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"CONFIDENCE IS IN THE EYE OF THE BEHOLDER":

THE INFLUENCE OF PHYSICAL ATTRACTIVENESS ON ATTITUDE CONFIDENCE

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ABSTRACT

Physical attractiveness of a source influences attitudes regarding the attitudinal topic covered in a message. The present thesis aims to test if this attribute is also capable of influencing confidence on attitudes, i.e., the perceived amount of certainty on attitudes towards a topic. We review the literature suggesting the multiplicity of effects of this attribute on attitudes and attitude change, as it is with other persuasive variables, and built on the relevance to approach the influence on attitude confidence. Recent research suggest that judgments of confidence are sensitive to influence from the context, such as the influence of attributes of the source of a message. As it is with attitudes, we test if attitude confidence is sensitive to corrections processes based on the perceived relevance of the source of the message. In this thesis, we test if the influence of physical attractiveness might be dependent on the perception of this attribute as an unwanted source of bias. We start by approaching its impact, as a feature of the source of a message, on judgments of attitude confidence, and build on its relevance as a feature of the recipient of a message. In the first set of studies we demonstrated that the presence of an attractive source, when unrelated with the content of the message, decreases attitude confidence. We show that when asked to report attitude confidence, people seem to correct for the potential influence of physical attractiveness with consequential impact to attitude strength outcomes. In the second set of studies we clarified the role of perceiving the message as contradictory to individuals' attitudes for the emergence of our effects. Finally, the third set of studies conceptualize the role of physical attractiveness as a self-evaluation from the recipient of the message. We show that this self-evaluation is informative to judgments of attitude confidence, providing an addition mechanism in which physical attractiveness in determining judgments of attitude confidence. We discuss how our findings integrate and expand what was previously known about the influence of physical attractiveness. We highlight the importance of studying features capable of decreasing attitude confidence, regardless of the influence on attitude change.

Keywords: Physical Attractiveness; Attitude Confidence; Attitudes; Persuasion; Correction.

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The Influence of Physical Attractiveness on Attitude Confidence

In our day to day life we are exposed to persuasive contexts, i.e., situations in which there is an effort to modify our evaluations towards other people, objects, or topics (Petty & Cacioppo, 1986). These persuasive settings can be more or less effective in influencing our attitudes. In most situations, the effectiveness of such persuasive settings is explained by the influence of factors of the context, such as features of the source of the message. There is an extensive literature showing evidence of the impact of these attributes in our attitudes. Research show that features of the persuasive context can influence our attitudes towards topics (see Petty & Briñol, 2012; Tormala & Briñol, 2015 for reviews). In addition, this type of attributes can determine also attitude confidence, i.e., the amount of perceived validity on one's attitude (e.g., Gross, Holtz, & Miller, 1995).

In this work we focus on one feature of the persuasive context – physical attractiveness. We directly test if this attribute of the source of a message is capable of influencing not only attitudes but also judgments of confidence in those attitudes.

To do this, we start by reviewing the literature on the role of features of the persuasive context and its influence on attitude change. We approach how research on attitude change identifies the variety of influences from features of the context. We focus on the influence of attributes of the source of a message and identify the multiplicity of processes by which persuasive features can influence attitudes. In this review we discuss the likelihood of additional influences from physical attractiveness (see e.g., Guyer, Briñol, Petty, & Horcajo, 2019). We start by approaching its impact, as a feature of the source of a message, on judgments of attitude confidence, and build on its relevance as a feature of the recipient of a message. We explore if an influence from an attractive source on attitude confidence, as it is with attitudes, can also be susceptible to processes of correction (Wegener & Petty, 1995). We approach situations in which people might perceive a potential influence on their attitudes from attractiveness. We raised as a possibility, that when perceived as an unwanted influence, physical attractiveness can promote individual process of correction for such influence.

Following the existent literature, we define our empirical hypothesis. We address if and why the presence of physical attractiveness can influence attitude confidence. We

assume that in the possibility that physical attractiveness can determine judgments of attitude confidence, this could be augmented by the perception of the illegitimate and unwanted influence from this attribute.

In three set of studies, organized in different papers (the first one already published and the other two in the process of submission), we aim to inform on the effects from physical attractiveness on attitude confidence and the underlying mechanisms of such effects.

In the first paper, we test the main assumption of this thesis aiming to show that physical attractiveness of the source of a message is capable of affecting attitude confidence. Our aim is to show that regardless of its observable impact on attitudes, the presence of an attractive source when unrelated to the context, can influence attitude confidence. Importantly, we test for the consequent effect on attitude strength. We show that an attractive source is associated with less attitude confidence, promoting weaker attitudes. To our knowledge, this is the first empirical approach showing that people can correct for a perceived biasing effect on a dimension other than the attitude itself. This research will be the first one to provide evidence of a detrimental effect of physical attractiveness on persuasion driven by a decrease on attitude confidence. From this first line of studies, we answer to some open questions in two lines of research.

In a second paper, we test if the perception of bias on attitudes is a necessary condition to the emergence of the influence of physical attractiveness on attitude confidence. We approach this hypothesis in two experiments and test the role of change of attitudes. This line of studies clarifies the role of correction as the explanatory mechanism of the influence of physical attractiveness on attitude confidence.

Finally, in the last paper we aim to test the role of individual features on the effects found in the first two papers. We address the contexts in which physical attractiveness of others is expected to modulate self-evaluations of this physical attribute (e.g., Brown, Novick, Lord, & Richards, 1992; Cash, Cash & Butters, 1983) and the indirect influence on judgments of confidence. In this line of studies, we expect to find that self-evaluations of physical attractiveness inform judgments of attitude confidence. At the same time, we also expect this to be sensitive to the presence of physical attractiveness on the context. We hope to clarify that individuals' physical attributes can modulate their general sense of confidence. Importantly, we test if this is an alternative mechanism explaining the effects

of source attractiveness on attitude confidence.

In sum, in this thesis we aim to show that physical attractiveness cannot always be a good feature when presented at a persuasive context. We target this by approaching the influence of physical attractiveness of a source on how recipients evaluate their attitudes towards a message and also how they evaluate themselves. We hope that by providing answers to these questions this thesis contributes to the field of attitudes and attitude change. We open the discussion for future research on the study of the variability of influences on confidence on judgments.

Section I

Literature Review

Chapter I. Attitudes and Attitude change

When approaching the influence of physical attractiveness on attitude confidence, within a persuasive context. we need to state what is an attitude and what is attitude change. Adopting a definition of attitudes can be a complex decision since it is one of the most distinctive and important concepts studied in Social Psychology (Allport, 1935). A common ground between different views, on the concept and structure of attitudes, is the definition as a general evaluative judgment. This general definition is commonly used by researchers of attitude change in which we focus the framework of the present work (see Maio, Haddock & Verplanken, 2019).

Throughout this Chapter, in addition to defining attitudes as a "general evaluative judgment" towards an object, we focus on attitudes as subject to change as a result of a persuasive context. Mainly, we focus on attitude change as a result of an influence from the source of a persuasive message. We sustain our arguments on the Elaboration Likelihood Model (ELM; Petty & Cacioppo, 1986; Petty & Wegener, 1999; see Petty & Briñol, 2012) to address how this type of features can differently affect attitudes through different routes and cognitive processes. With this, we based our approach on the idea that features of the context differently influence these general evaluative judgments, either by changing valence, extremity, or another attitudinal dimension. We further address the desirability of these changes. We sustain that change can be perceived as undesirable, specifically if it was promoted by the influence of undesirable factors.

Attitude as an Object-evaluation

The study of attitudes is highly relevant and a core concept among all the different areas of study within Social Psychology (Allport, 1935). The long history of the study of attitudes generated multiple definitions of this concept (see e.g., Maio et. al, 2019 for a review). These directly or indirectly refer to attitudes as an evaluative judgment about an object on our social world, such as people, ideas, social groups, objects, or behaviors. As such, attitudes are usually viewed as general evaluations along a positive to negative continuum (Eagly & Chaiken, 1993; Fabrigar & Wegener, 2010; Petty, Briñol, Tormala, & Wegener, 2007) reflecting a general positive or negative feeling about an object (Petty & Cacioppo, 1981). This psychological tendency to evaluate an object in favor or disfavor (see Eagly & Chaiken, 1993) can be conceptualized as a more or less complex mental

representation. This leads to definitions of attitudes as an association between an object with a summary of evaluations (Fazio, 1995) or as a mental representation that integrates cognitive, affective, and behavioral information (Zanna & Rempel, 1988).

In this thesis, we address attitudes as an evaluative judgment that can vary in three general dimensions: valence, extremity, and strength (see Eagly & Chaiken, 1993). First, evaluations towards an object can vary in its valence, i.e., be positive or negative. Second, attitudes can vary in extremity, i.e., distance of this rating compared to a neutral evaluation. Third, attitudes can vary in strength., i.e., the extent in which attitudes, and its evaluative direction, are durable (i.e., persist over time and resist persuasive attacks) and impactful (i.e., influence future behavior and thoughts) (Petty & Krosnick, 1995).

Attitude change and Persuasion

Attitude change is defined as a modification of the evaluation towards an attitudinal object (see e.g., Petty & Wegener, 1998). People can either change to the opposite evaluative direction (e.g., from being against to being supportive about a new law) or within the same evaluative dimension (e.g., the degree in which someone is against/supportive about a new law). Thus, attitude change can be related to either an alteration in valence or in strength. Several change processes have been previously studied such as social and public compliance (e.g. Asch, 1956), social obedience (e.g., Milgram, 1963), or the influence on individual and private acceptance (e.g. Moscovici, 1967). In this thesis, we approach attitude change through the lens of persuasion, i.e., "an effort to modify and individual's evaluations of people, objects, or issues by the presentation of a message" (Petty & Cacioppo, 1986, p. 25). In a persuasive context, attitude change is examined with respect to the individual's opinion about the position advocated in a communication (Petty & Wegener, 1998).

Research on attitude change in a persuasive context focuses on three dimensions: the source, the message, and the recipient (e.g. Hovland, Janis & Kelley, 1953; McGuire, 1968; see Tormala & Briñol, 2015 for a review). In this thesis, we focus on the multiplicity of influences from a feature of the source of a message – physical attractiveness - on attitude change. This type of feature can determine persuasion through a more direct influence on attitudes or by inducing more or less favorable thoughts (e.g., Greenwald, 1968). A review of the existing literature on the influence of features (e.g. source attractiveness, expertise), the conditions in which those influences are more likely to occur (i.e., cognitive overload

and motivation to elaborate), and the different processes that could support such changes (e.g. elaboration, heuristic, conditioning) lead to the development of the Elaboration Likelihood Model (ELM; Petty & Cacioppo, 1981).

The ELM states that attitude change occurs through one of two routes: one encompassing elaboration (achieved by high cognitive capacity and/or high motivation to elaborate) and the other evolving other processes in less elaborative conditions (lower cognitive capacity and/or motivation to elaborate). This model is sustained by a set of assumptions that define a variety of process occurring within each route (i.e., multiprocess two-route model). This model contrasts with others, such as the Heuristic Systematic Model (HSM; Chaiken, 1980; Chaiken, Liberman, & Eagly, 1989; see Maio et. al 2019 for a review) which sustain their approach in two single processes.

