

## RESEARCH ARTICLE

# Attitudes and attitude certainty guiding pro-social behaviour as a function of perceived elaboration

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## Abstract

This research examined the effect of perceived elaboration on the relationship between attitudes and prosocial behaviour. Study 1 revealed that group fusion was more predictive of pro-group behaviour (donation to in-group members) when perceived elaboration was high rather than low. In Study 2, attitudes toward helping were more likely to guide prosocial behaviour (helping others in a learning task) for participants who reported higher levels of perceived elaboration. Studies 3 and 4 manipulated perceptions of elaboration, demonstrating that attitudes guided subsequent hiring decisions (Study 3) and an actual behavioural choice in a natural setting (Study 4), and that this link was stronger for those participants induced to believe that they engaged in high (vs. low) elaboration. Furthermore, Studies 2 and 4 revealed that the effects of perceived elaboration on attitude-behaviour correspondence were mediated by attitude certainty. The present research reveals that prosocial behaviour can be facilitated by taking into consideration meta-cognitive processes that accompany evaluation (perceived elaboration and attitude certainty).

## KEYWORDS

attitude certainty, attitudes, perceived elaboration, prosocial behaviour, prosocial intentions

## 1 | INTRODUCTION

Prior research has shown that attitudes are capable of guiding prosocial actions across different domains (Balconi & Canavesio, 2013; Gaertner, 1975; Ma, 2020; Omoto & Snyder, 1995; Stepanikova et al., 2011). For example, attitudes toward donation were significant predictors of behavioural intentions to become a donor by signing the registry and of behavioural intentions to talk with family about organ donation (Park & Smith, 2007; see also Sirois et al., 2005). In another illustration, Erlandsson et al. (2018) found that participants used their attitudes toward a charity appeal when deciding upon actual donations (see also Graziano et al., 2007; Jonas et al., 2002).

The effect of attitudes in predicting helping behaviour (i.e., hiring, speaking on behalf of a person, mentoring, etc.) has also been found when evaluating job candidates and partners. For instance, Lu and

colleagues (2011) found that positive attitudes toward older workers were positively related to intentions to hire older people as opposed to avoiding hiring them. Additionally, prior research found that attitudes toward job candidates are also important when predicting inclusive behaviour (Nelissen et al., 2016; see also Colella & Bruyère, 2011 for a review) and that employee attitudes can enhance organizational citizenship behaviour, including mentoring activities (Walumbwa et al., 2010). Finally, in another line of research relevant to ingroup favouritism, Swann and colleagues (2010) found that evaluations relevant to in-groups predicted prosocial behaviour for in-group members (see also Klein & Rudert, 2021; Levine et al., 2005). Interestingly, between group fusion and in-group favouritism has been found to vary as a function of different variables from the person and the situation (see Paredes et al., 2020).

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Summing up, various attitudes (attitudes toward particular actions, people, and groups) have previously been related to prosocial and helping behaviours (e.g., volunteering, cooperating, speaking on behalf of and defending another person, mentoring others, etc.). Interestingly, in some studies attitudes predicted behaviour better in some conditions or for some people more than others (e.g., Byrka et al., 2019; Fasbender & Wang, 2017; Nelissen et al., 2016; Swann et al., 2010; Walumbwa et al., 2010), but those moderators were particular to the specific situation. In contrast, the present research suggests a moderator that could be applied across many different situations and types of helping.

We propose that the effect of attitudes on prosocial behaviour will be moderated by meta-cognitive variables previously unexplored in this domain. Specifically, it is proposed that prosocial and helping behaviours depend not only on the favourability of attitudes in the relevant domain, but also on meta-cognitive assessments such as how much elaboration participants believe they have engaged in (perceived elaboration) and on the certainty with which they hold their attitudes (attitude certainty). As described next, perceived elaboration and attitude certainty both reflect a secondary assessment (i.e., 'Have I thought a lot about this evaluation?' and 'Is my evaluation correct?') of a primary cognition (i.e., the attitude itself). Although attitude certainty was proposed to be the proximal mediator, the present research focuses on perceived elaboration because people might naturally reflect on how much thinking they have done about their relevant attitudes before engaging in behaviour (Barden & Petty, 2008).

### 1.1 | Perceived elaboration and attitude certainty

Attitudes can differ in their ability to guide actions (i.e., their strength can vary, Petty & Krosnick, 1995). To understand these differences in the extent to which attitudes are consequential for behaviour, contemporary multi-process theories of attitude change were developed. Several theories, such as the elaboration likelihood model (ELM; Petty & Cacioppo, 1986) and the heuristic-systematic model (HSM; Chaiken et al., 1989) were generated originally to articulate multiple ways in which attitudes can be formed, changed, and maintained (see Petty & Briñol, 2012, for an historical overview). These models provide a framework that addresses how attitude change can occur through relatively thoughtful (i.e., 'high elaboration') or relatively non-thoughtful (i.e., 'low elaboration') processes and the resulting consequences of such attitude change on behaviour. In these theories, elaboration mechanisms affect the relationship between individuals' attitudes and their intentions and actions. Briefly described, the more an attitude is based on thoughtful consideration of relevant information about an issue or topic, the more it tends to influence behaviour (Horcajo & Luttrel, 2016; Petty et al., 1983; see also Kruglanski & Thompson, 1999).

The actual amount of thinking (objective elaboration) and perceptions of the amount of thinking (perceived elaboration) were initially treated as interchangeable assuming that measures of perceived elaboration invariably reflected differences in actual elaboration (Cacioppo et al., 1983; Petty et al., 1980). However, further research has highlighted the importance of separating out operative indicators of many variables relevant to attitudes and persuasion from the perception of

those indicators (e.g., objective vs. perceived accessibility, objective vs. perceived ambivalence, objective vs. subjective knowledge, etc.; Bassili, 1996; see Luttrel & Sawicki, 2020, for a recent review). Thus, objective elaboration and perceived elaboration can be separated empirically and conceptually (see Barden & Petty, 2008). Whereas objective elaboration refers to the actual amount of thinking a person has done and can be assessed with measures of primary cognition (e.g., counting the number of thoughts listed), perceived elaboration refers to the subjective perception about such thinking and is assessed with a self-report measure of secondary cognition since it involves a meta-cognitive reflection (Rucker et al., 2011). Prior research has shown that perceived elaboration can be manipulated independent of actual elaboration and is still capable of predicting attitudinal consequences (Barden & Petty, 2008). That is, two individuals might engage in equivalent levels of actual thought about a proposal, but one might believe that he or she was relatively thorough in thinking about the information whereas the other might believe that he or she was not very thoughtful. That divergence in perceived elaboration can be critical for producing differential attitude consequences (resistance to change, behavioural engagement, etc.) even when keeping constant and controlling for the actual amount of thinking.

The extent of elaboration of an attitude is important not only because it influences attitude consequences (e.g., attitude-behaviour correspondence) but also because it affects other strength indicators that serve as predictors or antecedents of those consequences (e.g., attitude certainty). Attitude certainty generally refers to a sense of validity concerning one's attitudes (e.g., Gross et al., 1995; Rucker et al., 2014). In a classic study, Fazio and Zanna (1978) found that undergraduates' attitudes toward participation in psychology experiments were better predictors of actual participation when held with high rather than low certainty. Attitude certainty is important because attitudes held with high (vs. low) certainty are more likely to resist change, persist over time, influence information processing and judgement, as well as guide behaviour (Clarkson et al., 2008; Petty et al., 2003; for reviews, see Rucker et al., 2014; Tormala & Rucker, 2018).

Initial conceptualizations of attitude certainty tended to assume that certainty sprang from structural features of the judgement such as having attitudes based on more issue-relevant knowledge, direct experience (e.g., Fazio & Zanna, 1978), or extended amounts of actual thinking (Petty & Cacioppo, 1986). Indeed, structural factors like those and others (e.g., accessibility, ambivalence) can play an important role in determining attitude strength (Petty & Krosnick, 1995) and attitude certainty (Rucker et al., 2014). More relevant to the present studies, recent research has begun to examine how people sometimes infer greater certainty in attitudes even when there are no structural differences (e.g., Barden & Petty, 2008; Rucker et al., 2008; Tormala & Petty, 2002). As tested in the present studies, attitude certainty can be greater when people merely perceive that they have thought in a careful and thorough manner as opposed to a superficial manner, even keeping structural thinking constant. For example, people can come to infer greater certainty in their attitudes if they are simply led to believe that they have done much thinking about the attitude object even if they have not. In the initial demonstration of this, Barden

and Petty (2008) found that when people came to believe that they diligently thought about an issue, their attitude on the issue better predicted their behavioural intention even though the perception of deep thought was created experimentally without any substantive basis to it. These authors demonstrated that perceiving that one's attitude is based on more thought (perceived elaboration) influenced attitude certainty, supporting the thoughtfulness heuristic (i.e., if I have thought a lot about my attitude, I must be certain of its validity). The attitude certainty that emerged from perceived elaboration was consequential, leading to behavioural intentions that were more in line with the attitudes that participants held.

