

The Effects of Elaboration on the Strength of Doping-Related Attitudes: Resistance to Change and Behavioral Intentions

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This experiment analyzed whether attitudes toward the legalization of several doping behaviors would resist change and predict behavioral intentions when they were initially formed through thoughtful (i.e., high elaboration) versus nonthoughtful (i.e., low elaboration) processes. Participants were randomly assigned first to a persuasive message either against or in favor of the legalization, which they read with relatively high or low degrees of deliberative thinking. Attitudes and intentions regarding legalization were assessed following that message. Next, each participant received a second message that was opposed to the first one, serving as an attack against the attitude that participants had just formed. Finally, attitudes were again assessed. As hypothesized, participants showed greater attitude-consistent intentions when they formed their initial attitudes through thoughtful (vs. nonthoughtful) consideration of the first message. Moreover, the second message resulted in greater resistance to attitude change when participants formed their initial attitudes through thoughtful (vs. nonthoughtful) processes.

Keywords: attitude, behavioral intentions, doping, persuasion, elaboration, attitudinal resistance

Contemporary research on doping in sports has shown that a very important predictor of individuals' doping intentions is their attitude toward that behavior (for reviews, see Morente-Sánchez & Zabala, 2013; Ntoumanis, Ng, Barkoukis, & Backhouse, 2014). This is important because intentions to engage in doping behavior predict actual doping behaviors (Ntoumanis et al., 2014), although more experimental research is necessary to establish causal relationships between attitudes, intentions, and behaviors in the domain of doping (Backhouse, Atkin, McKenna, & Robinson, 2007; Barkoukis, Lazuras, & Harris, 2015). In fact, several prior findings call for a deeper understanding of when people's doping-related attitudes are especially *strong* and thus likely to resist subsequent change and inform their intentions and behavior (e.g., Barkoukis, Lazuras, Tsorbatzoudis, & Rodafinos, 2013; Horcajo & De la Vega, 2014, 2016; Lazuras, Barkoukis, Rodafinos, & Tsorbatzoudis, 2010).

To date, very little research has explored the antecedents and the psychological processes that produce strong doping-related attitudes, even though decades of

research on *attitude strength* have considered the conditions leading to strong attitudes toward other topics, issues, and so on (see Knowles & Linn, 2004; Petty & Krosnick, 1995). Specifically, attitude strength refers to an attitude's *durability* (i.e., persistence over time and resistance to change) and its *impact* on judgment and behavior (Petty & Krosnick, 1995). In line with prior research, the current study aimed to test the effects of elaboration (i.e., deliberative thinking) on the strength of doping-related attitudes. Specifically, we aimed to test whether conditions that promote deliberative thinking lead to attitudes toward the legalization of several doping behaviors and substances that are capable of predicting behavioral intentions and resisting later change.

Attitude Change and Doping Research

Multiprocess models of attitude change—for example, the Elaboration Likelihood Model (ELM) (Petty & Cacioppo, 1986; for a review, see Petty & Briñol, 2012) or the Heuristic-Systematic Model (HSM) (Chaiken, Liberman, & Eagly, 1989; see also Eagly & Chaiken, 1993)—propose that attitudes can be changed through different psychological processes depending on the overall likelihood of deliberative thinking and elaboration people are willing and able to expend in processing persuasive

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communications.¹ That is, attitude change can occur through relatively thoughtful (i.e., “high elaboration” or “systematic”) or relatively nonthoughtful (i.e., “low elaboration” or “heuristic”) processes.² Most relevant to the current study, these models hold that the process by which an attitude is formed or changed is consequential for the strength of the resulting attitude. Specifically, attitudes changed through thoughtful processes are stronger than attitudes changed through nonthoughtful processes, which means that they are more persistent over time, resistant to subsequent change, and predictive of intentions and actual behaviors (Petty & Cacioppo, 1986; Petty, Haugtvedt, & Smith, 1995).

In the last three decades, social psychological research has found empirical evidence supporting this attitude-strength postulate of the ELM (see Petty & Briñol, 2012; Petty et al., 1995). In several studies on topics ranging from ethnic prejudice to consumer attitudes, the attitudes of individuals who engaged in greater deliberative thinking during attitude formation showed greater persistence over time as well as more resistance to change when their newly formed attitudes were subsequently attacked with new information (e.g., Cárđaba, Briñol, Horcajo, & Petty, 2013, 2014; Haugtvedt & Petty, 1992), compared with attitudes formed with less deliberative thinking. Likewise, other relevant studies about political attitudes and consumer attitudes, for example, have shown that individuals who engage in more deliberative thinking about a message are more likely to behave (or have intention to behave) in ways that are consistent with their attitudes than are individuals who engage in less deliberative thinking (e.g., Cacioppo, Petty, Kao, & Rodriguez, 1986; Petty, Cacioppo, & Schumann, 1983). In sum, according to contemporary models of persuasion and available empirical evidence, the more an attitude is based on thoughtful consideration of relevant information about an issue or topic, the more it tends to persist over time, resist subsequent attacks, and influence intentions and behaviors. Most of these effects regarding attitude strength, however, have not been studied in doping research.