Assumptions of the Elaboration Likelihood model (ELM)

The ELM (Petty & Cacioppo, 1986; Petty & Wegener, 1999; see Petty & Briñol, 2012) assumes that the influence from a feature on attitudes depends on the level of elaboration of the information. This model states that the likelihood of elaboration varies along a continuum based on the motivation and ability of the individual to process and elaborate a message. Thus, the more people are motivated and have the cognitive resources to elaborate, the more likely it is for them to engage in a *central* level of processing. This type of condition increases the probability of elaboration on relevant-information (i.e., arguments presented on a message). On another level, the less people have motivation and ability to elaborate the more likely it is to engage in a *peripheral* level of processing. In this condition, it is more likely that people are affected by variables less relevant to the content of the message (e.g., an attractive source presenting a message, Chaiken, 1979). In this type of conditions, it is less likely that the quality of arguments influence the direction of thoughts, and as a consequence, attitudes. This is expected either because the individual is not involved with the message (Petty, Cacioppo, & Goldman, 1981) or because it does not have the sufficient cognitive resources to do so.

This model assumes that people are motivated to hold right and valid attitudes. This is important because people might elaborate more on the message or induce in some sort of correction process to ensure that they hold valid attitudes (Petty & Wegener, 1993; Wegener & Petty, 1995). Relevant to the present work, this framework assumes that variables of the persuasive context can influence attitudes. This is expected to occur by

serving as arguments to the validity of the message, as simple cues, or by affecting the type and amount of elaboration. Research on this model suggests that a variable of the persuasive context (e.g. an attractive source) can affect attitudes through different elaborative process and by serving different roles (i.e., multiple roles, Petty & Wegener, 1998). It assumes that the influence of a persuasive variable (vs. the content of the arguments) on attitudes varies based on the level of elaboration. With an increase of the motivation and the ability to elaborate, it is expected an increase of the use of arguments (vs. other cues) to predict attitudes. Finally, this model argues that a deeper elaborative processing of a message promotes stronger attitudes.

The ELM and the Different roles of Persuasion Variables

As referred above one of the assumptions of the ELM is that any variable of the persuasive context can influence attitudes, either by serving as arguments to the message, as simple cues, or by affecting elaboration. As such, the model conceptualizes that a variable of the persuasive context (e.g. an attractive source) may affect attitudes through different elaborative process and by serving different roles (i.e., multiple roles, Petty & Wegener, 1998). The basic assumption is that any variable can serve different roles within the persuasive process: as an argument, as a peripheral cue, as a factor that can affect the amount and direction of the elaboration, or impacting metacognitive processes. This multiple role approach assumes that the influence from a feature of the persuasive context depends on the likelihood of elaboration (see Petty & Wegener, 1998).

Attributes of the source of a message, i.e., features of the individual, group of people, or entity that presents a message; is one of the most relevant type of features on persuasion (see Briñol & Petty, 2009). Research suggests a multiplicity of influences from different attributes such as credibility, likability, power, or numerical status, on attitudes. As an example, informing people that a physician is the author of a message about a medical product, may serve as a peripheral cue if the recipients of the message are in less elaborative conditions. If the likelihood of elaboration is high, knowing this attribute of the source influences attitudes by serving as an argument to the validity of the message, by increasing issue-relevant thoughts. In a neutral level of elaboration, this feature can enhance the motivation to elaborate (e.g., Petty, et.al, 1981). Thus, source credibility might not always serve the simple cue translating the idea of "If an expert is saying this, then it must be true" (Chaiken, 1980). In some situations, this type of source can decrease, and not enhance,

persuasion. This is expected to occur if the presence of this feature motivates people to elaborate on the message (Chaiken & Maheswaran, 1994) but this message contains weak arguments (Bohner, Ruder, & Erb, 2002; Heesacker, Petty, & Cacioppo, 1983). Credibility may also influence persuasion by increasing confidence on individuals' thoughts and attitudes (Clarkson, Tormala & Rucker, 2008; see Chapter II on this thesis). This multiplicity of influences on attitudes also emerges with other features of the source such as physical attractiveness (see Chapter III of this thesis).

Features of the content and of recipient of the messages are also highly relevant on attitude change. First, the content of the message (e.g., position/direction of arguments), the length, or the number of arguments can drive changes on attitudes. One example is the direction of arguments, i.e., the position advocated in the message. This position might contrast with the recipients' initial attitudes (Clark & Wegener, 2013). It is more likely that arguments presented in pro attitudinal-message, i.e., a message containing arguments matching individuals' attitudes, are accepted than in contra-attitudinal message (Lord, Ross, & Lepper, 1979). Second, features of the recipient of the message such as intelligence (e.g., Rhodes & Wood, 1992), current individual states (e.g., mood, Petty & Briñol, 2015), or physical behavior and body actions (e.g., head nodding, Wells & Petty, 1980; see Briñol & Petty, 2008) can also determine the effectiveness of persuasion.

Previous research has documented evidence of the performance of these features in different roles (Petty & Wegener, 1988; see Briñol & Petty, 2008; Petty & Briñol, 2006; Tormala & Briñol, 2015) and through different processes. In this thesis we focus on physical attractiveness and provide our contribution to this literature. This feature of the source of a message has been mainly approached as capable of directly change attitudes (e.g., Chaiken & Eagly, 1983) and bias the direction of thoughts (e.g., Ziegler, von Schwichow, & Diehl, 2005). Physical attractiveness may also be treated as a recipient of the message. As such, one relevant aspect to take into consideration is the relevance that of this recipients' individual trait and/or states. In Chapter III we explore this possibility.

Undesirable Persuasion and Correction Mechanisms

What can be expected when people perceive an undesirable influence on their attitudes? When assessing the quality of the target people might perceive the potential biasing influences on their judgment (e.g., Wilson & Brekke, 1994). This often involves an effort to make an adjustment or correction on judgments that counteract the biasing factor

(e.g., Golding, Fowler, Long, & Latta, 1990). This is highly relevant to the research on attitude change, and especially to models such as ELM. This model assumes that people aim to hold valid attitudes and are motivated to elaborate on the information available to sustain their attitudes. This can be sufficient to drive people to attend to relevant features of the message (e.g., likable source, see Chaiken, 1980; Petty, Cacioppo, & Schumann, 1983) and to try to reduce any potential bias on their judgments.

There are however a set of requirements for a process of correction to occur. The Flexible Correction Model (Petty & Wegener, 1993; Wegener & Petty, 1995; 1997) argues that one of such requirements is that individuals need to be motivated to search for potential sources of influence. The second requirement is that people need to have a theory regarding the direction of this potential bias. Thus, a correction process is more likely to occur when individuals perceive a source of influence and treat it as unwanted (see Wegener & Petty, 1997; Wilson & Brekke, 1994). In these conditions, people might try to correct for this influence, which can eventually promote a response in an opposite direction to the expected bias. This model only assumes that individuals might try to correct for such potential influence, not necessarily meaning a successful correction (see also Martin, 1986; Schwarz & Bless, 1992).

Relevant to the present work, people can perceive an attractive source with a potential undesirable influence on attitudes towards a topic. Theory-based corrections can then promote reversals of typical persuasion effects, i.e., an attractive source can be less persuasive than an unattractive source. In a demonstration of this, Wegener and Petty (1995) tested the extent to which people correct for this attribute when the potential biasing influence is made salient. In this study, participants were asked to rate the quality of two products endorsed by attractive people. The critical manipulation was that prior to this judgment, participants were either instructed to ignore the presence of the attractive source in their answers or received no such instruction. When participants receive no information, a physical attractive source lead to more favorable attitudes. As expected, when participants were instructed to correct, an opposite effect on attitudes was observed. This result is then consistent with a correction for the expected biasing effect of physical attractiveness. In a related research, Petty, Wegener and White (1998) addressed the correction processes promoted by the source likeability. Consistent with previous research, a group of participants were instructed to not let their personal feelings towards the likability of the

source influence their judgments. As expected, in this condition source likeability lead to less attitude change, especially when participants were in high elaborative conditions.

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In sum, we define attitudes as general evaluative judgments susceptible to be influenced by a persuasive context. This can be the result of more direct or indirect impact from features of this context, such as the source of a message. In this thesis, we focus on one of such features – physical attractiveness. We sustain our approach on the ELM, stating that features of the persuasive context can influence attitudes through different processes. In this work, we explore new avenues of the influence of physical attractiveness. We approach both the impact on attitude confidence and its relevance as a feature of the recipient of a message. Importantly, this type of influences can also be susceptible to processes of correction when perceived as an unwanted source of influence.

In the next Chapter we define thoroughly how these influences occur in a persuasive context. We describe that it might occur not only on attitudes but also on how the individual thinks and evaluates their attitudes. We set the track of this work by approaching attitude confidence as a metacognitive measure of perceived validity in one's attitudes.

Chapter II. Attitude Confidence as a Meta-cognitive Measure

In Chapter I, we addressed how people are more or less susceptible to influences from the context on their attitudes. We describe that features of the persuasive context, such as the source of the message, can have this influence. Nevertheless, attitudes and the process by which they are changed, can be held with more or less confidence (see Petty et. al, 2007). This sense of confidence is defined as a metacognitive judgment. Metacognition refers to thoughts about thoughts or thought processes. When people have a primary thought (e.g., "I agree with this person's opinion") they could reflect and evaluate on this thought. This is defined by a metacognitive or secondary thought (e.g. "I am confident that I agree with this person's opinion) (Jost, Kruglanski, & Nelson, 1998; see Petty et. al, 2007). When it comes to the study of attitudes and attitude change, this conceptualization has been applied in two lines of research: a) the study of thought confidence, as a predictor of change; and b) the amount of confidence people held about their attitudes. Both of these lines of research conceptualize that confidence is sensitive to contextual features and therefore relevant to take into account when studying attitude change.

The first line of research focuses on thought confidence. Approaching confidence on thoughts has been widely important to understand processes under which attitudes can change. The Self-validation hypothesis (Briñol, Petty & Tormala, 2004; Petty, Briñol & Tormala, 2002) argues that when it comes to understand attitude change it is important to account the amount of confidence people have on their thoughts. When thoughts are held with more confidence it is more likely that they predict attitudes in the same direction. For example, the more confidence people have about their unfavorable thoughts about a message, the more likely it is that their attitudes will be in this same direction (e.g., Tormala, Briñol & Petty, 2006). Thus, thought confidence can increase or decrease persuasion depending on the nature of the thoughts elicited (e.g., Petty et. al, 2002). Thus, this model proposes an additional role of persuasive variables – as determining the amount of thought confidence (e.g., source credibility, Tormala et. al, 2006, see Briñol & Petty, 2009).