In sum, the certainty that comes from meta-cognitive inferences (perceived elaboration) rather than structural differences (actual elaboration) can lead attitudes to be more likely to guide behaviour. Despite this research, the evidence collected so far for the role of perceived elaboration is relatively scarce, and it has relied exclusively on assessing behavioural intentions rather than actual behaviour. The present research was designed to contribute to this literature by examining the extent to which perceived elaboration can guide not only prosocial behavioural intentions but also actual actions. In doing so, the present research can provide a practical means to predict when the relationship between attitudes and prosocial behaviour will be stronger (e.g., when perceived elaboration is relatively high) and when it may be weaker (e.g., when perceived elaboration is relatively low). The current research also aims to explain why perceived elaboration would facilitate attitude-behaviour consistency (ABC). That is, we examine the meditational role of attitude certainty.

## 1.2 | Overview

The purpose of the present research was to examine the effect of perceived amount of thinking (elaboration) on the relationship between attitudes and prosocial behaviour. Four studies were conducted using different paradigms (i.e., two correlational studies and two experiments) to examine the impact of attitudes on prosocial behaviour (assessed with behavioural intentions and with actual prosocial behaviours). Study 1 tested the extent to which group fusion would be more predictive of pro-group behaviour (donation to in-group members) as a function of measured perceived elaboration. Although previous research has already shown that group fusion can predict pro-group behaviour (e.g., donations, see Swann et al., 2010), in this study we examined for the first time whether perceived elaboration could moderate that relationship. Study 2 examined if attitudes toward helping in general would be capable of guiding prosocial behaviour (actual helping of a person in a learning task), testing the ability of perceived elaboration to moderate that potential link.

Studies 1 and 2 were designed to examine the possibility that measuring the spontaneous perception of elaboration can enhance predictability of the effects of attitudes on prosocial behaviour. If this hypothesis is correct, these studies would have applied value because measuring perceived elaboration should be easy for researchers and practitioners, and it can be a highly useful tool to gain predictive power over behaviour. Additionally, people find this measure easy to

answer. Nevertheless, because participants' perceived elaboration was measured in these studies, it is possible that other, unmeasured factors such as knowledge, empathy, or need for cognition (Cacioppo & Petty, 1982) may have been confounded with reported elaboration. Therefore, Studies 3 and 4 moved to an experimental design and manipulated perceptions of elaboration in order to more accurately infer the causal role of this variable. Additionally, these studies also varied the attitude object to gain generalization across topics, materials, inductions, and measures. Specifically, Study 3 examined to what extent attitudes toward a job candidate would be capable of guiding behaviour (decision to support or not to support the hiring of the candidate) and intentions (willingness to defend the candidate in a meeting) and tested whether attitude-behaviour correspondence would be stronger under high (vs. low) perceived elaboration. Finally, Study 4 analysed whether attitudes toward comprehensive exams would be more capable of guiding actual prosocial behaviour (enrolment in a real mentoring programme designed to help students to prepare for exams) when perceived elaboration was manipulated to be high rather than low.

In addition, Studies 2 and 4 sought to demonstrate that perceived elaboration effects on ABC can be mediated by the extent of certainty individuals have in their attitudes. In line with Barden and Petty (2008), we expected that prosocial behaviour would be more consistent with attitudes when participants were high in the perceived elaboration and this would be mediated by the impact of perceived elaboration on attitude certainty.

## 2 | STUDY 1

The goal of this study was to examine for the first time the role of perceived elaboration in moderating the previously identified relationship between positive views of one's group and pro-group behaviour. To assess positive regard for one's group, we used a measure of fusion with the group that consisted of statements suggesting a strong connection between the self and one's group. Perceived elaboration was also measured. Then, the impact of those two variables (group fusion and perceived elaboration) in guiding pro-group behaviour was examined. Pro-group behaviour was measured by the amount of money that each participant was willing to donate to a partner described as belonging to the same group. Donation to in-group members is a measure commonly used in this domain (Gómez et al., 2011; Stepanikova et al., 2011; Swann et al., 2010). We predicted that as participants' perceived elaboration increased, so too would the correspondence between group fusion and donation to in-group members. That is, we expected that perceiving higher elaboration would affect how strongly positive regard for the group predicted pro-group behaviour.

### 2.1 | Method

#### 2.1.1 | Participants and design

Two hundred and eighty-one Spanish undergraduate students (204 women, and 77 men;  $M_{age} = 34.18$ ;  $SD = 11.01$ ) participated

anonymously in this study. Group fusion (continuous variable) and the extent of perceived elaboration (continuous variable) were included as predictor variables, whereas pro-group behaviour was measured as the dependent variable. A power analyses was conducted using G\*Power (Faul et al., 2009). We could not look at prior work to obtain an estimated effect size for the predicted interaction in the domain of pro-group behaviour. Thus, we planned for a relatively small effect in multiple regression (Cohen's  $f^2 = .030$ ; Cohen, 1988). Results indicated that the desired sample size for a two-tailed test ( $\alpha = .05$ ) of a two-way interaction with .80 power was  $N = 264$  participants. Our final sample size exceeded the estimated one (281 participants) because we wanted to be sure we had enough participants to detect the effect even if it was smaller than anticipated.<sup>1</sup>

### 2.1.2 | Procedure

Permission to conduct the study was provided by the university institutional ethics committee before the study began. Participants were told that they would be taking part in a study to validate some scales for research in psychology. As a way to approximate group attitudes, participants first completed the verbal scale of identity fusion with their country, Spain (Gómez et al., 2011). Afterwards, participants reported their perceived elaboration while completing the scale and filled out several socio-demographic questions. At the end of the study, participants took part in a task that was a conceptual adaptation of the Dictator Game (Cason & Mui, 1998). As part of this game, participants could donate money to another person, described as an in-group member. The amount of money that they donated was the indicator of pro-group behaviour and served as a dependent variable. Finally, after all measures were completed, participants were thanked and debriefed.

### 2.1.3 | Measures

#### *Predictor variables*

**Group fusion.** Fusion with the group was measured using the seven-item verbal scale of identity fusion with Spain (Gómez et al., 2011). This scale includes various statements relevant to regard for one's country such as 'I have a deep emotional bond with my country,' 'I am one with my country,' and 'I am strong because of my country.' Participants responded to each statement on a six-point scale anchored at (1) *Strongly disagree* and (6) *Strongly agree* ( $M = 3.17$ ;  $SD = 1.24$ ). Responses to each item were averaged to form a composite index of group fusion ( $\alpha = .88$ ). Higher values represented greater extents of fusion with the group (Paredes et al., 2020).

**Extent of perceived elaboration.** Perceived elaboration was assessed using two questions about thinking. Participants were asked to think back to the questions they had completed regarding their group fusion and report the amount of elaboration in which they engaged. Ratings were provided on two seven-point semantic differential scales, anchored at (1) *Low attention/Low thinking* and (7) *High attention/High*

*thinking* ( $M = 5.75$ ;  $SD = 0.80$ ). A composite index of perceived elaboration was formed by averaging responses to these two measures,  $r(279) = .411$ ,  $p < .001$ . These measures of perceived elaboration were taken from prior research (Barden & Petty, 2008; Cancela et al., 2016; Petty et al., 2002; Requero et al., 2020). Responses to this index were scored so that higher values represented the perception of more careful thinking during completion of the fusion measure.<sup>2</sup>

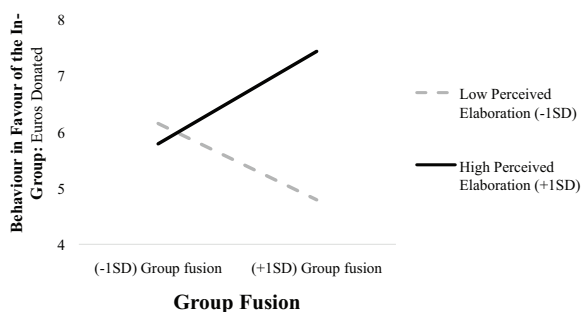
#### *Dependent variable*

**Behaviour in favour of the in-group.** The dependent measure was a conceptual adaptation of the Dictator Game (Cason & Mui, 1998), designed to measure key prosocial behaviours such as donation and generosity (Esteky et al., 2020; Stepanikova et al., 2011). First, participants were led to believe that they were paired with another person, who was described as an in-group member (i.e., a Spanish citizen). Then, they received instructions about how to play the game. Specifically, participants were told that the game consisted of two players (Player A and Player B). Player A would receive 30 Euros and could donate any amount of that sum to Player B. Importantly, they were told that any donation to Player B would entail a loss to Player A's initial endowment. Participants were told that they would be randomly assigned to the role of either Player A or Player B, although actually all participants were assigned the role of Player A. Thus, all participants indicated the amount of money they were willing to donate to Player B (minimum = €0, maximum = €30;  $M = 6.06$ ;  $SD = 3.90$ ). The dictator game has been used as a standard behavioural measure of pro-group behaviour within the identity fusion literature (Gómez et al., 2011; Swann et al., 2010), as well as in behavioural economics (e.g., Eckel & Grossman, 1996; Hoffman et al., 1996), sociology (Simpson & Willer, 2008; Willer, 2009), and social psychology (Benenson et al., 2007).

