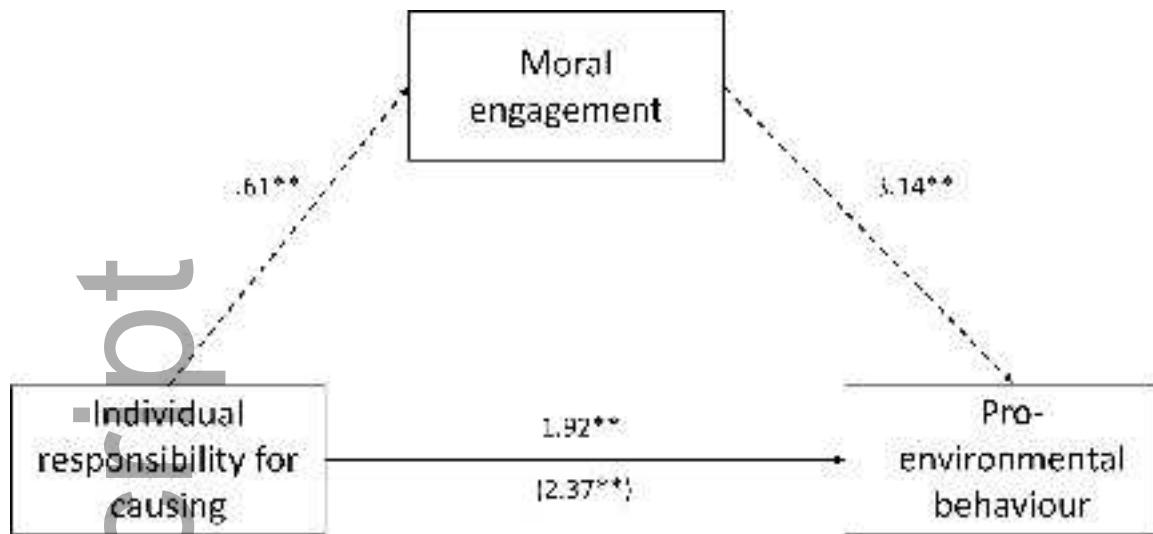
Figure 6. Cross-lagged panel analysis of guilt and moral engagement at T1 and T2 (N = 1355).



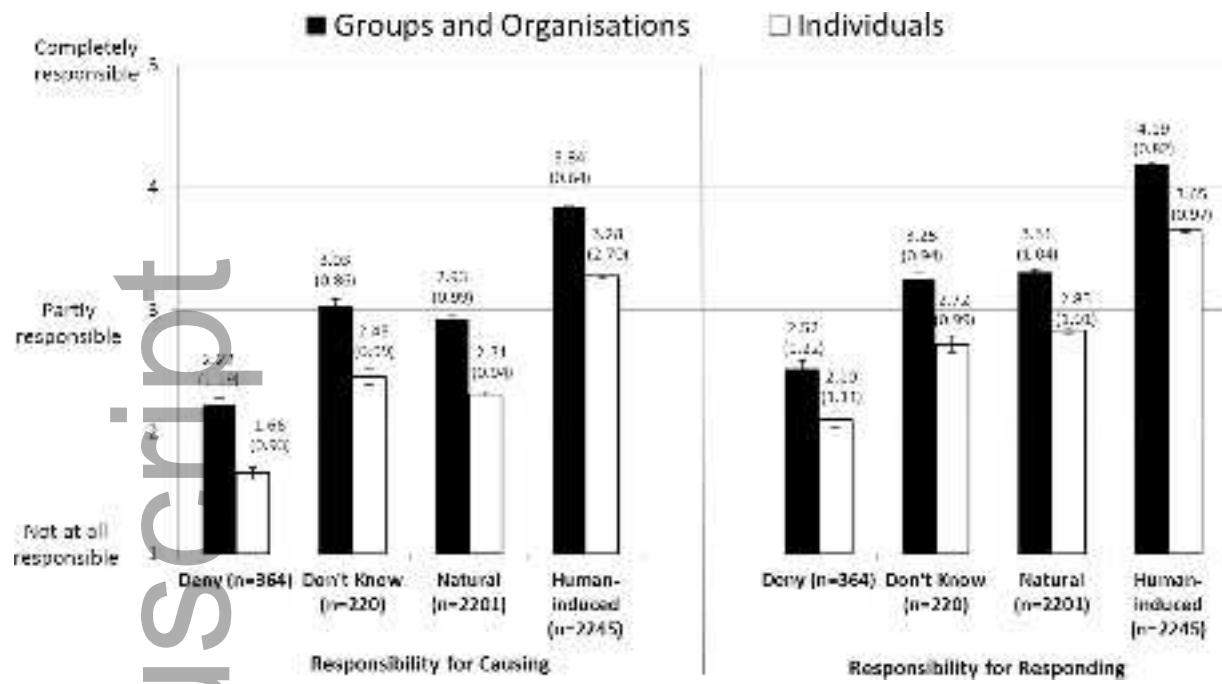
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