The second line of research focuses on confidence on attitudes. Attitudes towards a topic can be held with more or less confidence. Examining potential influences on the

amount of confidence someone has about their attitudes is important since attitudes held with more confidence are more impactful in guiding behavior, more likely to persist over time, and to resist change (Rucker, Tormala, Petty, & Briñol, 2014).

Attitude Confidence

Attitude confidence is a metacognitive assessment of the perceived validity of attitudes (Gross et. al, 1995; Petrocelli, Tormala, & Rucker, 2007; Rucker et. al, 2014; Tormala & Rucker, 2007).[1] Attitude confidence reflects the psychological need to seek information supporting attitudes about which people feel confident (Festinger, 1954). People are not only motivated to hold correct attitudes, but to also search for cues that can give this sense of validity (e.g., knowing if others share the same attitudes as the self).

Understanding validity on attitudes becomes relevant when attitudes can be sensitive to change. Attitude confidence has been treated as a relevant dimension to approach in these contexts as an antecedent of the elaboration of a message. Uncertainty can serve as motivation to elaborate. This occurs either because the individual is motivated to hold a correct attitude (Petty & Cacioppo, 1990) or because they perceive to have a lower level of confidence and have the desire to achieve more (*Sufficiency Principle*; Chaiken et al., 1989). Attitude confidence can also be determined by the accessibility of information. As people gain more knowledge and support for their attitudes acquired during elaboration these attitudes become more accessible (see Petty, Haugtvedt, & Smith, 1995; Holland, Verplanken & Knippenberg, 2003). Studying attitude confidence is important, not only to understand its malleable nature but also as an antecedent of attitude strength (Rucker et. al, 2014), as the extent in which attitudes and its evaluative direction are durable and impactful (Petty & Krosnick, 1995).

Attitude Confidence is Sensitive to the Context

The consideration of attitude confidence as a central variable in persuasion is a more recent development by acknowledging that it can be affected by the context (see Rucker et al, 2014; Tormala, 2016; Tormala & Rucker, 2007). Next, we describe how attitude confidence can change as a result on how the individual perceives the context, being more

[1] When describing attitude confidence, researchers sometimes have used synonymous terms and measures such as attitude certainty, validity, or correctness. In this thesis, we focus our attention on attitude confidence, though the synonymous measures should produce similar results.

or less capable of resisting persuasion, evaluating the validity of information, or suffer influences from persuasive variables.

Resistance to persuasion. People can adjust attitude confidence depending on any influence they perceived on their attitudes. One of such can occur when people are able to resist a persuasive attack, i.e., they do not change the valence and extremity of attitudes. In this case, it is possible that attitudes do not remain literally unchanged. In fact, when people resist the arguments advocated in a message, they can reflect upon this resistance (Tormala, Clarkson, & Petty, 2006; Tormala & Petty, 2002; see also Petty, Tormala, & Rucker, 2004; Tormala, 2008). Upon this, individuals can make upward or downward adjustments to attitude confidence based on how they perceive the validity of their attitudes. Supporting this claim, Tormala and Petty (2002) developed several experiments demonstrating that when people resisted persuasive attacks, they report to have more confidence in their attitudes. In these experiments, the authors presented participants a counter attitudinal message. Participants were then asked to counterargue these messages. The results indicated that when they were successful in being capable of counterargue the message, they report more confidence in their initial attitudes.

The informative base of attitudes. Attitude confidence can be adjusted based on the quality of information that underlies attitudes. Rucker et. al (2014, see also Tormala & Rucker, 2007; Tormala & Rucker, 2018) proposed a framework stating that attitude confidence is formed and changed through an attribution-based process. The Appraisal Based-Certainty Approach argues that people adjust the level of confidence on their attitudes based on the quality of the information serving as a basis for these judgments. In this sense, people access the quality of their judgments and make upward or downward adjustments on confidence. If the information underlying attitudes is considered valid, people tend to form a positive appraisal towards their attitudes increasing confidence. However, if individuals consider that they do not have the correct evidence supporting their attitudes, then they form a negative appraisal, which consequently leads to a decrease of confidence. Supporting this claim, in the previously described experiment by Tormala and Petty (2002), participants received the information that they were reading either a strong or a weak message, when in reality there were no differences in the quality of the arguments. When participants were able to resist the message, they report more confidence in their attitudes but only when they believe they resisted a strong message. It is likely that participants made an adjustment in their confidence by perceiving that they manage to

correct a strong influence on their attitudes. Nevertheless, there are also situations that people do not induce any kind of adjustment either due to the lack of variability in the perceive quality of evidence (Rucker et. al, 2014).

This conceptualization argues that individuals appraise their attitudes along six dimensions to determine attitude confidence: accuracy; completeness of information; relevance, legitimacy; importance of information; and experiential inputs (Rucker et. al, 2014; see also Tormala & Rucker, 2007). These appraisals can then interact with influence from features of the persuasive context such as factors of the source of a message. Although research that supports the conceptualization of these dimensions is relevant to understand the variability of influences on confidence, we will focus on dimensions connected with the focus of the present work.

One of such dimensions is the judgment to whether an information is attitude-relevant. If people perceive that the information underlying an attitude is relevant it is more likely that they feel more confidence about their attitudes, becoming stronger attitudes. Although this direct effect on attitude confidence was not previously tested, it could occur for physical attractiveness as a feature of the source. In specific situations, physical attractiveness can be perceived as an irrelevant feature (e.g., an attractive model in a car advertisement) being detrimental to attitude confidence. This is consistent with the idea that the more attitudes are viewed as relevant, the more likely they would guide behavior (Snyder & Kendzierski, 1982), and be held with more confidence (Fazio & Zanna, 1978).

People can also perceive the information that is serving as basis for their attitudes as legitimate. For example, a consumer might form an impression about a product based on public reviews but might consider that these reviews are unrelated with the actual quality of the product. In the research developed by Tormala, DeSensi, and Petty (2007) participants were instructed to conterargue a message. As a critical manipulation, participants were informed about the reasons of the successful resistance, either by the minority status of the source or because of this specific instruction. When participants perceived that their successful resistance was caused by the minority status of the source (vs. as the instructions), and they perceived this as an illegitimate reason, they reported less confidence on their attitudes towards the message. As it is with relevance, a physical attractive source might have positive influences on attitudes but at the same time considered as an illegitimate basis for attitudes.

Potential influences from the context. Features of the persuasive context can also modulate attitude confidence, regardless if it is a feature of the source, the message, or the recipient. When it comes to the influence from the source, previous work shows that individuals report more confidence in their attitudes when a persuasive message is presented by a high rather than a low credibility source. In the research conducted by Clarkson et. al (2008), the authors used an impression formation paradigm in which participants received evaluative trait descriptions of a target individual. In this study, participants were randomly assigned to one of two conditions of source credibility, manipulated by the length of relationship between the source of the message and the target individual. Participants who were in the high credible condition report more confidence in their attitudes towards the target than those in the low credible condition.

People might also report more confidence in their attitudes if they perceived that they have access to the complete information (e.g. Bizer, Larsen, & Petty, 2011; Bizer & Petty, 2005; Rucker & Petty, 2004; Rucker, Petty & Briñol, 2008) or if they shared the same opinion with others (e.g., Petrocelli, et. al 2007). In a study conducted by Visser and Mirabile (2004), the authors manipulated the level of congruence of participant's attitudes about the topic of senior comprehensive exams with others. In this experiment, participants were randomly assigned to one of two conditions. In one condition, participants were informed that all member for their network held congruent attitudes. In the other condition, network members were described has having a range of attitudes, some congruent and other incongruent with participants. In this experiment, participants were exposed to a message containing strong arguments in favour of such exams. Results suggest that those who were in the congruent attitude conditions show less attitude change, and more perceived validity in their attitudes, when compared to those who were in the incongruent condition.

Other features such as physical actions and body movements (see Briñol & Petty, 2008); emotions (Briñol, Pety & Barden, 2007); ease of processing of information (Tormala et al, 2007); and self-confidence and power (see Briñol & Petty, 2008, for a review) have been shown to influence confidence on thoughts generated towards a message. In one study developed by Briñol, Petty, Valle, Rucker and Becerra (2007; Experiment 3) participants were first asked to generate thoughts about a product. After this, participants were asked to be seated either on a boss role using a taller chair (high power condition), or as a subordinate role using a lower chair (low power condition). Results show that those induced to have more (vs. less) power following message processing had greater confidence in their

thoughts. As a consequence, when participants had more confidence, their attitudes were consistent with the direction of the thoughts, as positive or negative. Extending this line of work, it can be assumed that any variable known to relate with general self-confidence can become determinant to approach in a persuasive context. As such, because self-evaluations of physical appearance are highly related with the general judgment of self-esteem and general confidence (e.g., Felisberti & Musholt, 2014; Langlois et al., 2000; Wade, 2000; Wade & Cooper, 1999) it is highly likely to also be relevant to attitude confidence. Thus, taking into account the metacognitive nature of judgments of confidence, it is expected that this attribute can also be related with attitude confidence. In addition to physical attractiveness as the source of a message we explore this possibility in Chapter III.

Attitude Confidence and Attitude strength

Attitude confidence is directly related to attitude strength (Gross et al., 1995; Tormala & Rucker, 2007; Tormala & Rucker, 2018). Attitude strength refers to the attitude's durability and impact (Krosnick & Petty, 1995). Stronger attitudes are more likely to resist a persuasive attack, to persist over time, to influence processing, and to predict future behavior. From the several distinct factors contributing to attitude strength (e.g., accessibility, extremity, importance, and knowledge; see Krosnick & Petty, 1995) persistence and resistance to persuasion have a relevant relationship with attitude confidence. As previously discussed, resistance to a persuasion can contribute to an increase of attitude confidence. At the same time, attitudes held with more confidence leads to higher resistance to change.

In a study conducted by Bassili (1996), participants were asked to report their attitudes towards a set of topics (e.g. hiring quotas for women). Attitude stability was assessed over an interval of approximately 2 weeks in two separate interviews. In this study, participants also report the level of certainty, importance, and strength associated with attitudes towards those topics. Those who report to be more confident about their attitudes showed a consistency of their attitudes across time (see also Bizer, Tormala, Rucker, & Petty, 2006; Visser & Krosnick, 1998). In fact, differences on judgments of attitude confidence predicted the level of consistency of attitudes even when measured one year after (Luttrel, Petty, & Briñol, 2016). Attitudes held with more confidence are not only more persistent across time but also more resistance to change to a persuasive attack (e.g.,

Kelley, & Lamb, 1957; Krosnick & Abelson, 1992; Muthukrishnan, Pham & Mungale, 2001; Wu & Shaffer, 1987).