## 2.2 | Results

Following the suggestions of Cohen and Cohen (1983), donation to in-group members was submitted to a hierarchical regression analysis. Group fusion (centered), perceived elaboration (centered), and the interaction term were entered as predictors. Main effects were interpreted in the first step of the regression and the two-way interaction in the second, final step. Results showed a significant main effect of perceived elaboration,  $B = 0.595$ ,  $SE = 0.291$ ,  $t(278) = 2.048$ ,  $p = .041$ , 95% CI: [0.023, 1.167], such that greater perceived elaboration corresponded with more donation to in-group members. There was no main effect of group fusion on pro-group behaviour,  $B = 0.073$ ,  $SE = 0.187$ ,  $t(278) = 0.390$ ,  $p = .697$ , 95% CI: [-0.296, 0.442].

Most important to the present study, the regression revealed a significant two-way interaction between group fusion and perceived elaboration,  $B = 0.756$ ,  $SE = 0.269$ ,  $t(277) = 2.815$ ,  $p = .005$ , 95% CI: [0.227, 1.285]. As shown in Figure 1, among participants reporting higher levels of perceived elaboration (+1 SD), those reporting greater group fusion made higher donations,  $B = 0.662$ ,  $SE = 0.279$ ,  $t(277) = 2.370$ ,  $p = .019$ , 95% CI: [0.112, 1.211]. In contrast, among participants reporting lower levels of perceived elaboration (-1 SD), a non-significant



**FIGURE 1** Behaviour in favour of the in-group (donation to an in-group member) as a function of group fusion (plotted at +1 and -1 SD) and the extent of perceived elaboration (plotted at +1 and -1 SD) in Study 1. Donations ranged from 0 to 30 Euros.

effect in the opposite direction emerged,  $B = -0.546$ ,  $SE = 0.287$ ,  $t(277) = -1.900$ ,  $p = .059$ , 95% CI: [-1.112, 0.020].

## 2.3 | Discussion

We predicted and found that perceived elaboration moderated the effect of group fusion on pro-group behaviour. Our findings showed that the positive regard for one's group predicted behaviour in favour of the in-group to a greater extent among participants relatively high in perceived elaboration compared to participants reporting lower levels of perceived elaboration. Thus, as perceived elaboration increased, so too did the ability of group fusion to predict donation to in-group members. This finding is important because there was not a significant overall main effect of group fusion on pro-group behaviour. Rather, group fusion only predicted pro-group behaviour when perceived elaboration was relatively high. Therefore, identifying a moderator such as perceived elaboration can help to specify when the link between group fusion and pro-group behaviour would be more likely to emerge.

An open question worth examining is whether these results could be replicated using a different attitude object and with more applied behavioural measures. Particularly, we wanted to know to what extent this effect could be extended and generalized to a measure of attitudes and behaviours beyond the domain of in-group favouritism (i.e., attitudes toward helping and actual help). In addition, as suggested by Barden and Petty (2008), it would be worthwhile to extend the contribution of this study by providing meditational evidence for the role of attitude certainty in perceived elaboration effects. In the first study, we wanted to test the effects of perceived elaboration on pro-group behaviour when attitude certainty was not made accessible by measuring it, but the next study includes a measure of this construct.

## 3 | STUDY 2

The main goal of Study 2 was to conceptually replicate and extend the previous findings about the moderating role of perceived elaboration on ABC using a different attitude measure and a different prosocial

behaviour. Additionally, this study aims to provide meditational evidence for the role of attitude certainty in perceived elaboration effects (Barden & Petty, 2008).

Participants were first asked to think about a past instance regarding helping behaviour and then their attitudes toward helping people in general were measured. Their perceived elaboration while recalling the helping episode was also assessed. Importantly, participants were asked to complete a new measure designed to test the extent to which attitude certainty was a plausible mediating process. Participants reported how certain they were about their attitudes toward helping. Then, helping behaviour was assessed in this study by recording the choices made by the participants to help a particular person in a learning task. Our prediction was that attitudes toward helping people in general would become more predictive of helping a particular person as perceived elaboration increased. That is, we expected again that as participants' perceived elaboration increased, so too would attitude-behaviour correspondence. Moreover, we expected that greater perceived elaboration would lead to more attitude-behaviour correspondence because certainty in the resultant attitudes would be greater under perceptions of higher elaboration.

## 3.1 | Method

### 3.1.1 | Participants and design

Two hundred and twenty-seven Spanish undergraduate students (197 women, 29 men and one who did not report gender;  $M_{age} = 19.79$ ;  $SD = 2.87$ ) were asked to recall a past-helping episode. Attitudes toward helping (continuous variable) and the extent of perceived elaboration (continuous variable) were included as predictors, whereas helping behaviour was measured as the dependent variable. An a priori power analysis was conducted using G\*Power (Faul et al., 2009). After obtaining the interaction effect size in Study 1 (i.e., Cohen's  $f^2 = .029$ ), we planned for a similar effect size in this second study. The desired sample size for a two-tailed test ( $\alpha = .05$ ) of the predicted two-way interaction with .80 power was a total of  $N = 276$  participants. However, our final sample size was determined by the number of participants that we were able to collect before the end of the academic quarter, resulting in a number that was close (227 participants) to the estimated one. The final sample results in power of .72 to detect the anticipated effect size based on Study 1.

### 3.1.2 | Procedure

Permission to conduct the study was provided by the university institutional ethics committee before the study began. Upon arrival, participants were told that they would be taking part in a memory study about recalling past events. Then, all participants received written instructions asking them to complete several tasks. As part of the first task, each participant was asked to think about a previous episode regarding helping behaviour. After describing that helping episode,



participants reported their attitudes toward helping in general, as well as their perceived elaboration while thinking about the previous helping episode. Then, participants reported their certainty in their attitudes toward helping and filled out several socio-demographic questions. At the end of the study, participants completed the dependent measure of prosocial behaviour assessing actual help toward a particular person in a learning task. Finally, participants were debriefed, thanked and dismissed.

### 3.1.3 | Measures

#### *Predictor variables*

**Attitudes.** Attitudes toward helping were assessed using four nine-point items. These items were semantic differential scales used in previous research in the attitude domain (e.g., Cancela et al., 2016; Gandarillas et al., 2018). Specifically, the items asked participants if they liked helping in general: *dislike-like*, as well as if their general attitude toward helping was *negative-positive*, *bad-good*, and *unfavourable-favourable* ( $M = 7.68$ ;  $SD = 1.38$ ). Item-ratings were highly intercorrelated ( $\alpha = .80$ ), and were averaged to create a merged attitude index. The index was scored so that higher values represented relatively more favourable attitudes toward helping.

**Extent of perceived elaboration.** As in Study 1, elaboration was assessed using the same two questions about perceived thinking, plus one additional item used previously by Cárdbaba et al. (2014) to increase the reliability of the measure. Participants rated the extent of their elaboration on three nine-point semantic differential scales, where (1) represented *Low attention/Low thinking/Low elaboration* and (9) represented *High attention/High thinking/High elaboration* ( $M = 7.30$ ;  $SD = 1.15$ ). Item-ratings were highly intercorrelated ( $\alpha = .73$ ) and were thus averaged to form one single measure of perceived elaboration. Responses to this perceived elaboration index were scored so that higher values represented the perception of more careful thinking during the task of reporting attitudes toward helping.<sup>3</sup>

#### *Dependent variables*

**Helping behaviour.** Participants were asked to take part in a task for which they were supposedly partnered with another student. Specifically, they were told that the task involved another student (the ostensible partner) learning some content. The participant played the role of a *teacher* who has an '*apprentice*' (someone partnered through the Qualtrics survey program) in a memory task. The role of the '*teacher*' was to help the *apprentice* to learn by giving massage vibrations and pleasant music. The game consisted of a single trial. After receiving the instructions regarding their role and main objective, participants were told that learning is facilitated by promoting relaxing bodily responses. That is, participants were led to believe that providing relaxing states facilitates the learning process by strengthening the associations created (Ikemata & Momose, 2017; Yesavage et al., 1982). Particularly, they were told that the greater the comfort and calmness felt by the apprentice, the faster and more accurate would be the resulting learning experience. Then, the instructions were as follows: 'Your partner is

sitting down on a massage chair and you have the chance to help him or her.' Participants were then given a choice between nine vibration intensities in order of increasing comfortableness and pleasure, ranging from (1) *Low vibration* and (9) *High vibration*.

In addition to the vibrations, the participants could help their partner allowing him or her to enjoy some pleasant music. Again, participants were given a choice between nine different music durations in order of increasing relaxation and pleasure, ranging from (1) *Low time* and (9) *High time*. These two measures were significantly correlated,  $r(220) = .481$ ,  $p < .001$ , and were thus averaged to form one dependent measure of behaviour regarding helping another person ( $M = 7.07$ ;  $SD = 1.55$ ). Responses to this helping behaviour index were scored so that higher values represented the selection of a relatively more relaxing, and comfortable context, reflecting greater help to one's partner. This pleasure (vibration massage) paradigm (Davis & Brock, 1976) is an adaptation of a classic lab method to study aggression, namely the teacher-learner paradigm using electric shock or white noise, and we adapted it to examine helping behaviour (Buss, 1961; see also Bartholow et al., 2006; Bettencourt et al., 2006; Edguer & Janisse, 1994; Thomaes et al., 2008).