Most relevant to the current study, some research has already begun to consider the implications of contemporary persuasion models for doping-related attitude change. For instance, a recent study found that when people formed doping-related attitudes through thoughtful (vs. nonthoughtful) processes, they ended up with more certainty (or conviction) in those attitudes (Horcajo & De la Vega, 2016), which is important because certainty is often related to outcomes like attitude stability, resistance to persuasion, and attitude-behavior consistency (see Rucker, Tormala, Petty, & Briñol, 2014). These results alone, however, do not necessarily mean that elaborating on doping-related information will produce attitudes that are more resistant to change; in fact, recent research has shown that there are some conditions under which certainty does not predict strength outcomes (e.g., stability over time) (Luttrell, Petty, & Briñol, 2016).

A more direct examination of the strength of doping-related attitudes, however, has shown that they are more persistent over time when people thoughtfully consider the information in a persuasive message compared with when they give less deliberative thought to the message (Horcajo & De la Vega, 2014).

Nevertheless, even though these findings are encouraging and suggest the benefits of applying attitude-change models to doping research in sport psychology, it is important to note that persistence over time is just one important aspect of successful persuasion. In fact, persistence over time and resistance to subsequent change are different aspects of attitude strength. Whereas persistence (or stability) refers to the extent to which a newly formed (or changed) attitude endures over time, even if it is never attacked directly, resistance refers to the extent to which a newly formed (or changed) attitude is capable of resisting the influence of contrary information (Petty & Cacioppo, 1986; Petty et al., 1995). Thus, attitudes are more resistant the less they change in the direction of contrary information when challenged.

Attitude persistence and resistance to change tend to co-occur, but they can be independent. Prior research has shown that some variables that predict persistence do not necessarily increase resistance or influence relevant behavior at the same time (e.g., Haugtvedt, Schumann, Schneier, & Warren, 1994). This is because, for instance, pairing an attitude object with positive cues can make a memorable favorable attitude, but these cues will not help that favorable attitude resist an attacking message that relies on compelling arguments (see Wegener, Petty, Dove, & Fabrigar, 2004 for a review). Therefore, while related to other issues like resistance to subsequent persuasion and attitude-behavior correspondence, existing research on the persistence of attitude change reflects a single unique case of doping-related persuasion. It thus remains unknown whether people would still change their attitudes if sufficiently attacked or would intend to act in a manner consistent with their attitudes.

Current Experiment

In line with prior research on elaboration and attitude strength (see Petty et al., 1995), this experiment tested the hypothesis that forming doping-related attitudes through high- (vs. low-) elaboration processes would make the newly formed attitudes (a) more predictive of relevant behavioral intentions and (b) more resistant to subsequent attacking counter-attitudinal information.

Thus, in the current study, the degree to which participants read and considered the persuasive proposal thoughtfully or nonthoughtfully was manipulated using a common induction of personal relevance and responsibility. Following this manipulation, participants received an initial persuasive message that presented either negative (i.e., risks) or positive (i.e., benefits) information about the legalization of several doping behaviors (e.g., the

use of erythropoietin or anabolic androgenic steroids). This initial message contained a mix of strong arguments against (vs. in favor of) the legalization proposal and peripheral cues, which can lead to persuasion even when people do not think carefully about a message's arguments. By incorporating both compelling message arguments and persuasive peripheral cues, participants were likely to be persuaded by the initial message regardless of whether they were thinking carefully about it or not (Petty & Cacioppo, 1986; see Haugtvedt & Petty, 1992 for a similar approach). After participants read the first message, they reported their attitudes and behavioral intentions regarding the legalization proposal. Next, participants received a second message that argued for the opposite conclusions. Therefore, someone who first received a message arguing *in favor of* the legalization proposal would receive a message arguing *against* that proposal and vice versa. Finally, attitudes toward the legalization proposal were again assessed.

Regarding people's attitudes following the first message, in accord with the ELM (Petty & Cacioppo, 1986), we hypothesized that the message against legalization would produce more unfavorable attitudes toward that proposal than the message in favor of legalization, regardless of the extent of elaboration. Thus, only a main effect of the direction of the first message was expected in the first measurement of attitudes. However, for *behavioral intentions*, consistent with the ELM, we hypothesized an interaction between direction of the first message and elaboration. That is, in the high-elaboration condition, those who received the message against legalization would show significantly lower prolegalization behavioral intentions than those who received the first message in favor of legalization. In contrast, because low elaboration produces attitudes that are relatively weak (i.e., less predictive of behavior), in the low-elaboration condition, behavioral intentions would differ less (or not at all) between participants who received the first message against legalization and participants who received the first message in favor of the legalization proposal.

Finally, with regard to participants' attitudes following the second message, it was hypothesized that people who carefully considered the first message (i.e., high-elaboration participants) would change their formed attitudes less than people who did not carefully consider the first message (i.e., low-elaboration participants). Thus, an interaction between elaboration and direction of the first message on final attitudes was expected to emerge. That is, after the attacking message, high-elaboration individuals would continue to show a significant difference in attitudes between those who received the first message against legalization and those who received the first message in favor of legalization (i.e., their attitudes would be consistent with the initially formed attitudes). In contrast, low-elaboration individuals would not continue to show a significant difference in attitudes as a function of direction of the first message.

Method

Participants and Design

Seventy-two young male soccer players from several different teams in Madrid (Spain) participated in this experiment.³ These participants were eighteen years old, and they were competing in national or regional leagues. Participants were randomly assigned to the cells of a 2 (Elaboration: High vs. Low) \times 2 (Direction of the First Message: Against vs. In Favor of Legalization) between-participants factorial design. Attitudes and behavioral intentions were assessed immediately following the first message, and attitudes were again measured after a second attacking message. Thus, the resistance to change in attitude was assessed by a 2 \times 2 \times 2 mixed design.