Another relevant dimension of attitude strength is the attitude-behavior correspondence (e.g., Berger & Mitchell, 1989; Fazio & Zanna, 1978; Krishnan & Smith, 1998; Rucker & Petty, 2004; Tormala & Petty, 2004). People are more willing to act and do something related with the attitudes in which they feel more confident (e.g., Barden & Petty, 2008; Leippe & Elkin, 1987). Supporting this assumption, in Fazio and Zanna's (1978) experiments, participants were asked to work on series of tasks (e.g., letter series task) and then to provide ratings of confidence in the scores achieved in each of these tasks. Those that report to be more confident about their attitudes were more likely to enroll in the participation on these tasks (see also, Rucker & Petty, 2004). Due to the potential consequences to attitude strength, it is important to address the variability of influences on confidence.

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In this Chapter we state that attitude confidence is sensible to influences of the context. Research has shown that features of the persuasive context can influence not only attitudes, but also the amount of confidence in those attitudes. Features of the source of the message can prone individuals to report more or less confidence in their attitudes, regardless of any direct influence on attitude change. In addition to this, attitude confidence is sensible to individual adjustments based on the quality of the information underlying attitudes, as perceived as more or less legitimate. In the right conditions, people can adjust and correct the level of confidence on those attitudes. In this thesis, we raise the possibility that physical attractiveness, as a feature of the persuasive context, can also determine judgments of confidence. In fact, some authors already raised the possibility that physical attractiveness can, in specific conditions, be perceived as irrelevant and/or illegitimate, and therefore undermine attitude confidence (Rucker et. al, 2014).

The influence of this feature on attitude confidence is still an open question. First, it is unclear whether any feature of the context can influence attitude confidence. In fact, it is possible that not all features influence this metacognitive judgment in the same direction. It is likely that some features perceived as valid (e.g., a credible source) can be more informative to judgments of confidence than others (Rucker et. al, 2014). Based on the information gathered so far, we can only assume the possibility that physical attractiveness

can cue the validity in attitudes but at the same time can drive process of correction. In the next chapter, we argue that the multiplicity of effects from physical attractiveness opens several possibilities of its influence on judgments of confidence.

Chapter III. Extending the Role of Physical Attractiveness on Persuasion

In previous chapters we approached research on how features of the persuasive context can influence not only attitudes but also on thought and attitude confidence. In this thesis, we focus on a specific feature of the persuasive context – physical attractiveness. Our aim is to understand the influence of this feature both as the source and as the recipient of a message. We discuss the possibility that this feature can have other roles on persuasion. In this section we review the literature concerning physical attractiveness as a relevant feature of a persuasive context. We approach the extensive research on the influence of physical attractiveness, as a feature of the source of a message, on first cognitive order measures but also on second order metacognitive measures such as thought confidence. We discuss that this attribute has the capacity to not only influence attitudes, but also attitude confidence. We raised this as a possibility, not only as a source but also as an attribute of the recipient of a message.

The Power of Physical Attractiveness

Physical attractiveness is capable of affecting how we perceive and treat others (e.g. see Eagly, Ashmore, Makhijani, & Longo, 1991; Langlois et. al., 2000). More attractive people are viewed as having higher social adjustment and more social and intellectual competence (Eagly et. al, 1991). Dion, Berscheid, and Walster (1972) conducted an experiment designed to test physical attractiveness stereotypes. In this experiment, participants rated a photo of an attractive, an average, and an unattractive person. Participants then rate each person depict in these images in a set of traits (e.g., social desirability; occupational status; happiness). Results suggest that physical attractive photos were perceived as having more positive ratings across dimensions such as social desirability, parental and marital competence, and happiness. The authors summarized this positive influence, based on evidence, as “what is beautiful is good”.

The positive of physical attractiveness also emerges when accessed through the use of implicit measures (e.g., Buhlmann, Teachman, & Kathmann, 2011; Murphy, Hussey, Barnes-Holmes, & Kelly, 2015). The use of implicit measures suggests a unidirectional stereotype, in which attractiveness facilitates positivity but the opposite does not occur for

unattractiveness (van Leeuwen & Macrae, 2004). In Mello and Garcia-Marques (2018) we used an implicit measure (Stroop Task) to access attitudes towards physical attractiveness and its relation with credibility judgments. In this experiment, participants were asked to detect the color in which a word, related or unrelated to credibility, was presented. Critically, each of these words appeared in the same screen as a picture either of an attractive or an unattractive face. Results suggest that participants were slower in identifying the color of a credible word when it was associated with an attractive (vs. unattractive face). These results suggest the strength of the association between a physical attractive face with a credible word, slowing the unrelated tasks of naming the color of the word.

The positivity induced by attractive sources, as it is with other nonverbal features, can translate to an effect on persuasion through distinct processes. Some of these are expected to occur under low careful thinking such as classical conditioning (Staats & Staats 1958), as a cue for validity of information (Chaiken 1987; Schwarz & Clore 1983), misattribution to the attitude object (Jones et al. 2009), or because it increases processing fluency (Monin, 2003). All these are able to explain better or worse the impact over different judgments. Although these different approaches differ in their explanations, they agree that when attitudes change under low-thinking conditions, the direction of persuasion is consistent with the valence implied by this feature of the source. In this case, a physical attractive source, when perceived as a positive attribute, translates this positivity into attitudes. In addition to this, physical attractiveness is associated with other relevant traits such as expertise and trustworthiness (Eagly et al., 1991; Patzer, 1983; see also Oosterhof & Todorov, 2008). Critically, these attributes are defined as two relevant features to be identified within a source of a message (McGuire, 1969), and explains the effective influence on attitudes (Debevec, Madden & Kerman, 1986; Praxmarer, 2011).

Nevertheless, this positive influence of perceiving attractiveness on others does not emerge in all contexts. As suggested by the meta-analytic review conducted by Eagly and collaborators (1991), this stereotype has a moderated effect varying considerably from study to study. The strength of the use of this stereotype varies on the type of inferences that individuals are asked to make and on the amount of information that is given. In fact, as mentioned by the authors, physical attractiveness can have a “dark side”, and is frequently associated with other less positive qualities (e.g., vanity and selfishness).

Nevertheless, physical attractiveness is not only related with how we perceive

others but also how we evaluate ourselves. This individual judgment is linked with other judgments such as confidence or self-esteem. Those that report be more physical attractive also have more overall confidence (e.g., Felisberti, & Musholt, 2014; Langlois et al., 2000; Wade, 2000). In a study conducted by Wade and Cooper (1999), participants were asked to complete, in a contra balanced order, measures of physical attractiveness, body self-views, and self-esteem. Results suggests that, especially for women, there is a significant link between judgments of physical attractiveness and body views with ratings of self-esteem. In this thesis, we test if this overall association with confidence emerges also when measured as an association with an attitudinal topic.

Critically, self-evaluations of physical attractiveness can be determined by the level physical attractiveness of others. In the research developed by Cash et. al (1983), participants were exposed to highly attractive (vs. unattractive) faces. After this, participants rate their own attractiveness. When individuals were exposed to a highly attractive (vs. unattractive) face they reported lower self-ratings of physical attractiveness, promoting a *contrast effect* on judgments of physical appearance (see also Brown et. al, 1992, Little & Mannion, 2006). Critically, these contrast effects can then influence negatively ratings of self-esteem. In the research conducted by Thornton and Moore (1993) participants were seated in a table and were randomly assigned to one of two conditions. In one condition, participants were positioned in front of a poster with photographs of professional models. For the control condition participants did not see any images. After this, they were asked to provide ratings of their physical attractiveness and self-esteem. For those who were exposed to pictures of others reported lower self-ratings of physical attractiveness and social self-esteem and competence. As such, physical attractiveness of others influence not only how we judge and treat them but it can have important consequences to the self. Understanding how this feature is perceived is important to understand the variety of possibilities of influences on other judgments. Thus, not only on our attitudes towards the self or others but also how we perceive the validity of information presented by attractive people.

The Influence of Physical Attractiveness on Attitude Change

In a persuasive context, physical attractiveness can be treated either as a characteristic perceived in the source or as the recipient of a message. As previously described, research on self-evaluations of physical attractiveness are mostly focus on how

these self-views can be affected by the context. To our knowledge, no previous research approached the impact of this individual feature on attitudes or attitude change process.

When approaching physical attractiveness as a characteristic of the source, the literature refers to it has having a powerful influence on attitude change. As previously described, physical attractiveness is linked to other judgments such as expertise and trustworthiness (Eagly et al., 1991; Patzer, 1983; Praxmarer, 2011; see also Oosterhof & Todorov, 2008), as two relevant features of the source of a message with effective influence on attitudes (McGuire, 1969; Debevec et. al, 1986; Praxmarer, 2011). Importantly, this influence appears to be independent on its relevance to the content of the message advocated, i.e., it occurs even in when the topic of the message is unrelated with physical appearance (Ahearne, Gruen & Jarvis, 1999; Patzer, 1983).

We know from the ELM that physical attractiveness, as it is with other features, can influence attitudes and attitude change through different cognitive processes. This feature is capable of affecting primary (e.g., amount of thinking) (Petty & Cacioppo, 1981; Petty et. al, 1983) and secondary cognition processes (for a review of these effects of non-verbal variables see Guyer et. al, 2019). Below we describe that the effects of this feature go beyond the expected positivity associated to physical attractiveness.

The Variability of Influences of Source Attractiveness

Previous research suggests a multiplicity of effects on attitudes promoted by physical attractiveness. So far, physical attractiveness can a) determine the amount of elaboration, either by decreasing or increasing elaboration; b) exert a direct influence under low elaboration conditions; c) influence attitudes by serving as an issue relevant argument; and d) interfere with metacognitive variables.

Physical attractiveness can determine the amount of elaboration of the content of the message in different ways. One of such ways is by reducing careful processing of the arguments of a message (e.g., Watkins & Johnston, 2000). In the study conducted by Pallak (1983) either an attractive or an unattractive male presented a message to participants, either consisted by strong or weak arguments. Results suggests that the quality of arguments did not influence attitudes when an attractive (vs. unattractive) source presented the message. Being that the manipulation of argument quality allows to access the extent in which each individual is elaborating (Petty & Cacioppo, 1986) it was expected that the presentation of strong (vs. weak) arguments produced more favorable attitudes towards the

message. The pattern of data suggests that, regardless of the content of the message, this feature has a general positive influence promoted by a sense of pleasantness and processing fluency.

In addition to this, the presence of this attribute can also be sufficient to increase elaboration. For example, if a physical attractive source advocates information perceived as threatening (e.g., a counter attitudinal message; Petty & Cacioppo, 1984) it can motivate individuals to elaborate more on the content of the message. In a research conducted by Pucket, Petty, Cacioppo and Fisher (1983) when participants were exposed to a contra-attitudinal message by an attractive source, their resulting attitudes were determined by the quality of the arguments. In other words, the presence of this feature worked as a motivation to elaborate on arguments, even if these were perceived as weak and less valid.

Physical attractiveness also exerts a direct influence on attitudes. Individuals might change their attitudes by the presence of a physical attractive source, serving as a cue to accept or reject the message. In the study conducted by Chaiken (1983), participants were randomly attributed to one of two conditions. In the low involvement condition, participants were informed that their answers would not be relevant for future experiments. On the other condition, participants were informed that their answers were highly important and determine the development of future experiments. Participants were then exposed to a message presented by an attractive or by an unattractive source. Results suggest that the attitudes of those who were in the low involvement condition were more influenced by the presence of this feature.

