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ARTICLE

The role of meta-cognitive certainty on the relationship between identity fusion and endorsement of extreme pro-group behavior

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ABSTRACT

Identity fusion is a powerful feeling of connectedness to one's group. The current research explores whether measuring certainty in identity fusion improves its ability to predict extreme pro-group outcomes. Across three studies, participants reported their level of identity fusion with their country and their certainty in responses to the scale (predictor variables). Responses to a trolley dilemma) (Studies 1 and 3) and willingness to fight and die for one's group (Studies 1 and 2) were the dependent measures. As expected, certainty moderated the effects of identity fusion on self-sacrifice, with greater consistency between them obtained for those with high (vs. low) certainty. In conclusion, taking certainty into consideration can be useful to predict the association between identity fusion and self-sacrifice.

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Meta-cognition; certainty; confidence; identity fusion; self-sacrifice; individual differences

Identity fusion is a visceral feeling of "oneness" with the group wherein the personal self (characteristics of individuals that make them unique) joins with a social self (characteristics of individuals that align them with a group) and the borders between the two become porous (Swan & Buhrmester, 2015). The result is a potent feeling of connectedness to the group category whereby the integrity of either the personal or social self is not diminished. This allows fused individuals to experience a high sense of personal agency and derive reciprocal strength from group membership. For fused persons, strong relational ties among group members are likely to develop because members are valued for their membership but also due to their idiosyncratic personal qualities. Relational ties are also reinforced by the fact that fused individuals believe they share "essence" with other group members.

The construct of identity fusion was first thought of as an explanation for why some individuals are willing to fight and even self-sacrifice for a group. Research on this topic

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has consistently shown that identity fusion significantly predicts willingness to fight and die for the group, more broadly described as endorsement of extreme pro-group behavior (Gómez et al., 2011; Gómez, Morales, Hart, Vázquez, & Swann, 2011; Swann et al., 2014; Swann, Gómez, et al., 2010a; Swann, Gómez, Seyle, Morales, & Huici, 2009; Bortolini, Newson, Natividade, Vázquez, & Gómez, 2018).

Although identity fusion has been shown to predict extreme pro-group outcomes (e.g., willingness to fight and die, self-sacrifice in simulated situations), a few circumstances have been shown to moderate this well-established relationship. For instance, Paredes, Briñol, and Gomez (2018) found that identity fusion was associated with willingness to fight and die to a greater extent in certain conditions (e.g., participants were told that other fused individuals were as willing to fight and die as themselves) but less so in other conditions (e.g., participants were told that other fused individuals were as willing to fight and die as themselves plus they held moral reasons for their willingness to self-sacrifice). Other research has also shown that the relationship between identity fusion and extreme pro-group behavior is stronger in some contextual situations (Swann et al., 2010a; Swann et al., 2010b; Gómez et al., 2011). For instance, Swann et al. (2010a) showed that increasing autonomic arousal through physical exercise strengthened the relationship between identity fusion and endorsement of pro-group behavior. In another instance of contextual factors moderating this relationship, Gómez, Morales, et al., (2011) showed that highly fused individuals who were irrevocably ostracized from their in-group were more willing to endorse extreme pro-group behavior than their non-ostracized counterparts.

Taken together, past research reveals that identity fusion can accurately predict endorsement of extreme pro-group behavior, but with some variations in the magnitude of that relationship. The goal of the present research is to provide a simple means to predict when the relationship between fusion and pro-group behavior will be stronger (high fusion and high certainty) and when it may be weaker (low fusion and high certainty). In a nutshell, we examine the hypothesis that the greater the confidence associated with responses to the scale, the greater its predictive validity will be. Specifically, we predict that identity fusion would be associated with willingness to fight and die and simulated self-sacrifice in a trolley dilemma to a greater extent if participants were certain in their reported identity fusion.

Criterion validity: Confidence increases the individual's usage of mental content

A growing literature suggests that to be able to better predict behavior from judgement, one must also consider certainty. Mental constructs are more predictive of judgement and behavior when people report holding their thoughts with high (vs. low) confidence and/or certainty (Petty, Briñol, Tormala, & Wegener, 2007). For example, attitude certainty has shown to moderate the correspondence between attitudes and behavior as illustrated by research on attitude strength (Petty & Krosnick, 1995; Rucker, Tormala, Petty, & Briñol, 2014). Similarly, thought certainty can moderate the correspondence between relevant thoughts and judgements as illustrated by research on the self-validation hypothesis (Briñol & Petty, 2009; Pelham, 1991; Pelham & Swann, 1994; Petty, Briñol, & Tormala, 2002; for reviews on the role of doubt in self-traits and self-conceptions, see; Briñol, DeMarree, & Petty, 2010). Certainty refers to the subjective sense of conviction one has about one's

mental content, or the extent to which one believes one's mental content is correct or valid (e.g., Gross, Holtz, & Miller, 1995; Petty et al., 2007). Certainty can also be seen as a metacognitive tag on an attitude that reflects a secondary assessment (i.e., "Is my evaluation correct?") of a primary cognition (i.e., the evaluation itself; Petty & Briñol, 2006).

Beyond the research domains just mentioned, there is recent literature indicating that the predictive utility of certain individual-difference scales can be increased by adding measures of certainty in such scales. For example, Shoots-Reinhard, Petty, DeMarree, and Rucker (2015) demonstrated that individual-difference scores in the Need to Evaluate scale (NE, Jarvis & Petty, 1996) and in Political Ideology (Jost, 2006; Vitriol, Tagar, Federico, & Sawicki, 2019) were more predictive of relevant outcomes when people reported having relatively high (vs. low) confidence in their dispositions (see also Santos, Briñol, Petty, Gandarillas, & Mateos, 2019). In light of these findings, the current studies examined for the first time whether meta-cognitive certainty can moderate the relationship between identity fusion and endorsement of extreme pro-group behavior.

Confidence in identity fusion

Prior research revealed (Briñol & Petty, 2019) that certainty is capable of moderating various constructs ranging from political ideology to self-traits to individual differences variables such as the need to evaluate or trait aggressiveness. Therefore, we favor the hypothesis that certainty will moderate the impact of identity fusion on pro-group outcomes. However, whether this will also be true in the context of identity fusion needs to be empirically examined. We also acknowledge that this moderation might be particularly challenging for several reasons. On the one hand, identity fusion has predicted endorsement of extreme pro-group behavior very consistently across the board, with only a few exceptions (Paredes et al., 2018).

On the other hand, previous research has also documented a possible connection between low levels of confidence and extreme compensatory behaviors (DeMarree, Brinol, & Petty, 2015; for reviews, see Jonas et al., 2014; McGregor, Prentice, & Nash, 2012; Proulx, Inzlicht, & Harmon-Jones, 2012; Van Den Bos & Lind, 2002). If being willing to engage in extreme pro-group behavior has a compensatory nature, one might even expect relatively lower levels of certainty to be associated with more predictive power of identity fusion measures. In line with this reasoning, consider also the work of Baumeister, Heatherton, and Tice (1993) on certainty in self-esteem and aggression. The authors found that if people have meta-cognitive doubts in their (high) self-esteem (e.g., because their self-esteem happens to be unstable or unclear), they can show extreme behaviors such as those related to aggression. In sum, we acknowledge that there are several expectations to our general prediction that having high levels of identity fusion will be more predictive of extreme pro-group outcomes as certainty increases. Yet, if such a linkage exists, it would be an effective way to make identity fusion even more capable of determining its association with relevant outcomes such as sacrifice.