Procedure

The study was conducted in accordance with APA guidelines on the ethical treatment of human participants, and permission to conduct the study was provided by soccer teams before the study began. Moreover, participants were allowed to voluntarily participate in or abandon this experiment whenever they wished.

In line with prior research (e.g., Horcajo & De la Vega, 2014, 2016), this experiment focused on a legalization proposal as the target attitude object, instead of doping per se, to reduce potential biases of social desirability involved in doping-related attitude research (e.g., Gucciardi, Jalleh, & Donovan, 2010). In addition, this experiment used the same materials as Horcajo and De la Vega (2014, 2016) and followed a similar procedure. Thus, participants were first led to believe that they were taking part in a study designed to examine a proposal for the legalization of several doping behaviors (e.g., the use of anabolic androgenic steroids and erythropoietin). To manipulate the extent of deliberative thinking, an elaboration manipulation was used, inducing high or low personal relevance and responsibility. Participants were randomly assigned to one of the four conditions of the 2 \times 2 design by first shuffling the different questionnaires together and distributing them in this randomized order. Participants were first given a set of instructions based on the elaboration condition to which they had been assigned; they then read either the prolegalization or antilegalization message. After reading the first message, participants reported their attitudes and behavioral intentions regarding the legalization proposal. Immediately following this first measurement, all participants received a second message whose direction was the opposite of the message they received first. As noted before, a participant who first received a message against legalization would next receive a message in favor of legalization and vice versa. This second message was included without any explicit elaboration instructions, consistent with prior research testing the resistance to change in attitudes

initially formed through high- (vs. low-) elaboration processes (see Petty et al., 1995). Finally, participants again reported their attitudes toward legalization, as well as other ancillary questions. When they completed all measures, they were thanked and exhaustively debriefed. The whole experiment lasted approximately thirty minutes for each participant.

Independent Variables

Elaboration. The extent of deliberative thinking was manipulated by an induction adapted from prior research; participants were randomly assigned to either high- or low-elaboration conditions (Horcajo & De la Vega, 2014, 2016). Participants in the *high-elaboration* condition were told that the legalization proposal was being analyzed by FIFA (*Fédération Internationale de Football Association*) and that legalization could be implemented in soccer rules in the *next season* (i.e., 2016–2017). In this case, participants would perceive the issue as *personally relevant*. To further increase elaboration, participants were also explicitly encouraged to think carefully about the information included in the message by telling those participants that they were in a selected sample of soccer players whose responses would directly influence FIFA's evaluation of this issue, increasing participants' perceived *responsibility*.

In contrast, participants in the *low-elaboration* condition were told that the legalization proposal was being analyzed by WADA (*World Anti-Doping Agency*) and that legalization could be implemented in *cycling and athletics* rules in 2021–2022. Moreover, these participants were told that they were in a sample of soccer players being asked to complete WADA's survey about legalization and that their opinions could be considered for cycling and athletics rules (i.e., low personal relevance and responsibility) (see also Horcajo, Briñol, & Petty, 2012). Both personal relevance and perceived responsibility have been shown to reliably affect elaboration (see Petty & Cacioppo, 1986).⁴

Direction of the first message. Participants were randomly assigned to read either a persuasive message against legalization or a persuasive message in favor of legalization (adapted from Horcajo & De la Vega, 2014, 2016). In the *antilegalization condition*, the message emphasized various risks of legalization. Specifically, it argued that it is not appropriate to permit the use of substances such as erythropoietin and anabolic androgenic steroids (e.g., testosterone). Risks of this legalization are that it would affect athletes' physical and psychological health unfavorably and that it would negatively impact the sport overall. In contrast, the *prolegalization condition* message emphasized the various benefits of legalization. It argued that there are advantages to permitting the use of those same substances as long as they are used under strict medical supervision. The supposed benefits of this legalization would favorably influence athletes' physical

and psychological health (e.g., these drugs could help athletes cope with stress) among other social and economic benefits.⁵

This manipulation was designed to influence the favorability of participants' attitudes. The antilegalization arguments were expected to produce significantly more unfavorable attitudes toward the legalization proposal than the prolegalization arguments. Moreover, both messages included several potential peripheral cues, such as credible sources (recognized organizations such as FIFA or WADA), blatant direction of proposal (marking the terms *risks* or *benefits* of legalization by underlining them and making them bold), and an extensive number of arguments (i.e., five arguments were included in each message). Thus, attitudes were likely to change in response to those messages for participants in both the high-elaboration level (via more reliance on argument quality) and the low-elaboration level (via more reliance on potential peripheral cues), as prior research has found (Horcajo & De la Vega, 2014, 2016).

Direction of the second message. Immediately after the first measurement of attitudes, participants were exposed to a second message attacking their newly formed attitudes. That is, the second message a participant received was always in the opposite direction from the first message he received. These second messages were briefer versions of the essays used for the first messages to avoid participants' fatigue, including only three arguments from the five arguments included in the first antilegalization or prolegalization message. In both cases, to hide the objectives of the experiment, these attacking counter-attitudinal messages (against or in favor of legalization) were presented as information published in newspapers (see Cárdbaba et al., 2014).