The presence of physical attractiveness also determines attitude change in conditions where individuals are able and motivated to elaborate, determining the valence of thoughts (Ziegler et. al, 2005) or by serving as an issue relevant argument. In a study conducted by Petty and Cacioppo (1981), individuals who were more motivated to elaborate on the merits of a beauty product (shampoo) reported more positive attitudes when the product was paired with a photograph of an attractive than when it was with an unattractive.

Finally, attractiveness also influences attitude change through a second order cognitive process. In a research conducted by Evans and Clark (2012), the authors tested the effects of social attractiveness (i.e., likability) on persuasion. After being exposed to a message about phosphate detergents, participants were asked to list their thoughts about

the message. Before rating the level of confidence about their thoughts, participants were exposed to information about the source of the message, as either an attractive or as an expert. Results show that the presence of an attractive source validated individuals' thoughts about the message. More specifically, this occurred for those that report an individual characteristic that matched with this type of source (i.e., high self-monitoring). This match increased a sense of validity and confidence on thoughts, and therefore the predicted value for attitudes. In other words, the presence of an attractive source lead those that had favorable thoughts to report positive attitudes but those that had unfavorable thoughts to report negative attitudes about the message. Thus, the presence of this feature, and its influence on thought confidence, lead to more or less persuasion depending on the nature of thoughts.

In addition, people can correct for the influence of this attribute. As previously described, correction occurs when individuals perceive a bias or inappropriately influence on attitudes. If this influence is unwanted, people can adjust their judgments in not taking it into account this attribute, which can drive a reverse of the expected effect. Thus, an unattractive source might become more effective in persuading if people overcorrect for this potential influence. In the previous described research, Wegener and Petty (1995) showed that if people identify physical attractiveness as an unwanted source of influence, they can correct for such potential influence. This is extremely relevant as it shows a condition in which physical attractiveness lead to less (and not more) persuasion.

The Influence of Physical Attractiveness on Attitude Confidence: A Hypothesis to be Tested

The persuasive context can influence not only attitudes but secondary cognitive measures such as thought (Evans & Clark, 2012) and attitude confidence directly, even in the absence of changes in attitudes (e.g., Tormala & Petty, 2004). Given that metacognitive confidence can be applied to any cognition, and based on the evidence that physical attractiveness is capable of affecting attitudes through different processes, we have support to assume that it can also influence attitude confidence. We described the variability of effects promoted by this attribute. Based on previous research, it is also clear that any influence of physical attractiveness on attitude confidence might depend on the relevance of this feature to the context (Tormala & Rucker, 2018). However, none of these hypotheses were previously tested.

In this thesis we examine for the first time whether physical attractiveness is capable of affecting attitude confidence. The wide use of this variable within persuasive contexts is supported by the expected advantage of the use of this feature. Importantly, physical attractiveness can sometimes backfire and be associated with less influence on attitude change (e.g., Ziegler, et. al, 2005). Previous research on attitude confidence focused on source factors potential perceived as valid attributes, such as credibility and majority status. Physical attractiveness is often (but not always) unrelated to the merits of persuasive proposals (e.g., Petty & Cacioppo, 1981). Therefore, the effects of source attractiveness on attitudes and attitude confidence might depend on whether people perceive that source of information as a valid source of influence. In fact, we already know that people can correct for the influence of this feature on attitudes when it is perceived as unwanted (Wegener & Petty, 1995). Here we approach if this also translates into an effect on attitude confidence.

In this chapter we stated that physical attractiveness has an impact on how we perceive others and the self, being highly related with other judgments such as self-confidence and self-esteem. Importantly, this individual confidence can be sensitive to the presence of high levels of physical attractiveness in the context. We turned clear about the amount of research that sustains the multiplicity of roles of physical attractiveness on a persuasive context. On the basis of this review, we found that less is known about how it relates with attitude confidence. As such we focus our empirical work in addressing this issue.

Section II

Empirical Section

Overview of Empirical Studies

From our literature review we hypothesized that physical attractiveness can influence attitude confidence. The test of this hypothesis requires the identification of the conditions in which an effect is more likely to occur. We hypothesized and test if physical attractiveness can undermine attitude confidence if it is perceived as an unwanted source of influence.

The approach to physical attractiveness as an unwanted source of influence requires the test if it is dependent on a perceived undesirable influence on our prior attitudes, i.e., attitude change in an opposite direction. Therefore, we will follow up our approach with a second set of studies, aiming to test if the effect of physical attractiveness on attitude confidence occur in conditions where this feature is perceived to bias our own attitudes.

Finally, our studies will also approach physical attractiveness as a recipient factors and we focus on the relationship with judgments of attitude confidence. We test if the influence of physical attractiveness on attitude confidence underlies an impact on self-ratings of this physical attribute. As previously described, the exposure to physical attractive faces can undermine the general sense of confidence and self-views (e.g., Cash et. al, 1983). We approach how self-ratings of physical attractiveness can consequently influence judgments of attitude confidence and how the presence of an attractive source modulates such effect.

In the first empirical section we present evidence on the influence of physical attractiveness on attitude confidence. We then approach the conditions in which this effect is more likely to occur. Finally, we identify the relevance of studying this effect, by testing the consequential effect on attitude strength outcomes.

This first set of studies compounds a paper submitted for publication. **Experiment 1** identifies the effect and shows that physical attractiveness of the source influences attitude confidence. We assess an influence on attitude confidence promoted by high or low levels of physical attractiveness and compare them with a control condition. Subsequent studies replicate this effect. **Experiment 2** explores if the relevance and association between this attribute of the source with the topic of the message moderates the effect on attitude confidence. We address the role of the desirability of physical attractiveness as

potential influence on attitude confidence. **Experiment 3** addresses the dynamic of changes in attitudes and/or on attitude confidence, driven by the explicitness of attractiveness of the source as a potential source of bias. Finally, **Experiment 4** tests if the effect of an attractive source on attitude confidence matters for strength outcomes, predicting that individuals whose attitudes are held with less confidence would resist less to the influence of an attack.

We then follow up those results by offering an extra support to our claims. The second set of empirical studies approach the relation between attractiveness and confidence when individuals are uncappable of resisting a persuasive message. These studies define a new line of research that we aim to incorporated in a future publication. **Experiment 1** tests the link between attitudes towards a message and confidence on those attitudes. We address the relation between the agreement with a message and the confidence in those attitudes. We directly compared participants exposed to a pro attitudinal or to a counter attitudinal message. **Experiment 2** focuses on a counter attitudinal message and tests how source physical attractiveness influences the relationship between attitudes and attitude confidence.

The third and final set of studies also remain unsubmitted. This research takes a different approach to physical attractiveness, treating it also as a feature of the recipient of a message. Thus, we approach the relevance of self-ratings of physical attractiveness by the recipient of the message and its relation with judgments of attitude confidence. In **Experiment 1** we test the link between self-evaluations of attractiveness and its relationship with attitude confidence. **Experiments 2 and 3** extend this by presenting participants with different faces as more or less attractive. In these experiments we approach the role of comparison with faces when making an individual judgment. Finally, in **Experiment 4** we extent this approach to a persuasive context.

First set of studies - Empirical Article

The Influence of Physical Attractiveness On Attitude Confidence and Resistance to Change

The Influence of Physical Attractiveness On Attitude Confidence and Resistance to Change

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Abstract

It is well established that the physical attractiveness of the source of a message can influence recipients' attitudes about the message proposal. The current research is the first to examine if attractiveness is also capable of affecting attitude confidence and resistance to change. Experiment 1 revealed that an attractive source decreased recipients' attitude confidence, even when it did not affect attitudes. Experiment 2 replicated this novel finding and identified a critical condition under which this effect is more likely to occur. Specifically, attractiveness only reduced attitude confidence when it was unrelated to the merits of the persuasive proposal. This moderation by message relevance suggests that people can correct the confidence in their judgment for inappropriate sources of bias. Experiment 3 specified the conditions under which correction is more likely to take place on attitudes and on attitude confidence. Specifically, correction for source attractiveness on attitudes required an explicit correction instruction but correction on attitude confidence occurred regardless of the instruction. Finally, Experiment 4 demonstrated that the effect of attractiveness in reducing attitude confidence is consequential by making attitudes less resistant to change when facing counter attitudinal information. Taken together, the present research demonstrated that attractiveness can reduce attitude confidence as well as undermine subsequent resistance to counter attitudinal messages, but only when attractiveness was viewed as an unwanted biasing factor (i.e., the message topic was unrelated to attractiveness).

Keywords: Attitude confidence; Attitude strength; Attractiveness; Correction; Resistance

The Influence of Physical Attractiveness on Attitude Confidence and Resistance to Change

Extensive research in the field of attitudes and persuasion has demonstrated that the physical attractiveness of the source of a message can influence attitudes (e.g., see Petty & Wegener, 1998, for a review). In the present research, we examine for the first time whether source attractiveness can influence not only attitudes but also attitude confidence. Examining changes in attitude confidence is important because attitudes held with more confidence are more impactful in guiding behavior, are more likely to persist over time and to resist change (Rucker, Tormala, Petty, & Briñol, 2014).

1. Source Attractiveness and Attitude Change

A wealth of research has examined the effects of message sources on attitudes and persuasion (Hovland, Janis, & Kelley, 1953; Kelman, 1958; see Briñol & Petty, 2009, for a review). Most of this research has focused on the persuasive effects of source credibility, similarity, status, and power (Chaiken, 1980; Chaiken & Maheswaran; 1994; Kruglanski, et al., 2005; Martin & Hewstone, 2008; Moscovici, 1980; Mugny & Perez, 1991; Priester & Petty, 1995; Tormala, Briñol, & Petty; 2006; Wood et al., 1994; Ziegler, Diehl, & Ruther, 2002). Although relatively less studied, physical attractiveness of the source has also proven to be an important determinant of persuasion (DeBono & Harnish, 1988; Puckett, Petty, Cacioppo, & Fisher, 1983; see Guyer, Briñol, Petty, & Horcajo, 2019, for a recent review).

In general, relative to unattractive sources, attractive sources tend to generate more persuasion. The influence of source physical attractiveness, as well as other characteristics of the source of a message, can influence recipients' attitudes through each of the fundamental psychological processes of change identified by the Elaboration Likelihood Model (ELM) of persuasion (Petty & Cacioppo, 1986; Petty & Briñol, 2012; Petty & Wegener, 1999). According to this framework, variables such as physical attractiveness can influence attitudes by one of the following processes depending on the situation: (1) determining the amount of issue-relevant thinking that occurs, (2) serving as simple cues, (3) biasing the thinking that occurs, (4) being examined as an argument, and (5) by affecting what people think about their thoughts (i.e., meta-cognition; Petty, Briñol & Tormala, 2002).