Overview of the present research

The goal of the present research was to examine the extent to which identity fusion is more predictive of endorsement of extreme pro-group behavior as a function of certainty. Study 1 examined to what extent certainty in identity fusion can help to examine when the relationship between identity fusion and two self-report measures of endorsement of extreme pro-group behavior will be stronger or weaker. Study 2 used the same design and procedure to replicate the results, but focusing exclusively on the most commonly used measured of the two, Willingness to Fight and Die. Study 3 aimed to replicate Studies 1 and 2 with more reliable measures of each construct.[1]

Study 1

The goal of this study was to examine for the first time whether the verbal scale of identity fusion would be associated with relevant endorsement of self-sacrifice to a greater extent when people were certain of their scale responses. The two outcomes were self-reported willingness to fight and die for one's group, and a simulated trolley dilemma (Swann et al., 2009; Gómez, Brooks, et al., 2011; Swann, Gómez, et al., 2014). These dilemmas have shown results that are consistent with what real sacrificial behavior would be (e.g., showing preference to save genetically-related over non-genetically-related people, Bleske-Rechek, Nelson, Baker, Remiker, & Brandt, 2010). Based on past research, we expected that as participants' certainty in their answers to the identity fusion inventory increased, so would the correspondence of these responses with willingness to sacrifice.

Method

Participants and design

Two hundred and ninety-nine undergraduate students (38.2% males, 61.8% females) from a large public university in Spain (Universidad Nacional de Educación a Distancia, UNED), participated anonymously in this study. Participants were recruited in exchange for extra credit in one of their courses. The age of the participants ranged from 18 to 75(M_{age} = 35.88, *SD* = 13.41). Identity fusion and certainty were measured as independent variables and Willingness to Fight and Die and Simulated Trolley Dilemma responses were measured as the dependent variables. A power analyses was conducted using G*Power (Faul, Erdfelder, Lang, & Buchner, 2007). We could not look at prior work to obtain an estimated effect size for the predicted interaction between identity fusion and certainty. Because no prior research had examined this interaction we planned for a generic relatively small effect (f^2 = .025; Cohen, 1988). The results of the power analysis concluded that the desired sample size for a two-tailed test (α = .05) of the predicted two-way interaction with .80 power was N = 316 participants. In the end, we reached a close number with N = 299 participants.

Procedure

The information was presented as a study on scale validation. Participants first completed the identity fusion scale (Gómez, Brooks, et al., 2011). Then, participants reported their

certainty in their responses to the scale, after which they completed the dependent measures.

Predictor Variables

Identity Fusion

We used the seven-item verbal fusion scale to measure identity fusion with Spain (Gómez, Brooks, et al., 2011). Responses were provided on scales ranging from 0 (*strongly disagree*) to 6 (*strongly agree*), $\alpha = .88$. Items were averaged into a composite index. Higher scores reflected stronger fusion with the country Spain. Examples of items include: "I am one with my country," and "I am strong because of my country." ($M = 3.40$; $SD = 1.27$). This identity fusion measure predicts endorsement of extreme pro-group behavior (Gómez & Vázquez, 2015; Jiménez et al., 2016; Joo & Park, 2017).

Certainty

Following the identity fusion scale, participants indicated their certainty in their opinions about identity fusion by completing the following item: "How certain are you in the responses you just gave to the scale?" (1 = "Extremely uncertain" to 7 = "Extremely certain"). Thus, higher scores on this item indicate greater certainty ($M = 5.80$; $SD = 1.05$). This measure of certainty was identical to the one used by Santos et al. (2019) and Shoots-Reinhard et al. (2015) and has been shown to be capable of moderating the use of mental constructs.

Dependent variable

Willingness to fight and die

Participants completed the willingness to fight and die scale (e.g. I would fight someone physically threatening another member of my country;" "I would sacrifice my life if it saved another group member´s life"), taken from Swann et al. (2009). Responses were recorded on a 1 (completely disagree) to 7 (completely agree) scale, $\alpha = .85$. Higher values on this index indicated a greater willingness to fight and die for one's group ($M = 2.37$, $SD = 1.04$). This scale is the standard, most commonly used measure of endorsement of pro-group behavior in identity fusion research (Swann et al., 2009; Gómez, Brooks, et al., 2011; Paredes et al., 2018).

Responses to trolley dilemma

Participants were introduced to the "summoning the death train scenario" (Swann, Gómez, et al, 2014). Participants learned that a runaway train was about to crush and kill five citizens of his/her country unless they flipped a switch that diverted the train to their own railway track, killing them but leaving the five in-group members unharmed. On a 7-points scale ranging from 1 "totally disagree" to 7 "totally agree," participants were asked the following two questions: "to what extent would you be willing to flip the switch and sacrifice yourself saving five Spaniards" and "to what extent would you be willing to not flip the switch and save yourself letting five Spaniards die." The second item was reverse-coded so higher scores meant greater willingness to self-sacrifice. Both

items were highly inter-correlated ($r(296) = .68$, $p < .001$) so an index of the two was created ($M = 2.54$, $SD = 1.04$).

Results

A preliminary analysis of the relationships between the variables was conducted using Pearson correlations. As shown in Table 1, a significant and positive correlation was observed between identity fusion and willingness to fight and die, $r(297) = .642$, $p < .001$; and between identity fusion and trolley dilemma responses, $r(297) = .194$, $p < .001$. Moreover, the correlation between willingness to fight and die and trolley dilemma responses was significant, $r(297) = .04$, $p < .001$.

Willingness to fight and die

The dependent variable was submitted to a multiple regression analysis. Certainty, identity fusion, and the interaction term (i.e., Identity Fusion × Certainty) were entered as predictors. The critical two-way interaction was tested using the PROCESS add-on for SPSS (model 1; Hayes, 2013). The continuous variables (i.e. identity fusion and certainty) were mean-centred. The results indicated a main effect of identity fusion, $B = .494$, $t(295) = 12.975$, $p < .001$, 95% CI: 0.420, 0.569, indicating that people higher in identity fusion were more willing to fight and die for the group. We did not find a main effect of certainty, $B = .052$, $t(295) = 1.156$, $p = .249$, 95% CI: −0.036, 0.140. The predicted interaction between identity fusion and certainty was significant, $B = .084$, $t(295) = 2.357$, $p = .019$, 95% CI: 0.014, 0.154. As illustrated in Figure 1, among those with higher certainty scores (+1SD), identity fusion was positively associated with more willingness to fight and die for the group, $B = .582$, $t(295) = 13.228$, $p < .001$, 95% CI: 0.495, 0.668. However, for those with lower certainty scores (−1SD), a significantly weaker relationship also emerged between identity fusion and willingness to fight and die for the group $B = .406$, $t(295) = 6.64$, $p < .001$, 95% CI: 0.286, 0.526.

Analyzed differently, this interaction showed that, among participants at higher levels of identity fusion (+1SD), those at higher scores of certainty reported significantly more willingness to fight and die than did those at lower levels of certainty, $B = .158$, $t(295) = 2.240$, $p = .026$, 95% CI: 0.019, 0.297. In contrast, for participants at lower levels of identity fusion (−1SD), no association was found between certainty and willingness to fight and die, $B = -.054$, $t(295) = -.974$, $p = .331$, 95% CI: −0.164, 0.055.

Table 1. Study 1. correlations between identity fusion, certainty, willingness to fight and die, and Trolley Dilemma Responses.

Variables	1	2	3	*M*	*SD*
1. *Identity Fusion*				3.40	1.27
2. *Certainty*	.052			5.80	1.05
3. *Willingness to Fight and Die*	.642**	.060		2.37	1.04
4. *Trolley Dilemma Responses*	.194**	−.072	.196**	2.54	1.04

Note. The correlations are only for those participants who filled out all the variables ($N = 296$). *$p < .05$; **$p < .001$.