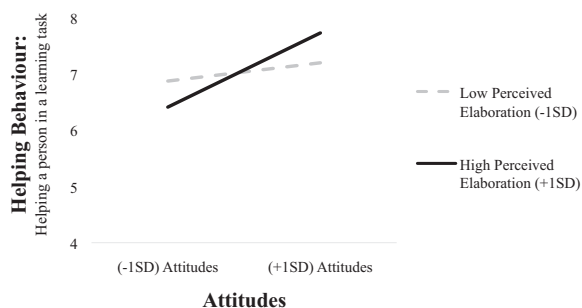
**Attitude certainty.** One item measured attitude certainty using a nine-point scale from (1) *Not at all certain* to (9) *Very certain* ( $M = 6.67$ ;  $SD = 2.31$ ). This measure has been shown to be an efficient way to assess attitude certainty in previous research (Tormala & Petty, 2002).

## 3.2 | Results

### 3.2.1 | Helping behaviour

As in Study 1, the behaviour of helping a particular person was submitted to a hierarchical regression analysis following the suggestions of Cohen and Cohen (1983). Attitudes toward helping (centered), perceived elaboration (centered), and the interaction term were entered as predictors. Main effects were interpreted in the first step of the regression and the two-way interaction in the second, final step. Results indicated a significant main effect of attitudes such that relatively more favourable attitudes toward helping were associated with greater helping behaviour,  $B = 0.318$ ,  $SE = 0.072$ ,  $t(224) = 4.410$ ,  $p < .001$ , 95% CI: [0.176, 0.460]. This is consistent with previous literature showing that attitudes are important in guiding prosocial behaviour. There was no main effect of elaboration on helping behaviour,  $B = -0.011$ ,  $SE = 0.087$ ,  $t(224) = -0.130$ ,  $p = .897$ , 95% CI: [-0.182, 0.160]. More importantly, a significant interaction between attitudes and perceived elaboration on helping behaviour was found,  $B = 0.157$ ,  $SE = 0.061$ ,  $t(223) = 2.565$ ,  $p = .011$ , 95% CI: [0.036, 0.277].<sup>4</sup>

As illustrated in Figure 2, this pattern revealed that participants' attitudes toward helping predicted the behaviour of helping another person in a learning task for participants reporting higher levels of perceived elaboration (+1SD),  $B = 0.477$ ,  $SE = 0.094$ ,  $t(223) = 5.051$ ,  $p < .001$ , 95% CI: [0.291, 0.664], but not for those reporting lower elaboration (-1SD),  $B = 0.118$ ,  $SE = 0.106$ ,  $t(223) = 1.111$ ,  $p = .268$ , 95% CI: [-0.091, 0.326]. In other words, among participants with higher levels



**FIGURE 2** Helping behaviour as a function of attitudes toward helping (plotted at +1 and -1 SD), and the extent of perceived elaboration (plotted at +1 and -1 SD) in Study 2. Helping behaviour ranged from 1 to 9.

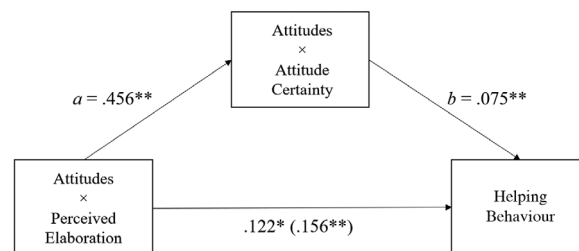
of perceived elaboration (+1 SD), attitudes toward helping were positively associated with greater helping behaviour, but for participants with lower levels of perceived elaboration (-1 SD), no significant relationship was found.

### 3.2.2 | Attitude certainty

Participants' certainty in their attitudes was submitted to the same hierarchical regression analysis. Attitudes toward helping (centered), perceived elaboration (centered), and the interaction term were entered as predictors. Results indicated that the main effect of perceived elaboration on attitude certainty was in the predicted direction, such that relatively higher levels of perceived elaboration tended to be associated with greater attitude certainty,  $B = 0.234$ ,  $SE = 0.134$ ,  $t(221) = 1.745$ ,  $p = .082$ , 95% CI: [-0.030, 0.499]. No other effects reached significance ( $ps > .699$ ).

### 3.2.3 | Mediation analysis

To examine whether the extent of attitude certainty mediated the effect of the key theorized interaction on attitude-behaviour correspondence, a mediated moderation test using bootstrapping methods was conducted (Muller et al., 2005). In this procedure, attitudes toward helping, the extent of perceived elaboration and attitude certainty were mean centered. To test the hypothesized mediation by attitude certainty, we conducted a biased corrected bootstrapping procedure with 10,000 bootstrap re-samples using Hayes process macro (Model 4; Preacher & Hayes, 2004; Shrout & Bolger, 2002). In this analysis, Attitudes  $\times$  Extent of Perceived Elaboration was a predictor variable, helping behaviour was a dependent variable, and Attitudes  $\times$  Attitude Certainty was a mediating variable (see Figure 3). Attitudes, perceived elaboration, and attitude certainty were included as covariates. This approach includes procedures that compute a 95% CI around the indirect effect and mediation is indicated if this CI does not include zero. As predicted, the result of this bootstrapping procedure revealed that the 95% CI of the indirect effect (i.e., the path through the mediator) did not include zero (Indirect Effect  $a \times b = .034$ , 95% CI = [0.001,



**FIGURE 3** Mediation model showing the effect of Attitudes  $\times$  Perceived Elaboration, as mediated by Attitudes  $\times$  Attitude Certainty on helping behaviour in Study 2. The figure in parenthesis is the total effect of Attitudes  $\times$  Perceived Elaboration on helping behaviour. \*  $p = .052$ ; \*\*  $p < .050$ .

0.119]). Therefore, the mediation by attitude certainty is supported as plausible.<sup>5</sup>

## 3.3 | Discussion

The results of Study 2 conceptually replicated previous results showing that attitudes toward helping are associated with greater actual helping behaviour (Erlandsson et al., 2018; Graziano et al., 2007; see also Jonas et al., 2002), but this was moderated by perceived extent of thinking. Specifically, the results showed that attitudes toward helping predicted the behaviour of helping a particular person in a learning task (prosocial behaviour) to a greater extent among participants reporting a higher extent of perceived elaboration. That is, perceived elaboration was found to moderate the previously identified effect of attitudes toward helping on prosocial behaviour, conceptually replicating Study 1. Also importantly, this study found that the impact of perceived elaboration on attitude-behaviour correspondence was plausibly mediated by attitude certainty. This finding provides convergent evidence along with Barden and Petty (2008).

Thus, building on the results of the first two studies, we recommend the use of perceived elaboration items as being a useful tool in any domain in which attitudes can guide behaviour. As shown, questions about perceived elaboration are easy for researchers and practitioners to use, and people find them easy to answer. Beyond their ease of use and efficiency, we recommend including perceived elaboration measures because they can increase the predictive validity of the attitudinal measures. Using more than 2 or 3 items in the measure of perceived elaboration would be desirable to increase reliability, but it is important noting that those items were sufficient to detect the predicted effect in Studies 1 and 2.

Although demonstration of a measurement tool to prognosticate behavioural prediction is important, the correlational nature of the first two studies leaves them open to several interpretations. Given that perceived elaboration in the first two studies was measured rather than manipulated, there might be some confounding variables that co-vary with perceived elaboration (e.g., knowledge, altruism, etc.). Although it seems most likely that assessments of perceived elaboration are based on actual levels of elaboration, the alternative

potential confounds cannot be ruled out in the first two studies. In order to address this issue, as well as to generalize our results even further, we focused on a different prosocial outcome and moved to an experimental design by manipulating perceived elaboration. That is, our next study aimed to analyse a different prosocial outcome and to establish the causal role of the core construct by manipulating the extent of perceived elaboration. Lastly, Study 3 aimed to improve on the connection (i.e., specificity matching) between the attitudes and behavioural measures relative to the first two studies (Study 1: group fusion predicts donation to an individual member of the group; Study 2: general attitudes toward helping predicts helping a particular person). Although this lack of specificity could speak to the generality of the results, we wanted to clarify whether the effect found depended on the relative lack of an obvious connection between measures. For that purpose, Study 3 was designed to have a higher level of specificity between the attitudinal measure and the behavioural measure.

## 4 | STUDY 3

This study aimed to replicate and extend the findings of the previous studies with a focus on examining the causal role of perceived elaboration, and to generalize the results to a new domain. Therefore, this study introduced several important changes. First, participants received a proposal that presented information about a job candidate. After reading the *curriculum vitae* (CV) of the job candidate, perceived elaboration was manipulated (rather than measured as in the previous studies) to be relatively high or low. Then, participants reported their attitudes toward the candidate. Finally, participants were asked to report their intentions to defend a job candidate and decide whether they would support the hiring of the candidate in a meeting in which they were presumably going to be involved. As noted, in this study the attitudinal measure and the behavioural outcome had a higher level of specificity (both related to a particular job candidate) in accord with recommendations to enhance ABC overall (Ajzen & Fishbein, 1977) and thus provide a stronger test of the moderation hypothesis. Attitude certainty was not measured in this study to avoid making this construct salient along with the manipulation.