For example, when *no constraints* are placed on a person's ability and/or motivation to think, attractive sources can reduce (e.g., Dipboye, Arvey, & Terpstra; 1977; Pallak 1983; Watkins & Johnston, 2000) or increase (Puckett et al, 1983) careful processing of a message under different circumstances and thereby influence attitudes. Under conditions that are not conducive to careful thinking (e.g., distraction, low-involvement, low relevance/responsibility, etc.) and/or for individuals who do not enjoy cognitively demanding tasks (i.e., low need for cognition; Cacioppo & Petty, 1982), attractiveness has been shown to influence attitudes by acting as a relatively simple acceptance or rejection cue (Haugtvedt, Petty, Cacioppo, & Steidley, 1988). Beyond affecting the amount of processing when thinking is not constrained to be either high or low, or serving as cue under low thinking conditions, source attractiveness can also play other roles under different circumstances. For example, when a person is able and motivated to carefully consider the merits of an issue (i.e., high-thinking), source attractiveness can bias the valence/direction of thoughts people generate in response to a persuasive message (Ziegler, von Schwichow, & Diehl, 2005). Under high-thinking conditions, source attractiveness can also serve as an issue-relevant argument when it is diagnostic of the merits of the attitude object under consideration (Petty & Cacioppo, 1981). Finally, more recent research has shown that the effects of attractiveness on persuasion can also occur through the meta-cognitive process of thought validation, making people rely on their thought more when they are the kind of person who values attractiveness (Evans & Clark, 2012).

In addition to this extensive body of research showing the multiple processes by which source attractiveness can influence attitudes, evidence has also revealed that sometimes people believe that their attitudes have been biased or inappropriately influenced by a feature of the source. That is, if people believe that their thoughts have been biased or in some way inappropriately influenced by a feature of the source such as attractiveness, and they do not want this to occur, they can adjust their judgments in a direction opposite to the perceived (i.e., a correction effect; Petty, Wegener, & White, 1998; Wegener & Petty, 1995). People can believe attractiveness has served as a biasing factor for several reasons (e.g., the source served as an irrelevant peripheral cue; the source biased their thoughts to favor the message). These corrections can occur in different directions depending on recipients' naïve theories of how the biasing event or stimulus (e.g., an attractive source) is likely to have influenced their thoughts. When people are motivated and able to correct, theory-based corrections can lead to reversals of typical persuasion effects (e.g., an

unattractive source is more persuasive than an attractive source if a person "overcorrects" for the presumed source influence). Importantly, meta-cognitive processes of correction are more likely to operate when thinking is relatively high because it is only in such situations that people have the motivation and ability to assess the accuracy of their judgments (Petty, Briñol, Tormala & Wegener, 2007).

In one example of correction, Wegener and Petty (1995) tested the extent to which people corrected for attractiveness when its potential biasing influence was made salient. In this study, participants were asked to rate the quality of two products endorsed by attractive celebrities. Prior to this rating, they were either instructed to try to ignore the influence of the attractiveness of the source on their answers or received no instruction. The results indicated that when instructed to correct, the attractive source led to less favorable ratings of the product than when participants did not receive any instructions, consistent with a correction for the presumed biasing effect of attractiveness. In a subsequent study, Petty, Wegener, and White (1998) showed that people corrected their judgments for source likeability when instructed to do so regardless of whether source likeability had an initial impact on attitudes. That is, when people were not thinking carefully, source likeability had a positive impact on attitudes when there was no instruction to correct, but this simple source cue did not affect attitudes when thinking was high, consistent with prior work on the impact of peripheral cues (e.g., Petty, Cacioppo, & Goldman, 1981). Nonetheless, when participants were instructed to correct their judgments for a possible bias, they did so regardless of whether source likeability did or did not have an initial impact on attitudes.

2. Attitude Confidence

A common feature of prior work on source physical attractiveness was that its effect was often assessed on measures of attitude favorability (e.g., good-bad, like-dislike, etc.). Importantly, research has identified dimensions of attitudes beyond favorability that are also consequential. For instance, a burgeoning literature on attitude strength (Petty & Krosnick, 1995) has revealed that attitudes subjectively held with greater confidence are stronger (more persistent over time, resistant to change, and predictive of behavior) than attitudes held with doubt (e.g., see Fabrigar, MacDonald, & Wegener, 2005; Fazio & Roskos-Ewoldsen, 2005; Rucker et al., 2014; Visser, Bizer, & Krosnick, 2006, for reviews). Attitude certainty refers to the subjective sense of confidence or conviction one has about an attitude, i.e., a metacognitive assessment of one's attitude (Gross, Holtz, & Miller, 1995; Petrocelli, Tormala, & Rucker, 2007; Tormala & Rucker, 2007).

Although attitude confidence has proven to be quite important in the persuasion literature, it has also been shown to be rather malleable. For example, previous research suggests that attitude confidence can be sensitive to the influence of source factors, even when no effects on attitudes are observed. For example, Tormala and Petty (2004) showed that when participants were led to believe they resisted being persuaded by a high rather than a low credibility source, their attitudes toward the topic were unaffected, but their attitude certainty increased (see also Clarkson, Tormala, & Rucker, 2008). However, as previously noted, research has yet to explore the interplay between physical attractiveness and attitude confidence. Thus, we sought to address this gap in the literature by exploring the effect and direction of the influence of source physical attractiveness on attitudes and attitude confidence. Moreover, we also strove to demonstrate a consequence of this attitude confidence in terms of attitude resistance to change.

3. The Effect of Source Factors on Attitude Confidence

Studying the effects of source factors on attitude confidence is important because more confidently held attitudes are stronger. As already noted, attitudes held with high confidence are more likely to persist over time (e.g., Bizer, Tormala, Rucker, & Petty, 2006; Luttrell, Petty, & Briñol, 2016) to resist persuasive attacks (Bassili, 1996) and to predict thinking and behavior (see Petty & Krosnick, 1995).

As also noted previously, attitude confidence is sensitive to the influence of source factors such as credibility. In addition to credibility, the numerical status of a source can affect attitude confidence. Tormala, DeSensi, and Petty (2007) found a relationship between the numerical status of the source and attitude confidence towards a certain policy. In this study, learning that a large majority (vs. a small minority) of students on campus supported a policy was associated with more attitude confidence. This research revealed that derogating a message proposal simply because the source is in the minority is perceived to be an illegitimate thing to do. Therefore, when people resisted changing their attitudes for that reason, their attitudes remained intact but they felt less certain about the attitude because they perceived that they had resisted change for an illegitimate reason (see Rucker et al., 2014, for further discussion of legitimacy and certainty).

As these examples illustrate, previous research on changes in attitude confidence have focused on source factors associated with validity, such as credibility and majority status. Instead of focusing on these factors informative of validity, the present research

focuses on physical attractiveness. Contrary to the credibility or the numerical status of the source, attractiveness is often (but not always) unrelated to the merits of persuasive proposals (e.g., Petty & Cacioppo, 1981). Therefore, the effects of source attractiveness on attitudes and attitude confidence might depend on whether people perceive that source of information as valid.

Overview of the Present research

As described, prior research investigating the effects of source factors on persuasion has focused not only on how features of the source of a message can influence attitudes but also attitude confidence. So far, the bulk of this research has focused on examining source variables such as credibility and majority/minority status. In the present work, we focus on physical attractiveness. At present, it is unclear whether physical attractiveness is capable of affecting attitude confidence, and if so, in what direction, and with what consequences. Here we explore whether and when physical attractiveness influences attitudes and attitude confidence.

Experiment 1 provides an initial exploration of the influence of source physical attractiveness on recipients' attitudes and attitude confidence by comparing different levels of physical attractiveness with a control condition. Experiment 2 focuses on replicating the effects obtained in the first study and exploring a moderator of that effect. Experiment 3 focus on specifying the conditions under which correction is more or less likely to take place on attitudes and attitude confidence. Finally, Experiment 4 tests whether the effect obtained on attitude confidence is consequential in terms of attitude resistance. Importantly, all measures, manipulations, and exclusions were reported in each study.

(Supporting information can be found in Appendix A of this thesis).

Experiment 1

The purpose of the first experiment was to provide an initial exploration of the influence of source physical attractiveness on message recipients' attitudes and attitude confidence. Participants were asked to read a message about a topic unrelated to attractiveness that presented a set of arguments advocating why children should not possess cell phones. Participants first read the message and were then presented with information about the source of the message. The critical manipulation exposed participants to one of three conditions: a picture of an unattractive source, no source (control condition), or a picture of an attractive source. Finally, participants reported their attitudes about the

proposal and their confidence in those attitudes. As noted, our primary goal was to explore whether there was an effect of attractiveness on attitudes and attitude confidence and if so, in what direction.

Method

Participants and Design

Ninety Amazon.com's *Mechanical Turk* workers (M_{age} = 29.6, 50.0% male) received $1.00 to complete this study designed to collect their opinions about different topics. Participants were randomly assigned to one of three experimental conditions: unattractive facial picture vs. no picture vs. attractive facial picture. A power analysis was conducted using G*Power (Faul, Erdfelder, Lang & Buchner, 2007). In the absence of previous research examining the impact of attractiveness on attitude confidence, we combined a generic overall medium effect size (f =.25; Cohen, 1988) with previous evidence of the direct role of attractiveness on attitudes (f = .45; Till & Busler, 2000). This study used a similar manipulation of physical attractiveness (e.g., close-up picture of a face with different levels of enhancement in attractiveness). The results of the power analysis on the estimated effect size (f =.34) indicated that the desired sample size for the one-way analysis with 3 groups with .80 power, was N = 87 participants. We performed a sensitivity power analysis (Faul et al., 2007) assuming an alpha significance criterion of 0.05. With a sample of ninety participants, the analysis had 80% power to detect a minimum effect size of f = .33.

Procedure

Participants were told that they would be required to read a message advocating against children owning a cell phone. Participants first read a message where the author presented six arguments of why children should not possess a cell phone (e.g. "*Conversation takes practice, dependence on electronic devices interferes with social interactions"*). Then, they were exposed either to an unattractive or attractive color photograph of the face of the author of the message or a blank space. After this manipulation, participants reported their attitudes towards the proposal and the degree of confidence in those attitudes. Finally, participants were thanked and debriefed.

Independent Variables

Physical attractiveness of the source. There were three experimental groups varying the source of the message: unattractive source, attractive source, and no-face. In

the unattractive and attractive source conditions, participants were exposed to a picture of a female face. These faces were selected from a larger set of faces previously evaluated in physical attractiveness using a 7-point scale (very unattractive - very attractive; Mello & Loureiro, 2015). We select the two female faces most discrepant in attractiveness. The unattractive source was rated as low in attractiveness ($M = 1.71$, $SD = .98$) and the attractive source was rated as high in attractiveness ($M = 5.28$, $SD = .90$), $t(43) = 19.96$, $p < .001$. The no-picture condition did not provide participants with any information about the source and therefore served as a control condition. We conducted a separate study to pilot test these photographs to address other potential features that could have been confounded with the attractiveness of the faces. In this pilot testing, 45 participants (M_{age}= 28.6, 67.4% male) were randomly assigned to see either the selected attractive or the unattractive face. After exposure to one picture or the other, participants were asked to provide ratings on the following four dimensions: attractive, likable, powerful, and credible (1 = Not at all; 7 = Extremely). As expected, participants perceived the attractive source to be more attractive ($M = 4.44$, $SD = .75$) than the unattractive source ($M = 3.91$, $SD = .86$), $t(43) = -2.28$, $p = .028$. Importantly, no significant differences were found for the ratings of likeability ($t(43) = -1.42$, $p = .163$), power ($t(43) = -1.57$, $p = .124$), and credibility ($t(43) = -0.96$, $p = .341$).