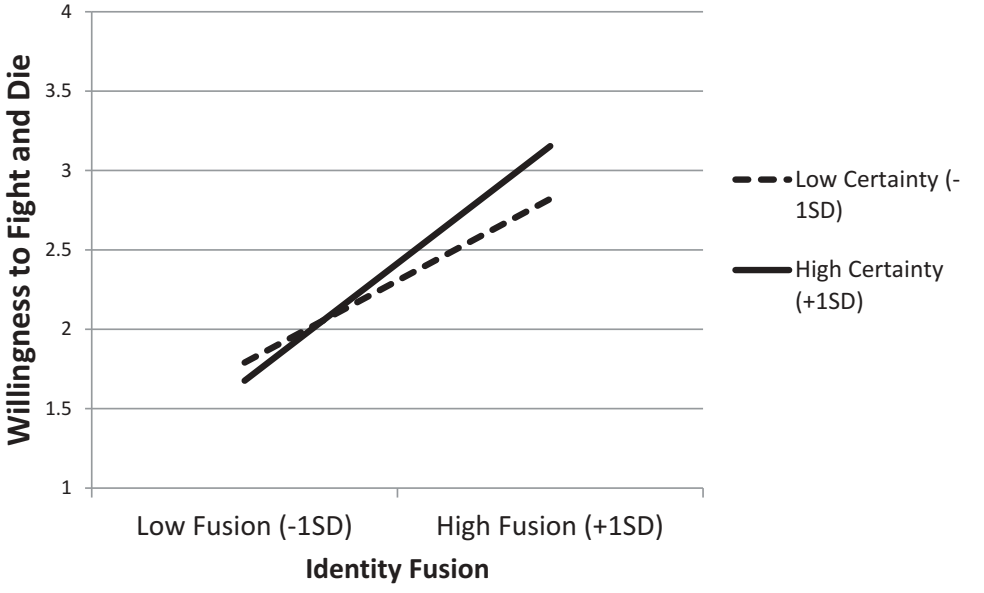

Figure 1. Study 1. Willingness to fight and die as a function of identity fusion and certainty.

Responses to trolley dilemma

Similar analytical procedures were used as in the prior regression analysis. The regression analysis revealed a main effect of identity fusion, $B = .126$, $t(292) = 2.597$, $p = .010$, 95% CI: 0.031, 0.222, indicating that people higher in identity fusion had higher levels of sacrifice. We did not find a main effect of Certainty, $B = -.052$, $t(292) = -.906$, $p = .366$, 95% CI: −0.165, 0.061. More importantly, the predicted interaction between identity fusion and Certainty was significant, $B = .099$, $t(292) = 2.189$, $p = .029$, 95% CI: 0.010, 0.189. As illustrated in Figure 2, among those with higher certainty scores (+1SD), identity fusion was positively associated with more sacrifice responses in the dilemma, $B = .231$, $t(292) = 4.106$, $p < .001$, 95% CI: 0.120, 0.341. For those with lower certainty scores (−1SD), there was no relationship between identity fusion and trolley dilemma responses, $B = .022$, $t(292) = .277$, $p = .782$, 95% CI: −0.132, 0.176.

Analyzed differently, this interaction showed that, among participants at higher levels of identity fusion (+1SD), no relationship was found between certainty and self-sacrifice in the dilemma, $B = .075$, $t(292) = .826$, $p = .409$, 95% CI: −0.103, 0.252. In contrast, for participants at lower levels of identity fusion (−1SD), those at lower scores of certainty tended to self-sacrifice in the dilemma more than did those at higher levels of certainty, $B = -.179$, $t(292) = -2.499$, $p = .013$, 95% CI: −0.319, −0.038.

Discussion

The effect of identity fusion on both measures of endorsement of extreme pro-group behavior was moderated by certainty. As hypothesized, we found that identity fusion was associated with sacrifice for the group to a greater extent on both outcome measures if participants were certain in their reported identity fusion. Thus, as certainty in one's

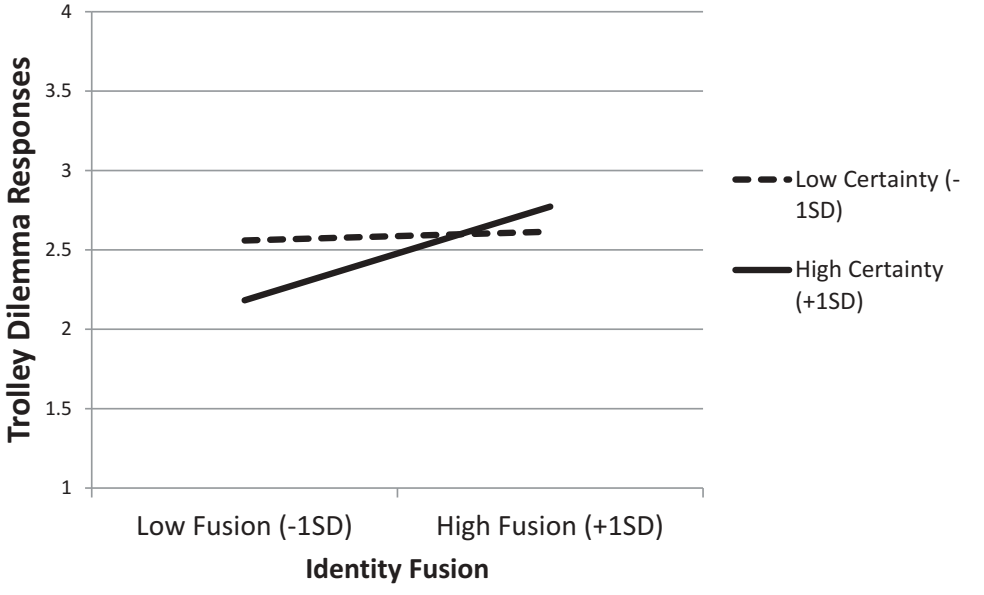

Figure 2. Study 1. Trolley dilemma responses as a function of identity fusion and certainty.

identity fusion increased, so too did the ability of this individual-difference variable to be associated with willingness to fight and die for the group and self-sacrifice for in-group members in the trolley dilemma. Assuming this effect is robust enough to replicate (goal of study 2), this suggests that researchers interested in assessing identity fusion can benefit by adding an additional question regarding certainty.

Moreover, we found that low (vs. high) certainty was associated with more pro-group behavior for participants with relatively low levels of identity fusion. It might be the case that having doubts in any given trait may lead to an increased likelihood of endorsing the opposite statement. For example, if a person doubts whether he or she is smart, then he or she might conclude that he or she might be stupid (Wichman et al., 2010). Similarly, having doubts in one´s low levels of fusion with one´s in-group may lead one to behave like a person with a high level of fusion.

Having said this, the two dependent variables in Study 1 show patterns of results that are different enough to speculate about them. Specifically, the same two-way interaction was mostly driven by participants relatively high in identity fusion in the case of the willingness to fight and die measure, whereas that very same interaction was mostly driven by participants relatively low in identity fusion in the case of the continuous measure of the trolley dilemma. We think that these differences may be due to an issue of measurement-level-of-specificity. Even though the two-way interaction found across measures is conceptually the same, we believe that the willingness to fight and die scale may be more extreme measures than a continuous measure of a trolley dilemma. Given these potential differences in extremity, it may be the case that the more extreme measures are tailored to highly-fused individuals and therefore they are more likely to drive the effect, and the less extreme measure is tailored to participants with low levels of fusion and therefore they are more likely to drive the effect. However, when entering type

of measure (first standardized) as an additional within-subjects factor in a multiple regression with identity fusion and certainty as the other two predictors, results show that the two-way interaction reported for both DV´s is not significantly moderated by measure, ($B = -.007$, $t = -0.27$, $p = .786$).[2]

Study 2

The main goal of Study 2 was to replicate the previous findings of the predictive power of certainty. For this second Study, we decided to focus exclusively on the most commonly used measured of the two (i.e., Willingness to Fight and Die; Gómez et al., 2011, 2011; Swann et al., 2014; Swann, Gómez, Huici, Morales, & Hixon, 2010b; Swann et al., 2009). Once again, we expected a positive relationship between self-reported identity fusion and endorsement of extreme pro-group behavior.