Dependent Variables

Attitudes toward the legalization proposal following the first message. Soccer players' attitudes were assessed using an extended version of Horcajo and De la Vega's (2014) attitudinal measurement to get a more complete assessment of the legalization proposal. Specifically, we used eight 9-point semantic differential scales (i.e., *against* vs. *in favor of*, *more stress after legalization* vs. *less stress after legalization*, *healthy* vs. *unhealthy*, *appropriate* vs. *inappropriate*, *positive* vs. *negative*, *desirable* vs. *undesirable*, *recommendable* vs. *nonrecommendable*, *good* vs. *bad*). Ratings on these attitudinal scales were highly related ($\alpha = .909$), so they were averaged to create a composite index of attitudes. Responses to these attitude scales were scored so that higher values represented more favorable attitudes toward legalization.

Behavioral intentions regarding the legalization proposal following the first message. Participants' behavioral intentions were assessed using three 9-point items which constituted a multiple-act criterion (Fishbein

& Ajzen, 1975): (a) “Hypothetically, to what extent would you be willing to sign a petition supporting the legalization proposal?” (b) “Hypothetically, to what extent would you be willing to include your name in a listing of athletes supporting the legalization proposal?” and (c) “Hypothetically, to what extent do you have the intention to use the substances and do the behaviors whether they are legalized? Ratings on these three behavioral scales were highly related ($\alpha = .924$), so they were averaged to create a composite index of behavioral intentions. Higher values represented higher behavioral intentions supporting the legalization proposal.

Attitudes toward the legalization proposal after the second attacking message. To assess the extent to which newly formed attitudes resist subsequent counter-attitudinal information, participants’ attitudes were again measured after exposure to the second attacking message. In this second measurement, attitudes toward the proposal were assessed with the eight attitudinal items. However, to hide the aim of the experiment and to reduce experimenter demand effects, five of the items were presented as Likert-type scales in which participants had to show their agreement (vs. disagreement) about whether the legalization proposal was appropriate, positive, desirable, recommendable, and good (anchored from 1, *Not at all*, to 9, *Totally*). The other three scales were presented as in the first measurement (i.e., *against vs. in favor of, more stress after legalization vs. less stress after legalization, healthy vs. unhealthy*). Once again, responses on these eight attitudinal scales were highly related ($\alpha = .887$), so they were averaged to form the composite index of attitudes after the attacking message.

Results

Attitudes Toward the Legalization Proposal Following the First Message

A 2 (Elaboration: High vs. Low) \times 2 (Direction of the First Message: Against vs. In Favor of Legalization) factorial ANOVA was conducted with attitudes following the initial message as the dependent variable.⁶ As predicted, only a significant main effect of direction of the first message emerged: $F_{1,61} = 24.34, p < .001, \eta^2 = .28, 90\% \text{ CI}: [.13, .42]$.⁷ That is, those who received the message against legalization showed significantly more unfavorable attitudes toward the proposal ($M = 2.24, SD = 1.20$) than did those who received the message in favor of legalization ($M = 3.93, SD = 1.54$), irrespective of the extent of elaboration (i.e., high or low) (see Table 1 and Figure 1, top panel).⁸ No other effects were significant, $F_s < 1, p_s > .47$.

Behavioral Intentions Regarding the Legalization Proposal Following the First Message

Because of issues of heterogeneous variance, behavioral intentions data were submitted to an established rank-order transformation for the following analyses.⁹ Thus, behavioral intentions were submitted to a 2 (Elaboration: High vs. Low) \times 2 (Direction of the First Message: Against vs. In Favor of Legalization) factorial ANOVA. Results indicated that there was a significant main effect of direction of the first message, $F_{1,62} = 18.87, p < .001, \eta^2 = .23, 90\% \text{ CI}: [.23, .37]$. That is, those who received

Table 1 Attitudes and Behavioral Intentions as a Function of Moment of Measurement, Elaboration, and Direction of the First Message

	Elaboration			
	Low		High	
	Direction of the First Message			
	In favor	Against	In favor	Against
Attitudes (Time 1)				
<i>M</i>	4.00	2.40	3.86	2.04
<i>SD</i>	1.62	1.28	1.51	1.10
Behavioral Intentions				
<i>M</i>	3.28	2.08	4.10	1.88
<i>SD</i>	2.25	1.15	1.79	1.74
Attitudes (Time 2)				
<i>M</i>	3.16	2.83	4.10	2.27
<i>SD</i>	1.17	1.35	1.37	1.19