Despite all these variations, we predicted the same interaction between attitudes and (manipulated) perceived elaboration in guiding behavioural intentions. Specifically, it was expected that the attitudes of participants assigned to the high perceived elaboration condition would have more impact on intentions to defend and hire the candidate compared to the attitudes of those assigned to the low perceived elaboration condition.

## 4.1 | Method

### 4.1.1 | Participants and design

Three hundred and thirty-two Spanish undergraduate students (281 women, 49 men, and two unidentified;  $M_{age} = 19.70$ ;  $SD = 2.34$ ) par-

ticipated in this study in exchange for course credit. Participants were randomly assigned to conditions in a Perceived Elaboration (High vs. Low)  $\times$  Attitudes (continuous variable) design. Defending intentions and hiring decisions were measured as the key dependent variables. An a priori power analysis was conducted using *G\*Power* (Faul et al., 2009). Based on the average effect size for the interaction in Study 1 (Cohen's  $f^2 = .029$ ) and Study 2 (Cohen's  $f^2 = .030$ ), results indicated that the desired sample size for a two-tailed test ( $\alpha = .05$ ) with .80 power was  $N = 273$  participants. Our final sample size exceeded the estimated one (332 participants) because we wanted to be sure we had enough participants to detect the effect even if it was smaller than anticipated because of the manipulation of perceived elaboration rather than using a continuous measure.<sup>6</sup>

### 4.1.2 | Procedure

Permission to conduct the study was provided by the university institutional ethics committee before the study began. Upon arrival, participants were told that they would have to attend a meeting at the end of the study. The main goal of the meeting would be to reach a consensus opinion on a discussion topic. Then, participants received the CV with the merits of a job candidate. This information about a job candidate, which constituted the discussion topic, was adapted from prior research (e.g., Briñol et al., 2012). It contained information such as her degrees, professional experience in well-known corporations, and indicated that she spoke three relevant languages, and had high knowledge about specific software programs. After examining the CV of the job candidate, all participants were randomly assigned to one of the two perceived elaboration conditions (high vs. low). Afterwards, all participants were told that before attending the meeting mentioned at the beginning of the study, they would have to indicate what position they would prefer to take in the upcoming discussion. Specifically, participants were asked to report their intentions to defend the candidate in the meeting and then whether they would support hiring the candidate. The cover story for the previous position choice tasks was that this would allow the researchers to create different discussion groups based on their preferences. Finally, participants were debriefed, thanked, and dismissed.

### 4.1.3 | Measures

#### *Independent/predictor variables*

*Manipulated perceived elaboration.* After reading the CV of a candidate, all participants were asked to complete a questionnaire regarding their level of attention and thinking. The attention and thinking questionnaire for those in the low perceived elaboration condition included four questions in which the responses were framed to imply low degrees of attention, thinking, importance and personal relevance. For example, participants in this condition rated their attention, extent of thinking, importance of the issue and degree of personal relevance on four nine-point semantic differential scales, where (1)



represented *No attention/thinking/importance/personal relevance* and (9) represented *Some attention/thinking/importance/personal relevance*. Therefore, regardless of the scores provided by participants, all responses implied relatively low attention, thinking, importance, and personal relevance. When issues are low in personal relevance, people tend not to think about them much (Petty & Cacioppo, 1979).

In contrast, for those in the high perceived elaboration condition, the questionnaire included the same questions, but the answers were framed to imply high degrees of attention, thinking, importance and personal relevance. That is, these participants rated the extent of their attention and thinking along with the degree of importance and personal relevance on four nine-point semantic differential scales, where (1) represented *Some attention/thinking/importance/personal relevance* and (9) represented *High attention/thinking/importance/personal relevance*. With this procedure, the minimum score that participants could answer already implied some degree of attention, thinking, importance and personal relevance. Once the questionnaire was completed, all participants were asked to add up the number that appeared in their responses to obtain a final score that could range from 4 to 36 points. The score in the attention and thinking questionnaire for participants in the low perceived elaboration condition ( $M = 24.19$ ;  $SD = 5.55$ ) and the score of those assigned to the high perceived elaboration condition ( $M = 25.41$ ;  $SD = 6.47$ ) are not directly comparable. Because different scales were used, the same number in the high elaboration condition implies a higher level of thinking than in the low elaboration condition. For a simple example, scoring 9 in the high elaboration condition implied 'high' attention, but in the low elaboration condition a nine implied 'some' attention.

After that, as part of this manipulation of perceived elaboration, participants were given feedback supposedly generated from prior data collected from their peers in the same study. This bogus feedback was presented in a chart whose information was manipulated to lead participants to believe that their score was relatively high or low, depending on the condition. Specifically, participants in the low (vs. high) perceived elaboration condition were led to believe that they had obtained a lower score in the attention questionnaire than their fellow students. Bogus feedback is a standard and widely used procedure to vary perceptions and has been used with success in previous research (Davis & Brock, 1975; Grunschlag et al., 2020; Valins, 1966).<sup>7</sup> This manipulation of the perceived elaboration was designed to influence the participant's perception of their actual thought independently of their objective extent of thought (for similar procedure, see Barden & Petty, 2008).<sup>8</sup>

**Attitudes.** Attitudes toward the job candidate were assessed using the same four 9-point semantic differential scales as in the previous study. Specifically, the items used asked participants if they liked the candidate on a *dislike-like* scale, as well as if their general evaluation was *negative-positive*, *bad-good*, and *unfavourable-favourable* ( $M = 7.10$ ;  $SD = 1.89$ ). Item-ratings were highly intercorrelated ( $\alpha = .94$ ) and were averaged to create a merged attitude index. Responses to these attitude scales were scored so that higher values represented more favourable attitudes toward the candidate.

## Dependent variables

**Defending the candidate.** Participants were led to believe that they would have to attend a meeting to reach a consensus opinion at the end of the study. Before joining this supposed meeting, they were asked to answer one question regarding their intentions to defend the candidate: 'To what extent would you be willing to defend the candidate?' (1 = *I will not defend the candidate* to 9 = *I will defend the candidate*;  $M = 5.41$ ;  $SD = 2.39$ ).

**Hiring decision.** Again, before attending the supposed meeting, we recorded whether participants showed their commitment to the hiring proposal by deciding whether they supported such hiring. We coded that variable as 0 = *I do not support the hiring* and 1 = *I support the hiring*. Overall, 82.8% of participants showed their support of the proposal to hire the job candidate.

## 4.2 | Results

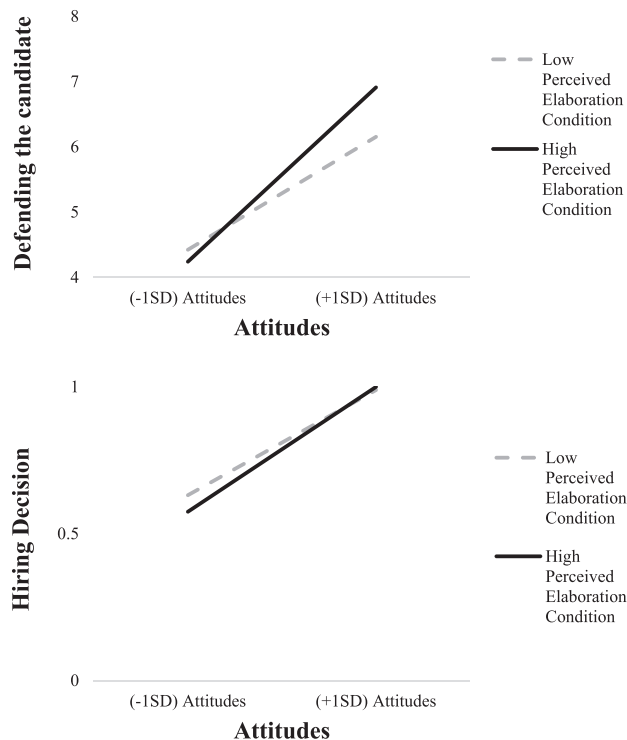
### 4.2.1 | Defending the candidate

To test whether attitudes toward the candidate had a differential impact on participants' intentions to defend the candidate as a function of the manipulation of perceived elaboration, we conducted a hierarchical regression analysis following the suggestions of Cohen and Cohen (1983). Attitudes (centered), perceived elaboration (manipulated dichotomous variable), and their interaction were entered as our predictor variables. Main effects were interpreted in the first step of the regression and the two-way interaction in the final step. Replicating the findings of previous research, results revealed a main effect of attitudes toward the candidate,  $B = 0.580$ ,  $SE = 0.062$ ,  $t(329) = 9.371$ ,  $p < .001$ , 95% CI: [0.458, 0.701], such that reporting more favourable attitudes was associated with a higher likelihood of defending the candidate. There was no main effect of perceived elaboration on defending intentions,  $B = 0.288$ ,  $SE = 0.234$ ,  $t(329) = 1.229$ ,  $p = .220$ , 95% CI: [-0.173, 0.748].