Method

Participants and design

Six hundred and seven undergraduate students (35% males, 65% females, 25 unidentified gender) from UNED, participated anonymously in this study. Participants were recruited in exchange for extra credit in one of their courses. The age of the participants ranged from 16 to 85 ($M_{age} = 34.51$, $SD = 11.88$). Identity fusion and Certainty were measured as independent variables and Willingness to Fight and Die was measured as the dependent variable.

A power analyses was conducted using G*Power (Faul et al., 2007). After learning from the initial study that the interaction effect obtained was even smaller than originally anticipated (i.e., $f^2 = .016$), we planned for an even smaller effect size in this second study ($f^2 = .01$; Cohen, 1988). The desired sample size for a two-tailed test ($\alpha = .05$) of the predicted 2-way interaction with .80 power was a total of N = 620. In order to achieve that number, we decided to collect as many participants as possible during the academic semester, resulting in a number that was close to the estimated one (607 participants).

Procedure

Participants first completed the identity fusion scale (Gómez, Brooks, et al., 2011). This measure served to classify participants in their levels of identity fusion. Participants then reported their certainty in their responses to the scale. These two variables served as predictors of the dependent measure (willingness to fight and die) that was completed at the end of the study.

Predictor variables

Identity fusion

Participants responded to the same identity fusion scale (Gómez, Brooks, et al., 2011) as in Study 1. Item-ratings were inter-correlated ($\alpha = .88$), thus averaged to form a single measure ($M = 3.42$; $SD = 1.27$).

Certainty

Following the identity fusion scale, participants indicated their certainty using the same item as in Study 1 ($M = 5.77$, $SD = 1.19$), and as in past research (Santos et al., 2019; Shoots-Reinhard et al., 2015).

Dependent variable

Willingness to fight and die

As in Study 1, participants completed the willingness to fight and die scale (Swann et al., 2009). Item-ratings were intercorrelated (α = .84), thus averaged to form a single measure ($M = 2.20$, $SD = 0.99$).

Results

A preliminary analysis of the relationships between the variables was conducted using Pearson correlations. As shown in Table 2, a significant and positive correlation was observed between identity fusion and willingness to fight and die, $r(606) = .50$, $p < .001$. Moreover, the correlation between identity fusion and certainty was significant, $r(606) = -.09$, $p = .028$.

Willingness to fight and die

This dependent variable was submitted to a multiple regression analysis following the same procedure as in Study 1. Replicating Study 1, analysis revealed a main effect of identity fusion, $B = .373$, $t(603) = 12.840$, $p < .001$, 95% CI: 0.316, 0.430, indicating that people higher in identity fusion were more willing to fight and die for the group. We did not find a main effect of certainty, $B = .030$, $t(603) = 1.00$, $p = .317$, 95% CI: −0.029, 0.089. More importantly, the predicted interaction between identity fusion and certainty was significant $B = .065$, $t(603) = 2.490$, $p = .013$, 95% CI: 0.014, 0.116. As illustrated in Figure 3, among those with higher certainty scores (+1SD), identity fusion was positively associated with more willingness to fight and die for the group, $B = .448$, $t(603) = 12.988$, $p < .001$, 95% CI: 0.380, 0.516. For those with lower certainty scores (−1SD), a relatively weaker albeit significant relationship also emerged between identity fusion and willingness to fight and die for the group $B = .298$, $t(603) = 6.174$, $p < .001$, 95% CI: 0.203, 0.392.

Analyzed differently, this interaction showed that, among participants at higher levels of identity fusion (+1SD), those at higher scores of certainty reported significantly more willingness to fight and die than did those at lower levels of certainty, $B = .111$, $t(603) = 2.408$, $p = .016$, 95% CI: 0.021, 0.203. In contrast, for participants at lower

Table 2. Study 2. correlations between identity fusion, certainty and willingness to fight and die.

Variables	1	2	*M*	*SD*
1. *Identity Fusion*			3.42	1.27
2. *Certainty*	−.09*		5.77	1.19
3. *Willingness to Fight and Die*	.50**	−.02	2.20	.99

Note. The correlations are only for those participants who filled out all the variables ($N = 607$). *$p < .05$; **$p < .001$.

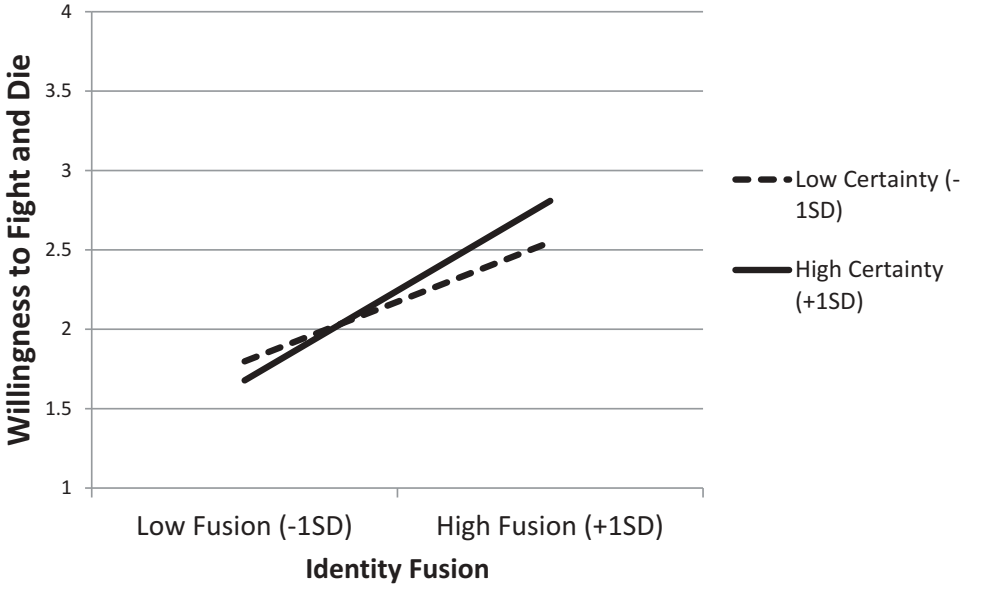

Figure 3. Study 2. Willingness to fight and die as a function of identity fusion and certainty.

levels of identity fusion (−1SD), no association was found between certainty and willingness to fight and die $B = -.052$, $t(603) = -1.220$, $p = .223$, 95% CI: −0.135, 0.031.

Discussion

As in Study 1, participants' self-reported identity fusion was associated with their willingness to fight and die to a greater extent as certainty increased. Thus, we successfully replicated the previous findings. Despite this successful replication, one may still wonder about the reliability of some of the measures used for these two studies. First, the certainty measure in Studies 1 and 2 was composed of only one item. As noted in the introduction, single-item measures have shown to be a quick and easy means to provide valid and reliable measurements (Shoots-Reinhard et al., 2015). Having said this, a follow-up Study would still benefit from a more complete, multi-item measure of certainty.