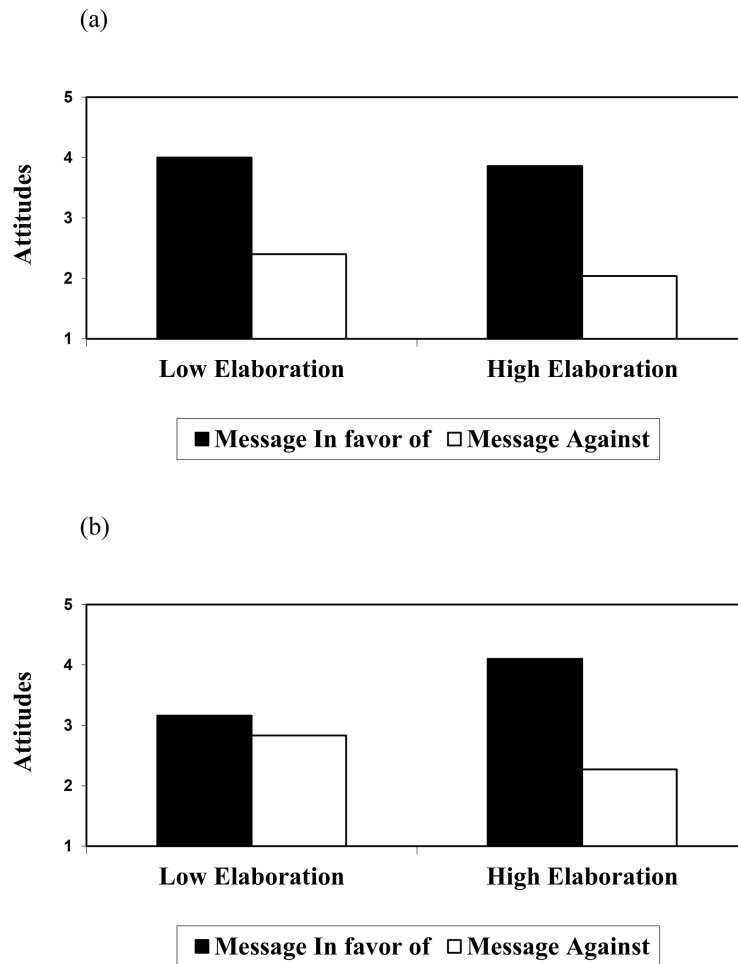


Figure 1 — Differences in attitudes between low- and high-elaboration conditions and message against or in favor of legalization conditions. Attitudes at two time points are presented: (a) Time 1 (immediately following the first message) and (b) Time 2 (after the second attacking message).

the message against legalization showed significantly lower intentions supporting the legalization proposal ($M = 25.28$, $SD = 16.47$) than did those who received the message in favor of legalization ($M = 42.77$, $SD = 17.18$). Most important to the current study, results supported the predicted interaction between elaboration and direction of the first message, $F_{1, 62} = 3.90$, $p = .05$, $\eta^2 = .06$, 90% CI: [0.00, .17].¹⁰ That is, for the high-elaboration participants, those who received an initial antilegalization message reported significantly lower intentions to support legalization and to do those noted behaviors if legalized ($M = 21.30$, $SD = 18.70$) than did those who received an initial prolegalization message ($M = 47.25$, $SD = 13.94$), $F_{1, 62} = 19.01$, $p < .001$, $\eta^2 = .23$, 90% CI: [.09, .37]. But for the low-elaboration participants, there was not a significant difference between those who received the first message against ($M = 28.27$, $SD = 14.34$) and those

who received the first message in favor of legalization ($M = 38.00$, $SD = 19.42$), $F_{1, 62} = 2.96$, $p = .09$, $\eta^2 = .05$ (see Table 1 and Figure 2).

Additional Analyses: Attitudes Predicting Behavioral Intentions Following the First Message

Another way to test the behavioral intentions hypothesis is to analyze whether the elaboration moderates the relation between individuals' attitudes and their intentions. That is, attitudes should be more strongly related to intentions in the high- (vs. low-) elaboration condition. Thus, scores on behavioral intentions were submitted to a hierarchical regression analysis with elaboration (dummy-coded) and attitudes following the first message (mean-centered) as Step 1 predictors and the interaction

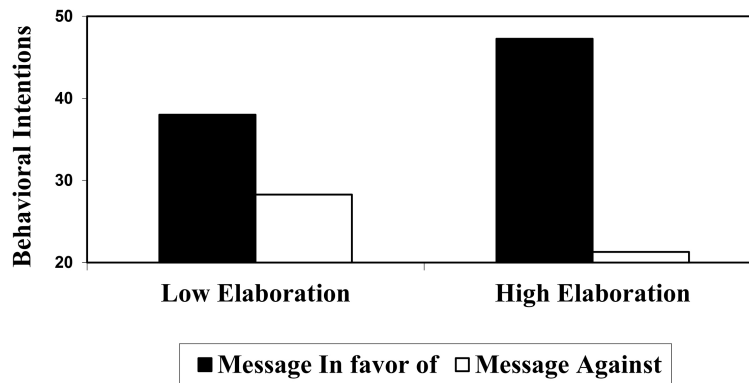


Figure 2 — Behavioral intentions as a function of elaboration (low vs. high) and direction of the first message (against vs. in favor of legalization).

term in Step 2. Results were interpreted from the first step in the model in which they appeared. Confidence intervals are provided for the unstandardized B values.

Results showed a significant main effect of attitudes such that more favorable attitudes corresponded to greater behavioral intentions supporting the legalization proposal, $B = 9.24$, $\beta = 0.78$, $t(62) = 9.89$, $p < .001$, 95% CI: [7.37, 11.11], $\eta^2 = .61$. More important, there was a trend toward the expected interaction between attitudes and elaboration on behavioral intentions, $B = 3.19$, $\beta = 0.18$, $t(61) = 1.73$, $p = .088$, 95% CI: [-.49, 6.88], $\eta^2 = .02$. Specifically, this interaction effect showed that participants' attitudes predicted intentions more strongly for high-elaboration participants— $B = 10.94$, $\beta = .93$, $t(61) = 8.14$, $p < .001$, 95% CI: [8.25, 13.63], $\eta^2 = .40$ —than for low-elaboration participants— $B = 7.75$, $\beta = .66$, $t(61) = 6.15$, $p < .001$, 95% CI: [5.23, 10.27], $\eta^2 = .23$.