More interestingly, a two-way interaction between attitudes toward the candidate and perceived elaboration on defending intentions emerged,  $B = 0.248$ ,  $SE = 0.123$ ,  $t(328) = 2.015$ ,  $p = .045$ , 95% CI: [0.006, 0.490]. As predicted and shown in Figure 4 (top panel), the interaction between attitudes and perceived elaboration showed that the effect of attitudes on the intentions to defend the candidate was significantly greater for participants who were assigned to the high perceived elaboration condition,  $B = 0.705$ ,  $SE = 0.087$ ,  $t(328) = 8.058$ ,  $p < .001$ , 95% CI: [0.533, 0.877], than for those who were assigned to the low perceived elaboration condition,  $B = 0.457$ ,  $SE = 0.087$ ,  $t(328) = 5.268$ ,  $p < .001$ , 95% CI: [0.286, 0.627].

### 4.2.2 | Hiring decision

Participants' decision to support the hiring proposal was submitted to a logistic binary regression analysis using perceived elaboration (manipulated dichotomous variable), attitudes (centered) and their interaction as predictor variables. Again, main effects were interpreted in the



**FIGURE 4** Top panel: Behavioural intentions regarding defending the candidate as a function of attitudes toward the candidate (plotted at +1 and -1 SD) and manipulated perceived elaboration (Low vs. High) in Study 3. Defending intentions ranged from 1 to 9. Bottom Panel: Decision to support the hiring of a candidate as a function of attitudes toward the candidate (plotted at +1 and -1 SD), and manipulated perceived elaboration (Low vs. High) in Study 3. Hiring decision coded as 0 = 'I do not support the hiring' and 1 = 'I support the hiring.'

first step of the regression and the two-way interaction in the second step (Cohen & Cohen, 1983). Results revealed a main effect of attitudes,  $B = 1.305$ ,  $SE = 0.157$ ,  $z = 8.312$ ,  $p < .001$ , 95% CI: [0.997, 1.612], such that participants with more favourable attitudes toward the candidate were more likely to support the hiring than participants with less favourable attitudes. There was no main effect of perceived elaboration,  $B = 0.050$ ,  $SE = 0.454$ ,  $z = 0.110$ ,  $p = .912$ , 95% CI: [-0.840, 0.940].

More importantly, a two-way interaction between attitudes and perceived elaboration emerged,  $B = 0.848$ ,  $SE = 0.412$ ,  $z = 2.058$ ,  $p = .040$ , 95% CI: [0.040, 1.656]. As predicted and shown in Figure 4 (bottom panel), the interaction showed that the effect of attitudes on the decision to support the candidate was greater for participants who were assigned to the high perceived elaboration condition,  $B = 1.888$ ,  $SE = 0.375$ ,  $z = 5.032$ ,  $p < .001$ , 95% CI: [1.153, 2.624], than for those who were assigned to the low perceived elaboration condition,  $B = 1.040$ ,  $SE = 0.171$ ,  $z = 6.101$ ,  $p < .001$ , 95% CI: [0.706, 1.374].

### 4.3 | Discussion

This study revealed that attitudes toward a job candidate were associated with the intentions to defend the candidate and the decision to

support the hiring of that candidate, replicating previous research in this domain (Lu et al., 2011; Nelissen et al., 2016). Most importantly, Study 3 replicated the effect of perceived elaboration on the relationship between attitudes and prosocial behaviour, using different measures and operationalizations than those of the first two studies. In fact, we generalized such effects to a different behavioural intentions measure (willingness to defend), as well as to a different behavioural decision (hiring).

Most importantly, Study 3 manipulated participants' perceptions of elaboration providing initial evidence of the causal role of this construct. The induction of perceived elaboration in this study was presented after people had been exposed to and processed the CV of the job candidate. Thus, it is unlikely to have affected how much thinking people actually did about the candidate (objective elaboration). It is worth noting that the manipulation used in this study could have confounded perceived elaboration and importance since both were mentioned in the instructions. Therefore, a final study was designed to replicate the results with a more direct manipulation of perceived elaboration and to gain ecological validity by including a clearer measure of actual prosocial behaviour.

## 5 | STUDY 4

This study aimed to replicate and extend the findings of the previous studies. Thus, several important changes were introduced. First, we varied the attitudinal object using a proposal about implementing comprehensive exams. Compared to the Human Resources topic used in the previous study, this is a much more familiar and realistic domain for students. Second, and most importantly, the causal role of perceived elaboration was examined using a more direct manipulation of this construct that did not involve any bogus feedback or fictional information, and that did not mention topic importance. Specifically, the new manipulation consisted of asking participants to recall past episodes in which they thought very much (vs. very little). Third, an appropriate manipulation check for this induction was included, along with additional ancillary measures about topic importance and attention. A fourth change was the inclusion of actual prosocial behaviour regarding the enrolment in a real mentoring programme designed to help students to prepare for exams. Although behavioural intentions are generally reliable predictors of behaviour (e.g., Bleske-Rechek et al., 2010; Fishbein & Ajzen, 2010; Webb & Sheeran, 2006; see Morwitz & Munz, 2020 for a review), this final study was designed to examine actual behaviour and generalization to natural settings. Fifth, even though a single item to measure attitude certainty was sufficient to detect the predicted mediation effect in Study 2 and in previous research (e.g., Tormala & Petty, 2002), including more items would be desirable. Thus, this final study also included a more reliable measure of the proposed mediator (attitude certainty) to examine, once again, the psychological mechanism underlying the effect.

Despite these variations, we predicted the same interaction between attitudes toward the exam proposal and perceived elaboration in guiding actual prosocial behaviour relevant to the proposal.

Specifically, it was expected that the attitudes of participants assigned to the high perceived elaboration condition would have more impact on actual helping behaviour relative to the attitudes of those assigned to the low perceived elaboration condition. Furthermore, it was expected that this effect would occur because participants in the high perceived elaboration conditions would hold their attitudes with a greater degree of certainty.

## 5.1 | Method

### 5.1.1 | Participants and design

Two hundred and one Spanish undergraduate students (164 women, 31 men, and 6 unidentified;  $M_{age} = 19.56$ ;  $SD = 1.26$ ) participated in this study by completing an online survey via Qualtrics in exchange of course credit.<sup>9</sup> Participants were randomly assigned to conditions in a two-cell design (Manipulated Perceived Elaboration: High vs. Low) with attitudes as an additional continuous predictor. Helping choice was the key dependent variable. An a priori power analysis was conducted using G\*Power (Faul et al., 2009). Given that the dependent measure of this study was dichotomous, the a priori analysis was calculated based on the effect size obtained for the interaction in the dichotomous dependent variable of Study 3, Odds Ratio [OR] = 2.336 (Cohen's  $f^2 = .054$ ). Results indicated that the desired sample size for a two-tailed test ( $\alpha = .05$ ) with .80 power was  $N = 235$  participants. Our final sample size was determined by the number of participants that we were able to collect by the end of the academic quarter, resulting in 201 participants (around 50 participants per condition). That sample size allowed us to detect an effect size of OR = 1.500 (Cohen's  $f^2 = .012$ ) with .80 power.

### 5.1.2 | Procedure

Participants were told that a university committee was considering whether senior comprehensive exams should be adopted, and that student feedback was being solicited in response to this proposal. Then, participants received a message composed of compelling arguments in favour of instituting senior comprehensive exams at their university adapted from prior research (Petty & Cacioppo, 1986). After reading the proposal, all the participants were randomly assigned to one of the two perceived elaboration conditions. After this induction, participants reported their attitudes toward the exam proposal and their certainty in those attitudes. Then, a real programme designed to mentor other students to prepare for exams was introduced. Participants had the opportunity to enrol in this programme and we recorded whether participants signed up. At the end of the study, participants completed manipulation checks and some ancillary measures, and filled out several socio-demographic questions. Finally, they were debriefed, thanked, and dismissed.

### 5.1.3 | Measures

#### *Independent/predictor variables*

**Manipulated perceived elaboration.** After reading the exam proposal, participants were randomly assigned to either a high or low perceived elaboration condition. In the high perceived elaboration condition, participants were asked to recall and describe at least two situations where they had thought very much in the past. In the low perceived elaboration condition, participants were asked to recall and describe at least two situations where they had thought very little. This manipulation was designed to lead people to misattribute the feelings associated with those past situations to the current context, even though they were totally independent events. That is, if participants were reminded of times in the past where they thought a lot or a little about something, they would plausibly make the same inference for this situation. Equivalent priming procedures based on recalling past episodes have been used in prior research to vary meta-cognitive perceptions of thinking and feeling (e.g., Paredes et al., 2021; Petty et al., 2002; Requero et al., 2021; Schwarz & Clore, 1983; Stavrakaki et al., 2021; Strack et al., 1985).

**Attitudes.** Attitudes toward the exam proposal were assessed using the same four 9-point semantic differential scales as in the previous studies: *dislike-like*, *negative-positive*, *bad-good*, and *unfavourable-favourable*. Item-ratings were highly intercorrelated ( $\alpha = .93$ ) and were averaged to create a merged attitude index ( $M = 4.36$ ;  $SD = 2.07$ ). Responses to these attitude scales were scored so that higher values represented more favourable attitudes toward the exam proposal.