Second, one of the current limitations is that Study 1 showed the effect on a continuous measure of the trolley dilemma and then this measure was dropped in Study 2. Given the novelty of the use of this measure, it is an open question whether this effect will hold on a more traditional, dichotomous measure of the trolley dilemma. Study 3 sought to address these two issues.

Study 3

The main goal of Study 3 was to replicate Studies 1 and 2 with more reliable measures. Specifically, we included a three-item measure of certainty, and we measured responses to a trolley dilemma both with a continuous and with a dichotomous measure. We

expected to replicate the results from Studies 1 and 2, and we expected the two measures of the dilemma not to differ meaningfully.

Method

Participants and design

Four hundred and eighty-three undergraduate students (44.2% males, 55.8% females) from UNED, participated anonymously in this study. Participants were recruited in exchange for extra credit in one of their courses. The age of the participants ranged from 16 to 81 (Mage = 37.19, SD = 12.66). Identity fusion and certainty were measured as independent variables and Willingness to Fight and Die was measured immediately after the independent variables.

A power analyses was conducted using G*Power (Faul et al., 2007). We planned for an effect that was similar to the effect found for the trolley dilemma (i.e., f 2 = .0164). The desired sample size for a two-tailed test (α = .05) of the predicted 2-way interaction with .80 power was a total of N = 481. The final number was close to the estimated one (483 participants).

Procedure

The procedure was similar to Studies 1 and 2. Participants first completed the identity fusion scale (Gómez, Brooks, et al., 2011). This measure served to classify participants in their levels of identity fusion. Participants then reported their certainty in their responses to the scale. Unlike the previous studies, in this sample the measure of certainty was composed of three items. These two variables served as predictors of the dependent measures (trolley dilemma responses in continuous and dichotomous measures) that were completed at the end of the study.

Predictor variables

Identity fusion

Participants responded to the same identity fusion scale (Gómez, Brooks, et al., 2011) as in Studies 1 and 2. Item-ratings were inter-correlated (α = .85), thus averaged to form a single measure (*M* = 3.87; *SD* = 1.22).

Certainty

Participants were asked to think back to the identity fusion scale and report the confidence they had in their responses. Self-ratings were provided on three items, including certainty, confidence, and validity. Responses were measured on 7-point scales (see Evans & Clark, 2012; Clark et al, 2013; Petty et al., 2002), where 1 represented Not at all certain/None at all/Not at all valid/and 7 represented Very certain/Very much/Extremely valid/, respectively. A composite of certainty was formed, then averaging responses to these three measures (α = .75), (*M* = 6.67; *SD* = 0.89).

Dependent variables

Continuous trolley dilemma responses

Participants were introduced to the "summoning the death train scenario" (Swann, Gómez et al, 2014). Participants learned that a runaway train was about to crush and kill five citizens of his/her country unless they flipped a switch that diverted the train to their own railway track, killing them but leaving the five in-group members unharmed. On a 7-points scale ranging from 1 "totally disagree" to 7 "totally agree," participants were asked the following two questions: "to what extent would you be willing to flip the switch and sacrifice yourself saving five Spaniards" and "to what extent would you be willing to not flip the switch and save yourself letting five Spaniards die." The second item was reverse-coded so higher scores meant greater willingness to self-sacrifice. Both items were highly inter-correlated ($r(296) = .69$, $p < .001$) so an index of the two was created ($M = 3.28$, $SD = 1.45$).

Dichotomous trolley dilemma responses

After they responded to the two continuous measures, participants chose between (1) not flipping the switch letting the trolley crush the five Spaniards (74.9% chose this option) or (2) sparing the five by flipping the switch and sacrificing their own lives (25.1% chose this option).

Results

A preliminary analysis of the relationships between the variables was conducted using Pearson correlations. As shown in Table 3, a significant and positive correlation was observed between identity fusion and the continuous responses to the trolley dilemma, $r(481) = .167$, $p < .001$; and between identity fusion and the dichotomous responses to trolley dilemma, $r(481) = .174$, $p < .001$. Moreover, the correlation between the two types of trolley dilemma responses was significant, $r(481) = .70$, $p < .001$. However, identity fusion and certainty were not significantly correlated, $r(481) = .02$, $p = .574$.

Continuous trolley dilemma responses

The continuous measure of the trolley dilemma responses was submitted to a multiple regression analysis. Certainty, identity fusion, and the interaction term (i.e., Identity Fusion × Certainty) were entered as predictors. The continuous predictors (i.e. identity fusion and certainty) were mean-centred.

Results indicated a main effect of identity fusion, $B = .16$, $t(479) = 3.19$, $p = .008$, 95% CI: 0.062, 0.263, indicating that people higher in identity fusion were more willing to

Table 3. Study 3. correlations between identity fusion, certainty, Dichotomous Trolley Dilemma Responses (DTDR) and Continuous Trolley Dilemma Responses (CTDR).

Variables	1	2	3	*M*	*SD*
1. *Identity Fusion*				3.85	1.24
2. *Certainty*	.026			6.67	0.89
3. *DTDR*	.167**	−.091*		3.24	1.42
4. *CTDR*	.174**	−106*	.699**	1.25	0.43

Note. *$p < .05$; **$p < .001$.

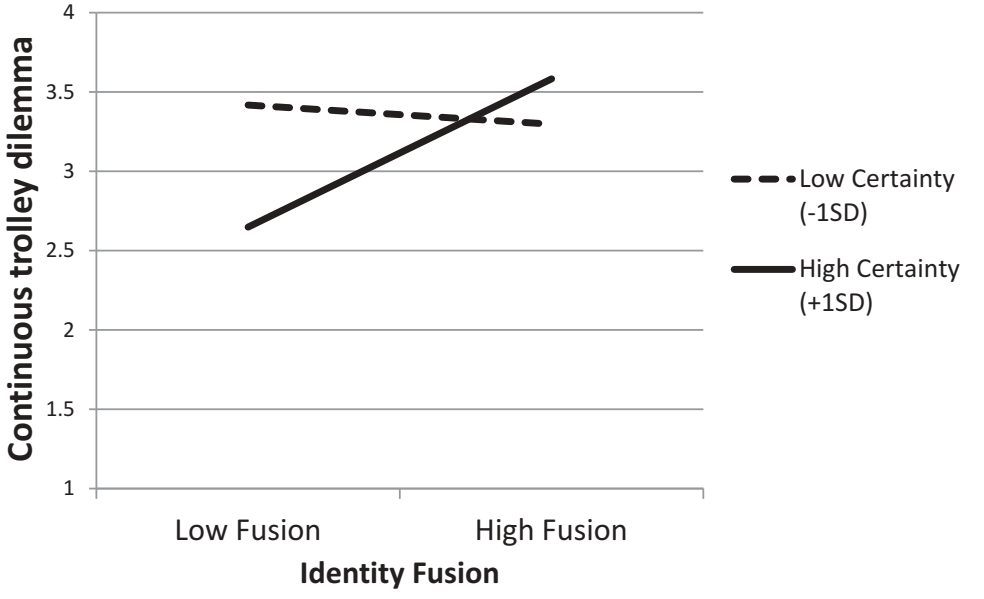

Figure 4. Study 3. Continuous trolley dilemma responses as a function of identity fusion and certainty.

self-sacrifice in the trolley dilemma. We found a marginally significant main effect of Certainty, $B = -.13$, $t(479) = -1.91$, $p = .055$, 95% CI: −0.274, 0.003, such that people higher in certainty were less willing to self-sacrifice in the trolley dilemma. The predicted interaction between identity fusion and Certainty was significant, $B = .23$, $t(479) = 4.08$, $p < .001$, 95% CI: 0.123, 0.350. As illustrated in Figure 4, among those with higher certainty scores (+1SD), identity fusion was positively associated with more willingness to self-sacrifice in the trolley dilemma, $B = .38$, $t(479) = 5.57$, $p < .001$, 95% CI: 0.242, 0.505. For those with lower certainty scores (−1SD), there was no relationship between identity fusion and willingness to self-sacrifice in the trolley dilemma, $B = -.05$, $t(479) = -0.62$, $p = .534$, 95% CI: −0.201, 0.104.