Dependent Variables

Attitudes toward the message. Participant's attitudes toward the topic were assessed with one item "*What is your opinion about children owning a cell phone?*" on a 7-point scale (1 = against; 7 = in favor). This single item is identical to the one used by Petrocelli et. al (2007) to assess attitudes. In this prior research, the authors also tested the impact of a persuasive treatment on both attitudes and attitude confidence (for another example, see also, Briñol, et al., 2018). Responses to this item were scored such that higher values indicated more agreement with the advocated position.

Attitude Confidence. Participant's level of confidence in their attitudes was assessed using one item "*How confident are you of your attitude toward the message you just read?*" on a 7-point scale (1 = not confident at all; 7 = very confident). This item was identical to the one used by Clarkson, et. al (2008) to measure attitude confidence in research relevant to the present study because it was used to test the influence of source factors on attitudes and attitude confidence. We elected to use a single-item to capture attitude confidence because recent literature has tested and validated the use of the identical single-item measure of certainty to moderate the relationship between diverse judgments

and behaviors (Shoots-Reinhard, Petty, DeMarree, & Rucker, 2015; Santos, Briñol, Petty, Gandarillas & Mateos, 2019; Paredes, et al., 2019; see also, Robins, Hendin, & Trzesniewski, 2001).

Results

Attitudes

The three group, one-way ANOVA revealed no effect of physical attractiveness on attitudes, F (2, 87) = 1.86, p = .161, η^2_p = .04. We conducted a series of pairwise comparisons. We found no significant differences between the unattractive (M = 3.83, SD = 2.07) and no-face condition (M = 3.77, SD = 2.01), t(87) = - 0.13, p =.898. We also found no significant difference between the no-face and attractive conditions (M = 4.67, SD = 1.95), t(87) = 1.73, p =.087. Finally, the same occurs when comparing the unattractive condition with the attractive condition, t(87) = 1.60, p = .112, though as expected, the direction is for attitudes to be more favorable with the attractive than the unattractive source.

Attitude Confidence

A separate one-way ANOVA revealed a significant main effect of physical attractiveness on attitude confidence, F (2, 87) = 7.03, p = .001, η^2_p = .14. To fully interpret this effect, we conducted a series of pairwise comparisons using the Least Significant Difference (LSD) test. First, the comparison between the unattractive and no-face condition revealed a non-significant difference, t(87) = 0.36, p =.720. In the comparison between the no-face and attractive conditions, we found a significant difference, t(87) = 3.41, p =.001. It showed that the attractive condition led to lower attitude confidence (M = 4.50, SD = 1.83) than the no-face condition did (M = 5.77, SD = 1.19). The same effect was found when comparing the unattractive condition to the attractive condition, t(87) = -3.05, p = .003. This effect revealed that the unattractive condition lead to more attitude confidence (M = 5.63, SD = 1.19) than the attractive condition.

(Supporting information can be found in Appendix D of this thesis)

Discussion

The results of experiment 1 suggest that the physical attractiveness of the source can influence attitude confidence even if attitudes are not affected. Specifically, our data revealed that attractive sources are associated with less attitude confidence when compared

with both an unattractive source and a no-picture control condition. This a new finding and suggests not only that the physical attractiveness of a source can affect attitude confidence and attitudes in different ways, but also that an attractive source can provoke individuals to adjust their confidence ratings presumably by correcting for the potentially biasing impact of physical attractiveness. To the best of our knowledge, this is the first time that research has documented adjustments for biasing variables on attitude confidence rather than a measure of attitudes, per se. In a second experiment, we introduce some changes to test to what extent these effects would replicate and generalize to other topics. Most importantly, we test a possible moderator for this effect.

Experiment 2

After having shown in Experiment 1 that physical attractiveness is capable of decreasing attitude confidence compared to a control condition and an unattractive source, we conducted a second experiment with two goals in mind. The first goal was to replicate the observed pattern of effects found in experiment 1 on attitude confidence using different materials.[2] The second goal was to propose and test a moderator for the effect of attractiveness on attitude confidence. We speculate that the decrease in attitude confidence occurs because individuals do not want to base their confidence on information that is not relevant to the merits of the persuasive proposal (see Wegener & Petty, 1995). Therefore, we decided to manipulate the extent to which the topic of the message was related or unrelated to attractiveness (Petty & Cacioppo, 1981; Kang & Herr, 2006). Specifically, participants read either a message about the merits of new detergents (product unrelated to physical attractiveness) or about skincare products (product relevant to physical attractiveness).

Considering the findings of the previous experiment, we expected that an attractive source would lead to less attitude confidence when the topic was unrelated to attractiveness, thus replicating the findings of study 1 in the domain of consumer products. Importantly, we expected attractiveness to lead to more attitude confidence when presenting a message related to attractiveness, where it was relevant. This finding would reverse our original result but be consistent with the direction of effect found in prior research on source

[2] In another study (N = 167) designed to pilot test new materials, we obtained additional evidence consistent with the hypothesis that an attractive face is associated with less attitude confidence ($M = 5.17$, $SD = 1.40$) when compared to an unattractive face ($M = 5.58$, $SD = 1.27$), $t(165) = 1.96$, $p = .052$) associated with the same proposal. In this study, participants also read a message and then saw the face of the source. This message was about the topic of governmental controls on the industry to minimize the effects of pollution.

expertise where high expertise tended to increase attitude confidence over low expertise. Therefore, we predicted an interaction between the attractiveness of the source and the message-type on attitude confidence. Furthermore, this effect was expected to occur regardless of whether attractiveness affected attitudes.

Method

Participants and Design

One hundred and twenty- six participants (M_{age} = 27.1, 55.6% male) recruited from the Prolific Academic platform received **£** 1.10 (approximately $1.30) to complete a study designed to collect their opinions about different topics. In this study, participants were randomly assigned to one of four conditions defined by a 2 (Message-type: topic related vs. unrelated to attractiveness) × 2 (Physical attractiveness of the source: unattractive vs. attractive) between-subjects design. The final sample size was decided based on collecting the maximum number of participants who signed up to participate in the study during the day in which it was posted. We aimed to stop the collection after achieving a final sample with at least 30 participants per condition as was the case in Experiment 1. Our final sample slightly exceeded this goal with an average of 32 participants per condition. We performed a sensitivity power analysis (Faul et al., 2007) assuming an alpha significance criterion of 0.05. With a sample of one hundred and twenty-six participants, the analysis had 80% power to detect a minimum effect size of f = .25 for the interaction, sufficient to detect an effect on attitude confidence in the condition that replicates Experiment 1.

Procedure

Participants were told that they would be required to read a message written by the author of a blog. Similar to Experiment 1, participants first read the message. After this, they were exposed to either an attractive or unattractive facial picture of the source of the message. After this manipulation, participants reported their attitudes toward the message and attitude confidence. Finally, participants were thanked and debriefed.

Independent Variables

Message-type. Participants read one of two messages. In the message related to attractiveness condition, the author presented six arguments about the use of specialized skincare products (e.g. "*A beautiful skin makes people feel more beautiful, and this will only be obtained with the use of these specific products*"). In the message unrelated to attractiveness condition, the author presented six arguments about the use of specific

detergents to clean dishes (e.g. "*There may be times when we have to use these types of products to remove difficult stains or food residue"*).

Physical attractiveness of the source. The attractiveness of the source was manipulated using the same materials as in Experiment 1.

Dependent Variables

Attitudes. Attitudes toward the topic were assessed using the same item as in Experiment 1.

Attitude Confidence. Attitude confidence was assessed using the same item as in Experiment 1.

Results

Attitudes

A 2 (Message-type: relevant or irrelevant to attractiveness) × 2 (Physical attractiveness of the source: unattractive or attractive) factorial ANOVA revealed a main effect of physical attractiveness on attitudes, F (1, 122) = 6.59, p = .011, η^2_p = .05. This effect indicated that participants had more favorable attitudes towards the message when they were exposed to an attractive (M = 5.73, SD = 1.16) than to an unattractive source (M = 5.09, SD = 1.57). This analysis revealed a non-significant effect of message type and therefore no differences emerged between the message unrelated (M = 5.31, SD = 1.48) and the message related to attractiveness condition (M = 5.50, SD = 1.35, F(1, 122) = 0.75, p =.388, η^2_p = .01. Finally, no significant interaction between the two factors emerged, F(1, 122) = 0.38, p =.541, η^2_p = .003, was found (see Figure 1, top panel).

Attitude Confidence

A separate 2 × 2 factorial ANOVA on attitude confidence revealed no main effect of attractiveness. This suggests that there were no significant overall differences on attitude confidence between those who were exposed to an unattractive (M= 5.33 , SD = 1.33) and those who were exposed to an attractive source (M = 5.50, SD = 1.03), F(1, 122) = .85, p =.358, η^2_p = .01. We also found no significant effect of message-type, suggesting no differences on ratings of attitude confidence between the message unrelated (M = 5.60, SD = 1.17**)** and the message related to attractiveness condition (M = 5.19 , SD = 1.56), F(1,122) = 2.34, p =.129, η^2_p = .02.

More importantly, a significant interaction between the two independent variables emerged, F (1, 122) = 12.65, p = .001, η^2_p = .09. As predicted, the pattern of this interaction suggests that that for the message unrelated to attractiveness (i.e., dish detergents), an attractive face was associated with less attitude confidence (M = 5.29, SD = 1.17) than an unattractive face (M = 5.91, SD = 1.11), F(1, 122) = 3.79, p = .054, η^2_p = .03, thus replicating Experiment 1. In contrast, for the message related to attractiveness (i.e., specialized skin-care products), an attractive face was associated with more attitude confidence (M = 5.77, SD = 0.77) than an unattractive face (M = 4.72, SD = 1.87), F(1, 122) = 9.25, p = .003, η^2_p = .07, (see Figure 1, bottom panel).