#### *Dependent variables*

**Manipulation checks.** At the end of the study, participants completed one manipulation check item to ensure the induction created the intended pattern on subjective elaboration. Specifically, participants had to answer a question about the extent of perceived elaboration using the scale: (1) *I did not think at all* (9) *I thought very much* about comprehensive exams ( $M = 7.35$ ;  $SD = 1.18$ ). Furthermore, a question about participants' perception of importance of the exams was also included in this study to check whether the manipulation of perceived elaboration inadvertently affected this construct. Specifically, participants had to answer a question about the extent of personal importance of the attitude issue using the scale: For me, comprehensive exams are (1) *not important at all* (9) *extremely important* ( $M = 6.82$ ;  $SD = 1.91$ ).<sup>10</sup>

**Helping choice.** A real programme designed to mentor and help other students to prepare for exams was presented to participants (<https://alumni.uam.es/avanza/mentorla>). After learning about this programme at their university, participants had the opportunity to enrol in it themselves. Their participation in the programme involved their acceptance of being directly assigned as a mentor for other students. Signing up for the programme involved meeting twice with a maximum of three students. We recorded whether participants fulfilled and signed the official form to join the helping programme. That variable was coded as

0 = No and 1 = Yes. About half of the students signed up to be a mentor to help other students to get ready for their exams (53.2%).

**Attitude certainty.** Four items were used to measure attitude certainty all on 9-point scales from *not at all* (1) to *very* (9): 'How certain [confident, sure, valid] is your opinion about Senior Comprehensive Exams?' ( $M = 7.15$ ;  $SD = 1.11$ ). These items have been used in past research to assess attitude certainty (Barden & Petty, 2008; Petrocelli et al., 2007; Rucker et al., 2008). Responses were averaged to form an overall index ( $\alpha = .72$ ).

## 5.2 | Results

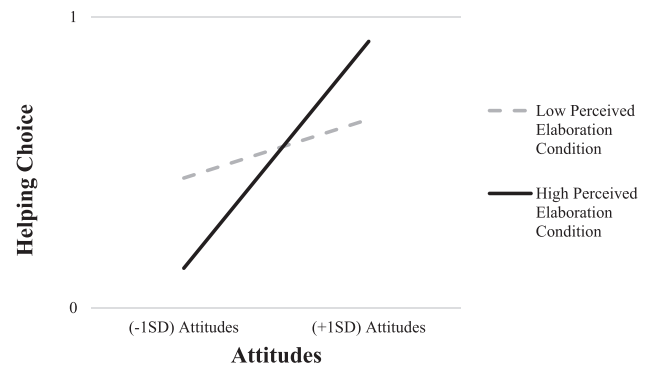
### 5.2.1 | Manipulation checks

Following the suggestions of Cohen and Cohen (1983), reported levels of elaboration were submitted to a hierarchical regression analyses using perceived elaboration (manipulated dichotomous variable), attitudes (centered) and their interaction as predictor variables. Main effects were interpreted in the first step of the regression and the two-way interaction in the second, final step. Results showed a main effect of manipulated perceived elaboration on the perceived elaboration measure, such that participants assigned to recall past episodes of high thinking reported higher levels of perceived thinking about the exams than those assigned to the low perceived elaboration condition,  $B = 0.283$ ,  $SE = 0.081$ ,  $t(198) = 3.485$ ,  $p = .001$ , 95% CI: [0.123, 0.442]. No other effects reached significance ( $ps > .354$ ). The same analysis was conducted on the control measure of perceived importance and the results revealed that no effects reached significance ( $ps > .160$ ).

### 5.2.2 | Helping choice

To test whether attitudes had a differential impact on helping as a function of perceived elaboration, a logistic binary regression analysis was conducted on helping choice, with attitudes (centered), manipulated perceived elaboration (dichotomous variable), and the interaction term (Attitudes  $\times$  Manipulated Perceived Elaboration) entered as predictors. Main effects were interpreted in the first step of the regression and the two-way interaction in the second step (Cohen & Cohen, 1983). Results revealed a main effect of attitudes on helping,  $B = 0.483$ ,  $SE = 0.086$ ,  $z = 5.616$ ,  $p < .001$ , 95% CI: [0.314, 0.651], such that participants with more favourable attitudes were more likely to enrol in the mentoring programme. There was no main effect of perceived elaboration,  $B = -0.049$ ,  $SE = 0.157$ ,  $z = -0.312$ ,  $p = .753$ , 95% CI: [-0.357, 0.259].

Most importantly, a significant two-way interaction between attitudes and perceived elaboration emerged,  $B = 0.412$ ,  $SE = 0.110$ ,  $z = 3.741$ ,  $p < .001$ , 95% CI: [0.196, 0.628]. The effect size of this two-way interaction is  $OR = 1.510$ , 95% CI: [1.217, 1.875] (Cohen's  $f^2 = .013$ ). As predicted, this interaction showed that the effect of attitudes on helping choice was significantly greater for participants who were assigned to the high perceived elaboration condition,  $B = 1.025$ ,



**FIGURE 5** Enrolment in the mentoring programme to help others with exams as a function of attitudes (plotted at +1 and -1 SD), and manipulated perceived elaboration (Low vs. High) in Study 4. Helping choice coded as 0 = 'No' and 1 = 'Yes.'

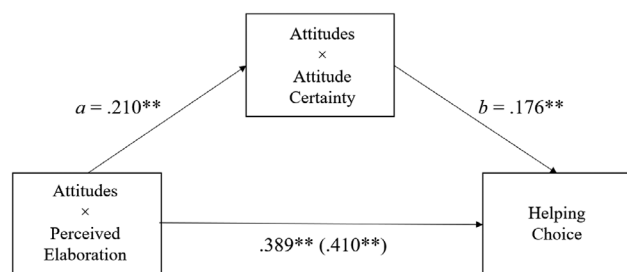
$SE = 0.100$ ,  $z = 5.223$ ,  $p < .001$ , 95% CI: [0.640, 1.409], than for those assigned to the low perceived elaboration condition,  $B = 0.200$ ,  $SE = 0.196$ ,  $z = 1.989$ ,  $p = .047$ , 95% CI: [0.003, 0.397] (see Figure 5).

### 5.2.3 | Attitude certainty

Participants' certainty in their attitudes was submitted to the same hierarchical regression analysis. Attitudes (centered), perceived elaboration (manipulated dichotomous variable), and their interaction were entered as predictor variables. As expected, there was a significant main effect of manipulated elaboration on attitude certainty,  $B = 0.211$ ,  $SE = 0.077$ ,  $t(198) = 2.749$ ,  $p = .007$ , 95% CI: [0.060, 0.363]. No other effects reached significance ( $ps > .170$ ).

### 5.2.4 | Mediation analysis

To examine whether attitude certainty was a plausible mediator of the effect of the key theorized interaction between attitudes and perceived elaboration on behaviour, a mediated moderation test was conducted using bootstrapping methods (Muller et al., 2005). In this procedure, manipulated perceived elaboration was contrast coded (i.e., low perceived elaboration = -1, high perceived elaboration = 1) and both attitudes and attitude certainty were mean centered. To test the hypothesized mediation by attitude certainty, we conducted a biased corrected bootstrapping procedure with 10,000 bootstrap re-samples using Hayes process macro (Model 4; Preacher & Hayes, 2004; Shrout & Bolger, 2002). In this analysis, Attitudes  $\times$  Perceived Elaboration was a predictor variable, helping choice was the dependent variable, and Attitudes  $\times$  Attitude Certainty was a mediating variable (see Figure 6). Attitudes, manipulated perceived elaboration, and attitude certainty were included as covariates. This approach includes procedures that compute a 95% CI around the indirect effect and mediation is indicated if this CI does not include zero. As predicted, the result of this bootstrapping procedure revealed that the 95% CI of the indirect effect (i.e., the path through the mediator) did not include zero (Indirect Effect  $a \times$



**FIGURE 6** Mediation model showing the effect of Attitudes  $\times$  Perceived Elaboration, as mediated by Attitudes  $\times$  Attitude Certainty on helping choice in Study 4. The figure in parenthesis is the total effect of Attitudes  $\times$  Perceived Elaboration on helping choice.

\*\* $p < .050$ .

$b = .037$ , 95% CI = [0.002, 0.104]). Therefore, the mediation by attitude certainty is supported as plausible.<sup>11</sup>

### 5.3 | Discussion

This study revealed that attitudes toward a persuasive proposal were associated with more prosocial behaviour, as indicated by participants' actual enrolment in a mentoring programme related to the proposal. Despite all the variations in materials, measures, and inductions, the results of this final study replicated one more time the effect of perceived elaboration in moderating the relationship between attitudes and prosocial behaviour. Furthermore, this study also found convergent evidence regarding the mediation process and moves from behavioural intentions to actual behavioural outcomes in a more natural setting. As predicted, the impact of perceived elaboration on attitude-behaviour correspondence was mediated by changes in attitude certainty. Beyond ruling in attitude certainty as a plausible mediator, the final study also ruled out potential confounds (e.g., topic importance and objective variations in attention).

## 6 | GENERAL DISCUSSION

The findings of these studies showed that the greater the perceived elaboration about one's attitude, the greater that attitude's predictive ability is to guide prosocial behaviour. We demonstrated that attitudes based on high perceived elaboration predicted prosocial behaviour better than attitudes based on low perceived elaboration whether perceived elaboration was measured or manipulated (e.g., Barden & Petty, 2008; Cancela et al., 2016; Requero et al., 2020).