Analyzed differently, this interaction showed that, among participants at higher levels of identity fusion (+1SD), there was no relationship between certainty and willingness to self-sacrifice in the trolley dilemma, $B = .16$, $t(479) = 1.54$, $p = .124$, 95% CI: −0.044, 0.363. In contrast, for participants at lower levels of identity fusion (−1SD), there was a negative relationship between certainty and willingness to self-sacrifice in the trolley dilemma, $B = -.43$, $t(479) = -4.39$, $p < .001$, 95% CI: −0.623, 0.237.

Dichotomous trolley dilemma responses

The dichotomous measure of the trolley dilemma response was submitted to a logistic binary regression analysis. Certainty, identity fusion, and the interaction term (i.e., Identity Fusion × Certainty) were entered as predictors. The continuous predictors (i.e. Identity Fusion and Certainty) were mean-centred.

Results indicated a main effect of identity fusion, $B = .27$, $z = 2.98$, $p = .003$, 95% CI: 0.095, 0.458, indicating that people higher in identity fusion were more likely to flip the switch and self-sacrifice in the trolley dilemma. We also found a main effect

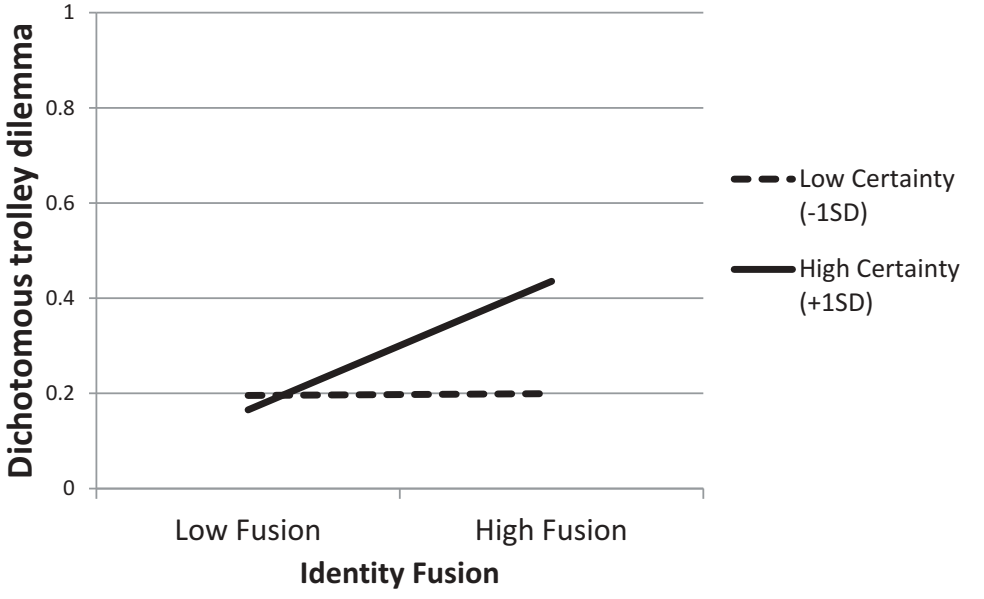

Figure 5. Study 3. Dichotomous trolley dilemma responses as a function of identity fusion and certainty.

of certainty, $B = .26$, $z = 1.99$, $p = .046$, 95% CI: 0.004, 0.512, indicating that people higher in certainty were more likely to flip the switch and self-sacrifice in the trolley dilemma. The predicted interaction between identity fusion and certainty was significant, $B = .30$, $z = 2.81$, $p = .005$, 95% CI: 0.090, 0.507. As illustrated in Figure 5, among those with higher certainty scores (+1SD), identity fusion was associated with increased likelihood of flipping the switch and self-sacrificing, $B = .54$, $z = 4.43$, $p < .001$, 95% CI: 0.304, 0.784. For those with lower certainty scores (−1SD), there was no relationship between identity fusion and the trolley dilemma response, $B = -.01$, $z = -0.06$, p = .944, 95% CI: −0.268, 0.288.

Analyzed differently, this interaction showed that, among participants at higher levels of identity fusion (+1SD), certainty was associated with an increased likelihood of self-sacrifice in the trolley dilemma, $B = .63$, $z = 3.36$, $p < .001$, 95% CI: 0.264, 0.999. In contrast, for participants at lower levels of identity fusion (−1SD), there was no relationship between certainty and self-sacrifice in the trolley dilemma, $B = -.11$, $z = -0.626$, $p = .531$, 95% CI: −0.473, 0.244.

Discussion

As in Studies 1 and 2, participants' self-reported identity fusion was associated with their willingness to self-sacrifice to a greater extent as certainty increased. Thus, we successfully replicated the previous findings. This study, however, offers several improvements over previous studies´ potential limitations. First, certainty was measured with a three-item scale, offering relatively higher reliability than the single-item measure used in Studies 1

and 2.[3] Second, responses to the trolley dilemma were measured both with continuous and dichotomous measures. Along with the results of the first study, this finding suggests that a continuous measure can be a useful way of assessing responses to trolley dilemmas beyond the traditional dichotomous choices. Results yielded very similar and significant interactions, consistent with the ones found in Studies 1 and 2. Nevertheless, like in Study 1, there are some minor differences in the results between the two measures that are worth noting.[4] First, although the slope does not change between measures, those with relatively low levels of certainty seem to score higher relative to those with relatively high levels of certainty in the continuous measure than in the dichotomous measure. This may be because, when in doubt (or with low certainty), participants may offer a response closer to the midpoint of the scale in the continuous measure. Given that there is no midpoint in dichotomous measures, participants may decide not to flip the switch when feeling uncertain. Second, when looking at the continuous measure, there were significant differences between high and low certainty for those scoring low in identity fusion. However, when looking at the dichotomous measure, there were significant differences between high and low certainty for those scoring high in identity fusion. This might be because highly-fused people may be more prone to think in dichotomous terms (all or nothing), whereas those scoring lower in identity fusion may be more prone to thinking more in continuous terms (neither black nor white, but different shades of gray).

General discussion

Across three studies, the results support our hypothesis that certainty moderates the effects of identity fusion on willingness to fight and die and simulated self-sacrifice (e.g., trolley dilemma responses). Specifically, we found that identity fusion was associated with willingness to fight and die and simulated self-sacrifice in a trolley dilemma to a greater extent if participants were certain in their reported identity fusion.[5] Thus, as certainty in individual differences in identity fusion increased, so too did the ability of this verbal scale to be associated with willingness to fight and die and the trolley dilemma responses.

Therefore, considering certainty in identity fusion can be helpful in predicting and understanding which people are more likely to act extremely in favor of the in-group (i.e., those relatively high in their reported certainty in their responses). Or, perhaps any one person varies in certainty at different points in time and thus the measure could be used to understanding when any given person is likely to act extremely in favor of the in-group (i.e., at times when the situation fosters certainty in their responses).