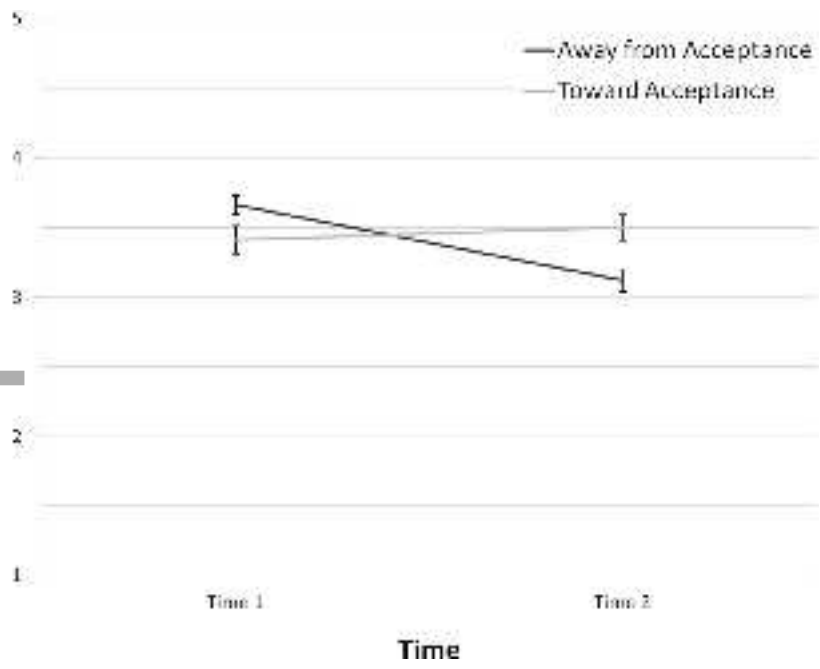
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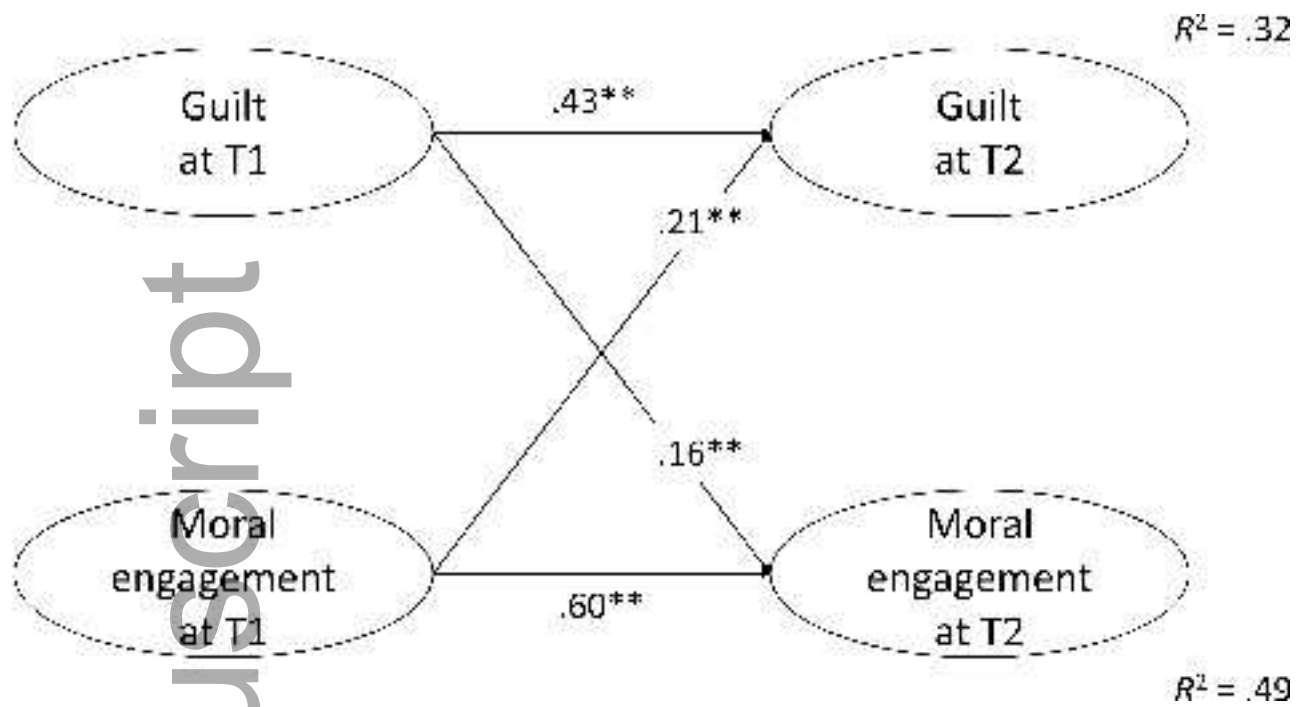
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