Attitudinal Resistance to Subsequent Change After the Second Attacking Message

To test the hypothesis that the extent of elaboration would affect the susceptibility of initially formed attitudes to *subsequent* persuasion, data were submitted to a 2 (Elaboration: High vs. Low) \times 2 (Direction of the First Message: Against vs. In Favor of Legalization) \times 2 (Attitudes Measurement: Time 1 vs. Time 2) mixed ANOVA. Results revealed a significant main effect of direction of the first message, $F_{1,61} = 20.03$, $p < .001$, $\eta^2 = .25$, 90% CI: [.10, .38]. That is, collapsed across both moments of measurement, those who received the first message against legalization showed significantly more unfavorable attitudes toward the proposal ($M = 2.59$, $SD = 1.30$) than did those who received the message in favor of legalization ($M = 3.65$, $SD = 1.35$). Moreover, an interaction effect between moment of measurement and direction of the first message emerged as significant, $F_{1,61}$

$= 7.00$, $p = .01$, $\eta^2 = .08$, 90% CI: [.01, .23], indicating that the effect of the first message was stronger for the first attitudinal measurement, $F_{1,61} = 24.34$, $p < .001$, $\eta^2 = .29$, than for the second measurement, $F_{1,61} = 11.43$, $p = .001$, $\eta^2 = .16$. Most relevant and consistent with the hypotheses, the interaction between elaboration, direction of the first message, and measurement moment was significant, $F_{1,61} = 7.20$, $p < .01$, $\eta^2 = .11$, 90% CI: [.02, .23] (Figure 1).¹¹

Results for attitudes following the first message have already been reported. To further understand the interaction, attitudes following the *second* message were submitted to a 2 (Elaboration: High vs. Low) \times 2 (Direction of the First Message: Against vs. In Favor of Legalization) factorial ANOVA. Thus, there was a significant main effect of direction of the first message, $F_{1,61} = 11.43$, $p = .001$, $\eta^2 = .16$, 90% CI: [.04, .29] such that those who received the first message against legalization showed significantly more unfavorable attitudes toward the proposal ($M = 2.58$, $SD = 1.30$) than did those who received the first message in favor of legalization ($M = 3.65$, $SD = 1.34$). Most important, as hypothesized, the interaction between elaboration and direction of the first message emerged as significant, $F_{1,61} = 5.51$, $p = .02$, $\eta^2 = .08$, 90% CI: [.01, .20]. That is, for participants in the high-elaboration condition, those who received the first message against legalization continued to show significantly more unfavorable attitudes toward the legalization proposal following the second message ($M = 2.27$, $SD = 1.19$) than did those who received the first message in favor of legalization ($M = 4.10$, $SD = 1.37$), $F_{1,61} = 15.77$, $p < .001$, $\eta^2 = .21$, 90% CI: [.07, .34]. However, as predicted, for participants in the low-elaboration condition, there was no significant difference between those who received the first message against ($M = 2.83$, $SD = 1.35$) and those who received the first message in favor of legalization ($M = 3.16$, $SD = 1.17$), $F_{1,61} = .55$, $p = .45$, $\eta^2 < .01$ (see Table 1 and Figure 1, bottom panel).

Discussion

The results of this study showed that doping-related attitudes can be changed as a function of persuasive communication. Consistent with the ELM (Petty & Cacioppo, 1986), although the extent of deliberative thinking (or elaboration) did not affect the amount of persuasion following an initial message, it did influence behavioral intentions and the attitude's resistance to subsequent change. More specifically, people who initially came to their doping-related attitudes by thoughtfully considering persuasive information reported behavioral intentions that were more consistent with the message they read and the attitudes they formed than people who were not induced to thoughtfully engage with the same information. Likewise, people who initially came to their doping-related attitudes by thoughtfully considering persuasive information were more resistant to subsequent change than the people in the low-elaboration condition.

In line with prior theory and research (Petty & Cacioppo, 1986; Petty et al., 1995), attitude change derived from high-elaboration psychological processes will be stronger than the same attitude change produced via low-elaboration psychological processes. The reason is that, when individuals engage with a persuasive message under high-elaboration conditions, they are motivated and able to access all relevant and available information from both external (e.g., message) and internal (e.g., prior knowledge) sources, making inferences, or adding something of their own to the information provided by the persuasive proposal, and thus drawing their own thoughtful conclusions about the qualities or merits of the attitude object. Thus, high-elaboration processes lead to the integration of all that relevant information into the structure underlying the individual's attitude. By fundamentally altering the structure of the stored evaluation, these processes make the newly formed or changed attitude not only stable but also resistant to change and predictive of subsequent information processing and behavior.