Readers should interpret these results with relative caution for two reasons. First, given the correlational nature of the design, one might raise concerns about reverse causality (i.e., that instead of certainty increasing the relation between identity fusion and extreme pro-group responses, a high relation between identity fusion and extreme pro-group responses lead people to infer certainty). Therefore, future research should move from the present measurement approach to a paradigm in which certainty is experimentally manipulated (Briñol & Petty, 2009). Nonetheless, the current studies still show that assessing certainty can enhance the predictive utility of the identity fusion scale. Future studies can benefit from manipulating certainty. Second, given the self-reported nature of the measures used in this research, the connection between these responses and actual

sacrificial behavior in the real world may be weaker than one that could be inferred from these studies. Future studies can benefit from including more ecological behavioral measures associated with sacrifice.

Beyond meta-cognitive certainty, there may be other potential moderators of the relationship between identity fusion and sacrifice. For example, following the long tradition in attitude strength literature (Petty & Krosnick, 1995), future studies should also assess perceived elaboration, importance, accessibility and centrality associated with identity fusion. The present research has implications not only for future avenues, but it also can be useful in re-interpreting past results (Swann et al., 2010b; Gómez et al., 2011). Specifically, Swann et al. (2010b) may have unintentionally moderated the relationship between identity fusion and extreme pro-group behavior by manipulating certainty through increased physical arousal. In another instance, Gómez et al. (2011) may have triggered some form of compensatory conviction (McGregor et al., 2012) by inducing feeling of social rejection on highly-fused individuals.

Applied researchers could also benefit from these results in meaningful ways. We showed that certainty measures are useful to increase the predictive utility of identity fusion. Therefore, implementing a strategy that distracts highly-fused individuals from their group bond might induce doubt about their nature, thus potentially reducing extreme outcomes. This would be an interesting strategy to implement when a group's goals are related to aggression or other negative outcomes. Finally, and in addition to increasing the criterion validity of identity fusion, we also recommend the use of certainty measures as a moderator of the verbal scale of identity fusion because of its cost, ease of use and efficiency. Questions about certainty are easy for researchers to use, they require only a single additional item, and participants should find them easy to answer (Santos et al., 2019; Shoots-Reinhard et al., 2015).

Finally, it is worth mentioning that this research is based on the assumption that certainty is associated with a relatively positive meaning. Depending on the person and the situation, certainty might mean something valid (status, righteousness, etc.) or something less valid (arrogance, stubbornness, etc.). We assumed that certainty had a positive meaning by default in our research. However, we acknowledge that if that meaning was different, the effects could vary. For a review on how the meaning of certainty can lead to different outcomes, see Briñol, Petty, Santos, and Mello (2018).

Notes

1. The databases and/or materials used in this research are available upon request. We report all measures, manipulations, and exclusions in these three studies. Also, we report all studies conducted in this line of research.
2. To test whether the two-way interaction between identity fusion and certainty was statistically different between responses to the willingness to fight and die scale and the continuous measure of the trolley dilemma, we ran a new linear regression analysis. Two additional variables were created in this new test. The first variable was a within-subjects factor called "Dependent variable" and resulted from the combination of willingness to fight and die and continuous measure of the trolley dilemma (both were standardized first). This means each participant had two rows: one with their response to the willingness to fight and die scale, and another one with the continuous measure of the trolley dilemma. The second variable was a between-subjects factor called "Type of measure" and had two possible values

(−1 = fight and die measure, 1 = continuous trolley dilemma measure). Our linear regression analysis was then run on fight and die and continuous trolley dilemma (the "Dependent variable"), with Type of measure (effect coding: −1 = fight and die measure, 1 = continuous trolley dilemma measure), Identity fusion (centred), Certainty (centred) and their interactions as our independent variables. Results show that the two-way interaction reported for both DV´s is not significantly moderated by type of measure, $B = -.007$, $t(587) = -0.27$, $p = .786$. This analysis strategy was also followed to compare a single-item measure of certainty with a three-item measure of certainty within Study 3 (endnote 3) and to compare the continuous and the dichotomous responses to the trolley dilemma in Study 3 (endnote 4).

3. For interested readers, we also compare the ability of the single item to produce moderation compared to the ability of the new three-item certainty measure. To test whether the two-way interaction between identity fusion and certainty was significantly different when certainty was composed by one vs. three items in the new study, we treated certainty measure (one vs. three items) as a within-subjects variable in the linear regression analysis. We ran similar regressions with the continuous and the dichotomous responses to the trolley dilemma. Results show that the two-way interaction reported for both DV´s is not significantly moderated by type of measure. Specifically, the comparison in the new study showed that the difference in effect size on the *continuous* response to the dilemma when using a three-item measure ($B = .236$, t (958) = 4.079, $p < .001$) compared to using just a single-item measure ($B = .141$, t (958) = 3.38, $p < .001$) did not differ significantly ($B = .047$, t (958) = 1.33, $p = .183$). Similarly, the comparison in the new study showed that the difference in effect size on the *dichotomous* response to the dilemma when using a three-item measure ($B = .298$, $z = 2.81$, $p = .005$) compared to using just a single-item measure ($B = .203$, $z = 2.57$, $p = .010$) did not differ significantly ($B = -.047$, $z = -0.72$, $p = .472$).
4. After standardizing both measures of the dilemma, we included type of measure as a within-subjects factor. It did not significantly moderate the two-way interaction between identity fusion and confidence found for both measures of the dilemma, $B = -.019$, t (958) = −0.67, $p = .502$. This suggests that, even though the pattern of results may show slight differences between dependent variables, both measures of the dilemma yielded similar results.
5. A finding one might expect is that the correlation between willingness to fight and die and trolley dilemma responses was higher for people who are certain than for people who are not. However, we did not find this effect. In this particular case, confidence refers to the metacognitive certainty about people's responses to the identity fusion questionnaire and not certainty about their willingness to fight and die. Changing the construct for which people are certain about is consequential in this case.

Disclosure statement

No potential conflict of interest was reported by the authors.

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References

Baumeister, R. F., Heatherton, T. E., & Tice, D. M. (1993). When ego threats lead to self-regulation failure: negative consequences of high self-esteem. *Journal of Personality and Social Psychology*, *64*, 141–156.

Bleske-Rechek, A., Nelson, L. A., Baker, J. P., Remiker, M. W., & Brandt, S. J. (2010). Evolution and the trolley problem: People save five over one unless the one is young, genetically related, or a romantic partner. *Journal of Social, Evolutionary, and Cultural Psychology*, *4*(3), 115–127.

Bortolini, T., Newson, M., Natividade, J. C., Vázquez, A., & Gómez, Á. (2018). Identity fusion predicts endorsement of pro-group behaviours targeting nationality, religion, or football in Brazilian samples. *British Journal of Social Psychology*, *57*(2), 346–366.

Briñol, P., DeMarree, K. G., & Petty, R. E. (2010). Processes by which confidence (vs. doubt) influences the self. In R. Arkin, K. Oleson, & P. Carroll (Eds.), *Handbook of the uncertain self* (pp. pp. 13–35). New York: Psychology Press.

Briñol, P., & Petty, R. E. (2019). The impact of individual differences on attitudes and attitude change. In D. Albarracín & B. T. Johnson (Eds.), *Handbook of Attitudes* (pp 520–556), 2nd ed., Vol. 1. New York, NY: Routledge.

Briñol, P., & Petty, R. E. (2009). Source factors in persuasion: A self-validation approach. *European Review of Social Psychology*, *20*, 49–96.

Briñol, P., Petty, R. E., Santos, D., & Mello, J. (2018). Meaning moderates the persuasive effect of physical actions: Buying, selling, touching, carrying, and cleaning thoughts as if they were commercial products. *Journal of the Association for Consumer Research*, *2*, 460–471.