As revealed in Studies 2 and 4, people rely on their attitudes more because they perceived them to be more valid (greater attitude certainty) when based on higher perceived thinking. The findings were robust across topics, including positive views of one's group in the first study, attitudes toward helping in the second study, attitudes toward a job candidate in the third study and attitudes toward comprehensive exams in the fourth study. Furthermore, we observed the same outcome regardless of the type of prosocial behaviour analysed (e.g., donation to an ingroup member in the first study, actual helping of a

particular person in a learning task in the second study, intentions to defend a job candidate and decision to support or not support such hiring in a meeting in the third study, and enrolment in a real mentoring programme designed to help students to prepare for exams in the fourth study). That is, we showed the same pattern of results using different attitude objects, different inductions, and different measures of prosocial behaviour. Furthermore, the results replicated regardless of the order in which measures were taken. In Studies 1 and 2, where perceived elaboration was measured, this variable was assessed after attitude measurement. In Studies 3 and 4, in which perceived elaboration was manipulated, this variable was induced after people were exposed to and processed the message and before measuring attitudes. The results were very similar across studies suggesting that the placement of the assessment was not critical for the effects to emerge.

As said previously, we demonstrated for the first time the importance of taking into consideration not only participants' attitudes but also their extent of perceived elaboration about their attitudes while trying to promote prosocial behaviour. Importantly, we provided evidence for the mediation of perceived elaboration effects. Specifically, in accord with Barden and Petty (2008) we found that perceived elaboration effects on prosocial behaviour were mediated by the extent of certainty individuals had in their attitudes. Additionally, Studies 3 and 4 demonstrated the *causal* role of perceived elaboration by manipulating perceptions of high versus low elaboration. That is, in this research, prosocial and helping behaviours depended not only on the favourability of the attitudes, but also on meta-cognitive assessments such as how much elaboration participants reported (perceived elaboration) and, as illustrated in Studies 2 and 4, on the certainty with which people held their attitudes.

In this research, we have introduced a new way to enhance prediction of prosocial behaviours by assessing both perceived elaboration and attitude certainty. Indeed, attitude certainty was the proximal mediator of behaviour, and therefore measuring meta-cognitive certainty can be highly beneficial for research in this domain, as it has been important in predicting behaviour in many other applied domains (e.g., Paredes et al., 2020, 2021; Santos et al., 2019; Shoots-Reinhard et al., 2015; Vitriol et al., 2019). Although attitude certainty was found to be the proximal mediator, we focused on perceived elaboration because people might naturally reflect on how much thinking they have done before deciding to act (Barden & Petty, 2008). Even if we would predict that assessing or manipulating any strength indicator beyond perceived elaboration could also affect attitude certainty and attitude-behaviour correspondence, future studies need to assess that possibility in the domain of prosocial behaviour.

This research contributes to current trends in meta-cognition and evaluation research revealing that people can infer greater certainty in the absence of any structural difference underlying attitudes, merely by leading people to think that they have done much thinking about the attitude object even if they have not. As revealed in the present research, the certainty that comes from simple inferences rather than structural differences is important because it predicts actual prosocial behaviour. As noted, over the last few decades, an important body of research has turned from the traditional focus on attitudes per se in predicting behaviour to understanding which attitudes will be more



predictive such as those perceived to be based on considerable thinking and certainty. As illustrated in the current studies, influencing meta-cognitions was critical for enhancing behavioural prediction.

Future research could benefit from examining the conditions under which perceived elaboration is more likely to produce the effects found with regard to attitude-behaviour correspondence. For example, for those who enjoy thinking (e.g., people high in Need for Cognition; Cacioppo & Petty, 1982) and in situations where thinking is desirable (e.g., high personal relevance; Petty & Cacioppo, 1979), the effect of the perceived elaboration could be even greater. Alternatively, if these and other potential factors related to thinking were controlled, measuring perceived elaboration might have less room to contribute to additional prediction.

Finally, this research assumes that perceived elaboration is associated with a relatively positive meaning. Depending on the person and the situation, perceived elaboration could be associated with high validity meanings (certainty, motivation, ability, intelligence, ease, etc.) or with low validity meanings (difficulty, depletion, lack of motivation, rumination, etc.). We assumed that perceived elaboration had a positive meaning by default in our research, as illustrated by the results on certainty. If the naïve theories about perceived elaboration vary from high validity (certainty) to low validity (doubts, rumination) then the obtained effects on ABC might also change (Briñol et al., 2018). For example, if people inferred from high thinking that they were confused or puzzled by the attitude object, these perceptions could reduce attitude-behaviour consistency.

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## ETHICS

Permission to conduct this research was provided by the university institutional ethics committee before the studies began [UAM-CEI 104-2009; 14 February, 2020].

## CONFLICTS OF INTEREST

We have no known conflict of interest to disclose.

## DATA AVAILABILITY STATEMENT

Data were not analysed before finishing the collection of all participants. All relevant measures and manipulations in these studies are reported. Data for all studies can be found at <https://osf.io/srvb8/>

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## NOTES

- <sup>1</sup> If we analyse the data with the first 264 participants, the two-way interaction between group fusion and perceived elaboration on pro-group behaviour remains significant,  $B = 0.953$ ,  $SE = 0.296$ ,  $t(260) = 3.225$ ,  $p = .001$ , 95% CI: [0.371, 1.535].
- <sup>2</sup> The correlation between group fusion and perceived elaboration was not significant,  $r(279) = .039$ ,  $p = .510$ .
- <sup>3</sup> The correlation between attitudes toward helping and perceived elaboration was not significant,  $r(225) = .076$ ,  $p = .253$ .
- <sup>4</sup> When the two different measures that formed the general index of behaviour regarding helping a person in a learning task were analysed separately, the interaction between attitudes and perceived elaboration remained significant for *pleasant music duration*,  $B = 0.193$ ,  $SE = 0.071$ ,  $t(221) = 2.723$ ,  $p = .007$ , 95% CI: [0.053, 0.333]. With regard to *massage vibration intensity*, the interaction was not significant but followed the same tendency,  $B = 0.114$ ,  $SE = 0.074$ ,  $t(220) = 1.543$ ,  $p = .124$ , 95% CI: [-0.032, 0.260].
- <sup>5</sup> In addition to Model 4, we also used Model 15 in Hayes process macro for testing mediation (Preacher & Hayes, 2008). The result of this bootstrapping procedure with 10,000 bootstrapped re-samples revealed that the predicted interaction between attitude certainty and attitudes on helping behaviour was significant ( $p = .024$ ) and the interaction between perceived elaboration and attitudes was close to significance ( $p = .052$ ). That is, the results of Model 15 for Study 2 replicated the pattern obtained with Model 4, revealing that attitude certainty was a plausible mediator (indirect effect,  $B = .017$ , 95% CI = [0.001, 0.058]).
- <sup>6</sup> If we analyse the data with the first 273 participants, the two-way interaction between attitudes toward the candidate and perceived elaboration was significant on hiring decisions,  $B = 0.933$ ,  $SE = 0.447$ ,  $z = 2.089$ ,  $p = .037$ , 95% CI: [0.058, 1.809] and trending when the dependent variable was defending the candidate,  $B = 0.242$ ,  $SE = 0.128$ ,  $t(269) = 1.891$ ,  $p = .060$ , 95% CI: [-0.010, 0.494].
- <sup>7</sup> The debriefing explicitly explained the logic behind random assignment and noted that both high and low thinking can be an equally valuable, desired experience (e.g., for an additional example, see also Kupor et al., 2014).
- <sup>8</sup> Manipulation checks of perceived elaboration were not included in this study because participants already reported their perceived elaboration as part of the induction.
- <sup>9</sup> Eight participants were excluded because they were not native Spanish speakers. The two-way interaction between attitudes and perceived elaboration remained significant when taking into consideration the full sample without the eight exclusions,  $B = 0.206$ ,  $SE = 0.081$ ,  $z = 2.525$ ,  $p = .012$ , 95% CI: [0.046, 0.366].
- <sup>10</sup> Although perceptions of importance would plausibly affect elaboration, perceptions of elaboration were not expected to influence importance. One additional measure was also included in this study to determine whether participants were paying attention to the questions. Embedded with the other measures, participants had to answer the following question 'if you are reading this statement, please select number 5 in the scale below.' All the participants selected number five showing that they were paying enough attention to the questions and thus the induction did not affect attention.
- <sup>11</sup> As in Study 2, here we also used Model 15 in Hayes process macro to test mediation (Preacher & Hayes, 2008). The result of this bootstrapping procedure revealed that the predicted interaction between attitude certainty and attitudes on helping choice was significant ( $p = .044$ ) and the interaction between perceived elaboration and attitudes was also significant ( $p = .001$ ). Furthermore, the 95% confidence interval (CI) of the moderated mediation index did not include zero (indirect effect,  $B = .038$ , 95% CI = [0.004, 0.101]). Therefore, the moderated mediation through attitude certainty is supported as plausible, replicating the results obtained with Model 4.

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