Several important implications for attitude change in doping research and its applications for prevention or intervention programs can be derived from our findings. First, some studies in sport science have documented the correspondence between doping-related attitudes and relevant doping behaviors, although more experimental research is necessary (see for reviews Ntoumanis et al., 2014; Morente-Sánchez & Zabala, 2013). One way to change sportspeople's doping behaviors would be to persuade them to adopt more unfavorable doping-related attitudes; indeed, prior studies in sport science research have shown that antidoping persuasive information can, in fact, successfully change doping-related attitudes (e.g., Goldberg et al., 1996, 2000; Horcajo & De la Vega, 2014, 2016). Applying an attitude strength approach based on the multiprocess models of attitude change (e.g., the ELM), however, provides a richer understanding of when

such a persuasive message is likely to create attitudes that also inform relevant behavior. Second, applying an attitude-strength approach would also clarify how readily people will change or maintain their doping-related attitudes in response to subsequent communications. That is, just because a persuasive message successfully induces unfavorable attitudes toward doping does not necessarily mean that those attitudes cannot just as easily be changed again. An attitude strength perspective lends insight into when a persuasive communication is most likely to encourage the development of new attitudes that resist subsequent change.

Therefore, these data contribute to an emerging need to understand the strength of doping-related attitudes, which mainly include long-term persistence, resistance to persuasion, and attitude-behavior consistency. To illustrate these issues, for instance, consider the interventions used by Goldberg and colleagues (1996, 2000) to change attitudes toward the use of anabolic androgenic steroids (AAS, e.g., using drug refusal role playing and exposure to health-promotion messages). Although their interventions successfully changed adolescent football players' attitudes toward the use of AASs, and affected intentions to use AASs and actual AAS use, the effect on actual behavior was only marginally significant one year later. Because interventions like these can result in tentative change but not necessarily long-term behavior change, identifying the low- or high-elaboration processes by which an intervention changes doping-related attitudes would indeed help predict the immediate and long-term attitudinal and behavioral consequences of that intervention.

Limitations of the Current Experiment and Future Research

One limitation of the current study is reliance on the self-report measures used. Such self-reports of attitudes can suffer from social desirability biases, and it is notable that attitudes toward the legalization proposal were overall relatively negative in all experimental conditions. Such negative responses (even after some participants read strong prolegalization arguments) could be partially the result of social desirability pressures. Regarding this issue, although they are very common in persuasion research, direct self-reports of attitudes can be subject to self-presentation concerns in the domain of doping. Future research could extend the results of this study by including indirect measures, such as the Implicit Association Test (IAT), which has been successfully used to assess doping-related attitudes in prior research (e.g., Brand, Heck, & Ziegler, 2014). Similarly, to understand attitude-behavior consistency, the current study relies on behavioral intentions because they have been shown to be a reliable predictor of actual doping behavior (Ntoumanis et al., 2014), but future research could benefit from more

objective measures of actual doping behaviors, such as hair sample analysis for key doping substances (Petróczy et al., 2010).

Moreover, the current study proposes that attitudes are initially formed by different psychological processes as a function of elaboration, consistent with much prior research (see Petty & Briñol, 2012; Petty & Cacioppo, 1986). Although this study's results support elaboration hypotheses, future research should show empirical evidence for the specific *mediating* processes involved in doping-related attitude change. For instance, the favorability of thoughts that individuals generated in response to the first message can be a plausible mediator of the effects on attitudes found for high-elaboration participants after the first message, but this potential mediator is not expected to mediate attitude change for individuals in the low-elaboration condition. Thus, the effects found on attitudes of low-elaboration participants would be mediated by a nonthoughtful process such as reliance on a *heuristic* or *simple cue*. In addition, Petty et al. (1995) proposed a more complex causal chain. Thus, the impact of antecedent variables (e.g., personal relevance) on attitude strength consequences (e.g., resistance to change) could be mediated by the extent of elaboration through various potential mediating processes (e.g., attitude accessibility or attitude certainty). Future research should examine this complete causal chain.¹² Similarly, future research could extend the results of the current study by testing whether the core mediating processes result in attitudes following the second message that are still especially predictive of behavioral intentions and actual behaviors.

Finally, although elaboration is a well-studied antecedent of strong attitudes, it is just one of many variables that predict attitude strength (e.g., direct experience with the attitude object) (see Petty & Krosnick, 1995 for a review). Future research should examine the applicability of those other antecedents to attitude strength in doping research. As reviewed in the introduction, recent research has considered the role that attitude certainty—another common indicator of strong attitudes—may play in doping-related attitudes (Horcajo & De la Vega, 2016). Future research should analyze other attitude-strength antecedents and mediating processes, as well as extend our findings to different athletes and groups relevant to doping prevention (e.g., coaches, parents).

In conclusion, this experiment applies a relevant theoretical framework to study doping-related attitudes, and it conceptually replicates and extends prior literature on persuasion and attitude strength to a new field. Thus, elaboration appears to be an important antecedent to especially durable and influential doping-related attitudes.

Notes

1. In the persuasion literature, the term *deliberative thinking* refers to conscious and deliberate consideration of relevant

available information presented in a communication; the term *elaboration* refers more specifically to the process by which people add something of their own (e.g., their prior knowledge) to the information available or provided by a communication (Petty & Cacioppo, 1986). In the current paper, we use the terms *deliberative thinking* and *elaboration* interchangeably.

2. An example of a high-elaboration process is when carefully processing a message evokes positive thoughts in response to compelling arguments; an example of a low-elaboration process is using simple decision rules, or heuristics, that lead to persuasion, such as “If the message is provided by an expert source, then I like it or I agree” (Eagly & Chaiken, 1993; Petty & Cacioppo, 1986).