Clark, J. K., Wegener, D. T., Sawicki, V., Petty, R. E., & Briñol, P. (2013). Evaluating the message or the messenger? implications for self-validation in persuasion. *Personality and Social Psychology Bulletin*, *39*(12), 1571–1584.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). New York: Academic Press.

DeMarree, K. G., Brinol, P., & Petty, R. E. (2015). Reducing subjective ambivalence by creating doubt: A metacognitive approach. *Social Psychological and Personality Science*, *6*(7), 731–739.

Evans, A. T., & Clark, J. K. (2012). Source characteristics and persuasion: the role of self-monitoring in self-validation. *Journal of Experimental Social Psychology*, *48*(1), 383–386.

Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G* Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, *39*(2), 175–191.

Gómez, Á., & Vázquez, A. (2015). The power of 'feeling one'with a group: Identity fusion and extreme pro-group behaviours/El poder de 'sentirse uno'con un grupo: Fusión de la identidad y conductas progrupales extremas. *Revista De Psicología Social*, *30*(3), 481–511.

Gómez, A., Brooks, M. L., Buhrmester, M. D., Vázquez, A., Jetten, J., & Swann, W. B., Jr. (2011). On the nature of identity fusion: Insights into the construct and a new measure. *Journal of Personality and Social Psychology*, *100*, 918–933.

Gómez, A., Morales, J. F., Hart, S., Vázquez, A., & Swann, W. B., Jr. (2011). Rejected and excluded forevermore, but even more devoted: Irrevocable ostracism intensifies loyalty to the group among identity fused persons. *Personality and Social Psychology Bulletin*, *37*, 1574–1586.

Gross, S. R., Holtz, R., & Miller, N. (1995). Attitude certainty. *Attitude Strength: Antecedents and Consequences*, *4*, 215–245.

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY: The Guilford Press.

Jarvis, W. B. G., & Petty, R. E. (1996). The need to evaluate. *Journal of Personality and Social Psychology*, *70*, 172–194.

Jiménez, J., Gómez, A., Buhrmester, M. D., Vázquez, A., Whitehouse, H., & Swann, W. B. (2016). The dynamic identity fusion index: A new continuous measure of identity fusion for web-based questionnaires. *Social Science Computer Review*, *34*(2), 215–228.

Jonas, E., McGregor, I., Klackl, J., Agroskin, D., Fritsche, I., Holbrook, C., … Quirin, M. (2014). Threat and defense: From anxiety to approach. In J. M. Olson & M. P. Zanna (Eds.), *Advances in experimental social psychology* (Vol. 49, pp. pp. 219–286). San Diego, Ca: Academic Press.

Joo, M., & Park, S. W. (2017). Effect of identity fusion on decision to make extreme sacrifices in romantic relationships: The moderating role of impulsiveness. *British Journal of Social Psychology*, *56*(4), 819–827.

Jost, J. T. (2006). The end of the end of ideology. *American Psychologist*, *61*, 651–670.

McGregor, I., Prentice, M., & Nash, K. (2012). Approaching relief: Compensatory ideals relieve threat-induced anxiety by promoting approach-motivated states. *Social Cognition*, *30*, 689–714.

Paredes, B., Briñol, P., & Gomez, A. (2018). Identity fusion leads to willingness to fight and die for the group: The moderating impact of being informed of the reasons behind other members sacrifice. *Self & Identity*, *17*(5), 517–530.

Pelham, B. W. (1991). On confidence and consequence: The certainty and importance of self - knowledge. *Journal of Personality and Social Psychology*, *60*, 518–530.

Pelham, B. W., & Swann, W. B., Jr. (1994). The juncture of intrapersonal and interpersonal knowledge: Self - certainty and interpersonal congruence. *Personality and Social Psychology Bulletin*, *20*, 349–357.

Petty, R. E., Briñol, P., Tormala, Z. L., & Wegener, D. T. (2007). The role of meta-cognition in social judgment. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (2nd ed ed., pp. pp. 254–284). NewYork, NY: Guilford Press.

Petty, R. E., & Briñol, P. (2006). A metacognitive approach to "implicit" and "explicit" evaluations: Comment on Gawronski and Bodenhausen (2006). *Psychological Bulletin*, *132*(5), 740–744.

Petty, R. E., Briñol, P., & Tormala, Z. L. (2002). Thought confidence as a determinant of persuasion: The self-validation hypothesis. *Journal of Personality and Social Psychology*, *82*, 722–741.

Petty, R. E., & Krosnick, J. A. (1995). *Attitude strength: Antecedents and consequences*. Hillsdale, NJ: Erlbaum.

Proulx, T., Inzlicht, M., & Harmon-Jones, E. (2012). Understanding all inconsistency compensation as a palliative response to violated expectations. *Triends in Cognitive Sciences*, *16*(5), 285–291.

Rucker, D. D., Tormala, Z. L., Petty, R. E., & Briñol, P. (2014). Consumer conviction and commitment: An appraisal-based framework for attitude certainty. *Journal of Consumer Psychology*, *24*, 119–136.

Santos, D., Briñol, P., Petty, R. E., Gandarillas, B., & Mateos, R. (2019). Trait aggressiveness predicting aggressive behavior: The moderating role of meta-cognitive certainty. *Aggressive Behavior*, *45*, 255–264.

Shoots-Reinhard, B., Petty, R. E., DeMarree, K. G., & Rucker, D. D. (2015). Personality certainty and politics: Increasing the predictive utility of individual difference inventories. *Political Psychology*, *36*, 415–430.

Swan, W. B., & Buhrmester, M. D. (2015). Identity fusion. *Current Directions in Psychological Science*, *24*, 52–57.

Swann, W. B., Jr., Buhrmester, M. D., Gómez, Á., Jetten, J., Bastian, B., Vázquez, A., … Zhang, A. (2014). What makes a group worth dying for? Identity fusion fosters perception of familial ties, promoting self-sacrifice. *Journal of Personality and Social Psychology*, *106*, 912–926.

Swann, W. B., Jr, Gómez, Á., Buhrmester, M. D., López-Rodríguez, L., Jiménez, J., & Vázquez, A. (2014). Contemplating the ultimate sacrifice: Identity fusion channels pro-group affect, cognition, and moral decision making. *Journal of Personality and Social Psychology*, *106*, 713–727.

Swann, W. B., Jr., Gómez, A., Dovidio, J. F., Hart., S., & Jetten, J. (2010a). Dying and killing for one's group: Identity fusion moderates responses to intergroup versions of the trolley problem. *Psychological Science*, *21*, 1176–1183.

Swann, W. B., Jr, Gómez, A., Huici, C., Morales, J., & Hixon, J. G. (2010b). Identity fusion and self-sacrifice: Arousal as a catalyst of pro-group fighting, dying, and helping behavior. *Journal of Personality and Social Psychology*, *99*, 824–841.

Swann, W. B., Jr, Gómez, A., Seyle, D. C., Morales, J., & Huici, C. (2009). Identity fusion: The interplay of personal and social identities in extreme group behavior. *Journal of Personality and Social Psychology*, *96*, 995–1011.

Van Den Bos, K., & Lind, E. A. (2002). Uncertainty management by means of fairness judgments. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 34, pp. pp. 1–60). San Diego, CA: Academic Press.

Vitriol, J. A., Tagar, M. R., Federico, C. M., & Sawicki, V. (2019). Ideological uncertainty and investement of the self in politics. *Journal of Experimental Social Psychology*, *82*, 85–97.

Wichman, A. L., Briñol, P., Petty, R. E., Rucker, D. D., Tormala, Z. L., & Weary, G. (2010). Doubting one's doubt: A formula for confidence. *Journal of Experimental Social Psychology*, *46*, 350–355.