3. Although this research was limited by a very specific participant sample (young male soccer players on the two teams in Madrid that agreed to collaborate in this study), it remains important to consider the statistical power of the analyses in this experiment. In planning this research, it was expected that the key elaboration \times message direction interactions would be medium to large in size. Indeed, prior studies on attitude strength and doping-related attitudes have found effect sizes for its critical elaboration and attitude strength effects of roughly medium size (e.g., $f = .29$; Horcajo & De la Vega, 2014). We thus conducted a priori power analyses using the software *G*Power* (Faul, Erdfelder, Buchner, & Lang, 2009), testing the sample size needed to find medium to large effects with power in the range of .70–.80 in the experimental designs implemented in the current study. First, results for the 2×2 factorial ANOVA analyses that were needed to test the effects on behavioral intentions support a sample size ranging from $N = 41$ (large effect, $f = .40$ with power of .70) to $N = 128$ (medium effect, $f = .25$ with power of .80). We thus settled on recruiting $N = 80$ participants from the limited, though important, population of young male soccer players. In fact, over 80 participants were recruited, but several soccer players did not come to the experiment. Fortunately, by using a repeated-measures analysis for the resistance-to-persuasion effects, we benefited from increased statistical power for that predicted effect. We acknowledge that description of these analyses was included in the paper at the request of an anonymous reviewer.

4. An elaboration manipulation check, which contained two items about perceived cognitive effort, was included as an ancillary measure. Participants rated the extent to which they *paid attention to* and *thought about* the messages they received on two 9-point scales anchored as follows: *low attention paid* (1) versus *high attention paid* (9), and *low thinking* (1) versus *high thinking* (9). Responses to these two items were significantly related ($r = .78, p < .001$) and were averaged to form an index of perceived elaboration. As expected, a 2×2 ANOVA showed only the predicted significant main effect of the elaboration manipulation on this index: participants in the high-elaboration condition reported greater cognitive effort ($M = 7.35, SD = 1.39$) than participants in the low-elaboration condition ($M = 6.43, SD = 1.05$), $F_{1, 61} = 8.17, p < .01, \eta^2 = .12$. Although this might not be a perfectly reliable measure of amount of elaboration, previous research has shown that such self-reports can be effective in discriminating participants who

had engaged in relatively high versus low elaboration (Cárdaba et al., 2014; Horcajo, Briñol, & Petty, 2014).

5. These messages did not include rigorous and accurate scientific information about the certain benefits or risks of those substances and behaviors. Moreover, a message in favor of legalization was included to have more equivalent tasks across experimental conditions and to permit a better comparison with messages against legalization. In accord with Horcajo & De la Vega (2014), applications of this research (e.g., doping-prevention programs) would include the development and implementation of effective programs to change doping-related attitudes in only one direction (i.e., against doping). Each participant received this clarifying information at debriefing after the experiment.

6. Seven participants were not included in this analysis because either they did not complete all attitudinal measures or they responded without reading a screening item included between dependent measures, such as “If you are reading this item, respond 1 in the below scale.” Moreover, preliminary analyses of the ratings of attitudes revealed that variances across conditions were homogeneous, permitting the use of ANOVA (Levene’s $F_{3,61} = 1.34, p = .26$).

7. Following the recommendations of Steiger (2004), we present 90% confidence intervals around η^2 . Using a 90% confidence interval produces intervals that are consistent with the results of ANOVAs with $\alpha = .05$ criteria. In addition, because η^2 can only be positive, we do not report confidence intervals for nonsignificant effects because the lower boundary of such an effect’s confidence interval cannot be lower than 0, rendering the resulting numbers largely uninformative.

8. This main effect remained significant when behavioral intentions were included as a covariate, $F_{1,60} = 5.35, p = .02, \eta^2 = .03$. In this model, behavioral intentions significantly related to attitudes, $F_{1,60} = 67.03, p < .001, \eta^2 = .04$, but no other effects were significant ($ps > .13$).

9. Six participants were not included in this analysis because either they did not complete all behavioral measures or they responded without reading the screening item noted previously. Preliminary analyses of the ratings of behavioral intentions revealed that variances across conditions were heterogeneous (Levene’s $F_{3,62} = 2.99, p = .03$). Therefore, consistent with prior research, we transformed these measures into ranks to move from heterogeneity to homogeneity using SPSS software (see Meddis, 1984). Basically, this procedure ranked all participants as a function of their original values on the behavioral intentions scores, reducing heterogeneity (Levene’s $F_{3,62} = 1.52, p = .21$) and permitting the subsequent use of ANOVA. Thus, the participant with the lowest value in the original scoring received the value 1 in the new rank-transformed variable; the participant with the next lowest value was ranked as 2, and so forth. Participants with identical scores in the original data received the same value in the rank-transformed data (i.e., an averaged rank). The final scores of behavioral intentions had as many unique values as the number of participants unless there were participants with identical original scores. All means and standard deviations reported in the text refer to the rank-transformed data (see the raw scores in Table 1).

10. This interaction effect remained significant when attitudes were included as a covariate, $F_{1,60} = 6.12, p = .01, \eta^2 = .04$. No other effects were significant ($ps > .26$).

11. The interaction remained significant when controlling for intentions, $F_{1,60} = 8.68, p < .01, \eta^2 = .11$.

12. This mediating processes-based explanation may be relevant to discount alternative explanations for several effects analyzed in the current study (e.g., an explanation based on *valence-framing* effects); see Horcajo & De la Vega (2014) for a discussion.

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