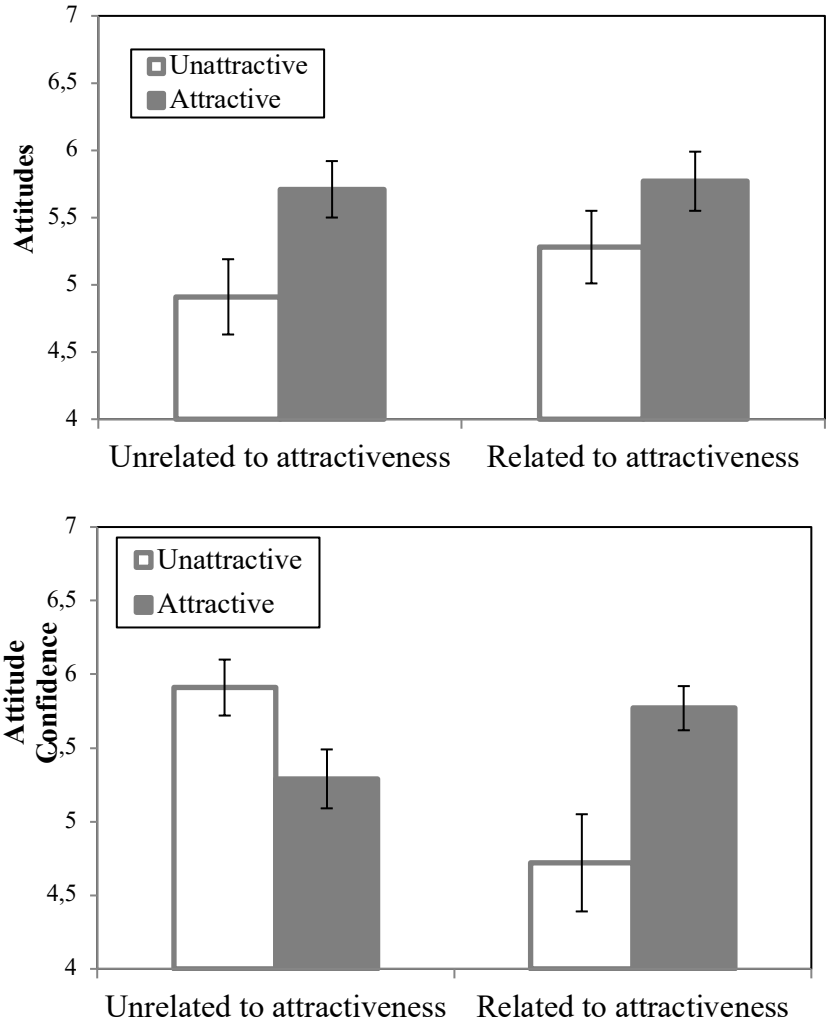


Figure 1. Top panel: Attitudes as a function of the condition of Physical Attractiveness of the source and Message-Type in Experiment 2.

Bottom panel: Attitude confidence as a function of the condition of Physical Attractiveness of the source and Message-Type in Experiment 2. Error bars represented standard errors

Given that attractiveness affected attitudes in this study, we also ran an ANCOVA in order to control the effect of attitudes on attitude confidence. No main effect of attitudes emerged, $F(1, 121) = 1.18$, $p = .280$, $\eta^2_p = .01$, and the interaction between physical attractiveness of the source and message-type remained significant, $F(1, 121) = 13.05$, $p < .001$, $\eta^2_p = .09$.

(Supporting information can be found in Appendix D of this thesis).

Discussion

Experiment 2 replicated the effect of physical attractiveness on attitude confidence and identified a condition under which this effect is more likely to occur. Specifically, source attractiveness reduced attitude confidence only when the source advocated for a topic unrelated to attractiveness, consistent with the idea that people are correcting for an inappropriate bias (Wegener & Petty, 1997). Importantly, we found the opposite effect when the same source presented a message related to this physical feature. That is, attractiveness increased (rather than decreased) attitude confidence when it was relevant to the persuasive proposal.

So far, we have identified a new effect and demonstrated a condition that facilitates the emergence of that effect, and a condition under which it can be reversed. Indeed, as noted above, this moderation suggests why the effect is likely to have occurred. However, it remains an open question to address why the lack of legitimacy of physical attractiveness leads to correction effects on attitude confidence but not on attitudes. One possibility is that although people might have spontaneously formed their attitudes without considering the possibility of bias (e.g., Fazio, 1995; Bargh, Chaiken, Raymond, & Hymes, 1996) it is less likely that they do the same with judgments of confidence. That is, people may not form a confidence judgment spontaneously and thus when receiving the confidence question, some explicit thought is prompted which causes people to consider whether they have a good basis to be confident. With this additional thought, they realize that attractiveness is not a good reason to be confident and therefore correct for this possible bias. With respect to attitudes, however, this extra thought does not take place when the attitude question is confronted because people have already spontaneously formed their attitudes. Indeed, prior research on attitude correction has shown that correction does not take place unless people are explicitly prompted to consider the possibility of bias. That is, in previous research, individuals corrected for the influence of physical attractiveness and other biasing factors

on their attitudes but only when the source of the bias was specifically pointed out (e.g., Petty et al., 1998; Wegener & Petty, 1995). To examine this, Experiment 3 compares an explicit instruction to correct for bias with no instruction. We hypothesized that in accord with prior research, this explicit correction instruction would be necessary to observe correction for attractiveness on the attitude measure, but the correction instruction would not be necessary to observe correction on the attitude confidence measure.

Experiment 3

In Experiment 3 we address whether explicitly making the potential for bias salient is needed to produce correction on measures of attitudes but not on measures of attitude confidence. To do this, we decided to use the same manipulation of the salience of bias from physical attractiveness used previously in research by Wegener and Petty (1995). Specifically, participants in the bias salient condition were instructed to try to ignore the level of physical attractiveness of the source of the message on their judgments. In the control condition, no such instruction was provided (mimicking the conditions of Experiments 1 and 2 in the current research).

By manipulating whether bias was made salient or not, we expected to specify the conditions under which correction is more likely to take place on attitudes (replicating previous literature) *versus* on attitude confidence (replicating the new finding introduced in this research). We predicted that this prompt draws attention to the possibility of bias in one's attitudes. The salience of bias is what promotes attitudinal correction. Specifically, we predicted that for the attitude measure, bias instructions would interact with attractiveness and therefore moderate the outcome such that when there was no instruction, attitudes would be more favorable when the source was attractive rather than unattractive. More importantly, however, when the potential for bias was made salient with the instructions, attitudes would be more favorable when the source was unattractive than attractive because people would correct their attitudes for the presumed biasing effect of attractiveness. This would replicate prior research on the impact of providing explicit bias correction instructions on attitudes.

We expected a different pattern on the confidence measure, however. Here, we predicted that correction is provoked when people are confronted with the attitude confidence question. As explained earlier, although people tend to spontaneously form attitudes when they are confronted with evaluative information (e.g., Fazio, 1995), they

may be less likely to spontaneously form confidence judgments unless prompted. In day to day life, people might be prompted when they are considering acting on their attitude. This need for behavior may prompt consideration of how much confidence to place in one's attitude. In the current context, it is the confidence question that prompts this consideration. That is, when asked the confidence question, people would deliberate about just how confident they should be. With a modicum of thought, they would realize that an attractive source is not a good basis to be certain in one's attitude and thus would correct for this potential bias (as in Experiments 1 and 2). When the explicit bias instructions are presented, they should likewise correct for a possible bias from attractiveness, but these instructions are not necessary (as they are for attitudes) because the confidence question itself serves as a prompt to consider whether they should be confident or not. Thus, unlike for attitude judgments where making bias salient should interact with the attractiveness manipulation, for the confidence judgment we only anticipated a main effect for the attractiveness induction showing that people corrected for a possible attractiveness bias regardless of the salience induction.

Method

Participants and design

One hundred and twenty-four participants (M_{age} = 27.3, 53.2% male) recruited from the Prolific Academic platform received £ 0.98 (approximately $1.20) to complete a study designed to collect their opinions about different topics. In this study, participants were randomly assigned to one of four conditions defined by a 2 (Physical attractiveness of the source: unattractive vs. attractive) × 2 (Correction manipulation: no instructions vs. correction instructions) between-subjects design. The final sample size was decided based on collecting the maximum number of participants who signed up to participate in the study during the day in which it was posted. Based on experience, we anticipated that we would obtain at least 100 participants. We performed a sensitivity power analysis (Faul et al., 2007) assuming an alpha significance criterion of 0.05. With a sample of one hundred and twenty-four participants, the analysis had 80% power to detect a minimum effect size of f = .25 for the interaction.

Procedure

Participants were told that they would be required to read a message written by the author of a blog. Participants first read the same message unrelated to attractiveness used

in Experiment 2 which advocated for the use of specialized detergents to clean dishes. Next, participants were exposed to either an attractive or unattractive facial picture of the source of the message. Then, participants were exposed either to an instruction to correct for the influence of the attractiveness on their judgments or they received no correction instructions. After this manipulation of correction, participants reported their attitudes toward the proposal and the confidence associated with their attitude. Finally, participants were thanked and debriefed.

Independent Variables

Physical attractiveness of the source. The attractiveness of the source was manipulated using the same materials as in Experiments 1 and 2.

Correction manipulation. There were two experimental groups varying the type of instructions participants received prior to their judgments of attitudes and attitude confidence. In the correction instructions condition, participants received the following instruction, "Please try to make sure your perceptions about the level of physical attractiveness of the person who wrote this message do not influence your ratings and judgments about the topic written in the message." This instruction is the same as the one used by Wegener and Petty (1995). The no-instructions condition replicates Experiments 1 and 2 and did not provide participants with any instructions before making ratings of attitudes and attitude confidence.

Dependent Variables

Attitudes. Attitudes toward the topic were assessed using the same item as in the prior experiments.

Attitude Confidence. Attitude confidence was assessed using the same item as in the prior experiments.

Results

Attitudes

A 2 (Physical attractiveness of the source) × 2 (Correction manipulation) factorial ANOVA on attitudes revealed no significant differences between the unattractive (M = 3.54, SD = 1.65) and the attractive face (M = 3.54, SD = 1.27), F (1, 120) = .004, p = .949, η^2_p = .001. This analysis revealed also no significant main effect promoted by the correction instructions, and therefore no differences emerged between the no-instruction (M = 3.60,

SD = 1.60) and the instruction condition (*M* = 3.48, *SD* = 1.33), *F* (1, 120) = 0.17, *p* = .681, η^2_p = .001. More importantly, an interaction between the two manipulations emerged, *F* (1, 120) = 3.89, *p* = .051, η^2_p = .03. As predicted, the pattern of this interaction was such that when participants received no instructions to correct, an attractive face was associated with more agreement with the message (*M* = 3.87, *SD* = 1.43) than an unattractive face (*M* = 3.33, *SD* = 1.73), *F* (1, 120) = 2.02, *p* = .158, η^2_p = .02. In contrast, for the correction instructions condition, an attractive face was associated with less agreement (*M* = 3.24, *SD* = 1.03) than an unattractive face (*M* = 3.74, *SD* = 1.57), *F* (1, 120) = 1.88, *p* = .173, η^2_p = .02 (see Figure 2, top panel). Although neither of these cell comparisons reached significance at .05, the interaction was in the pattern obtained by prior research on attitude correction processes. (Supporting information can be found in Appendix D of this thesis).

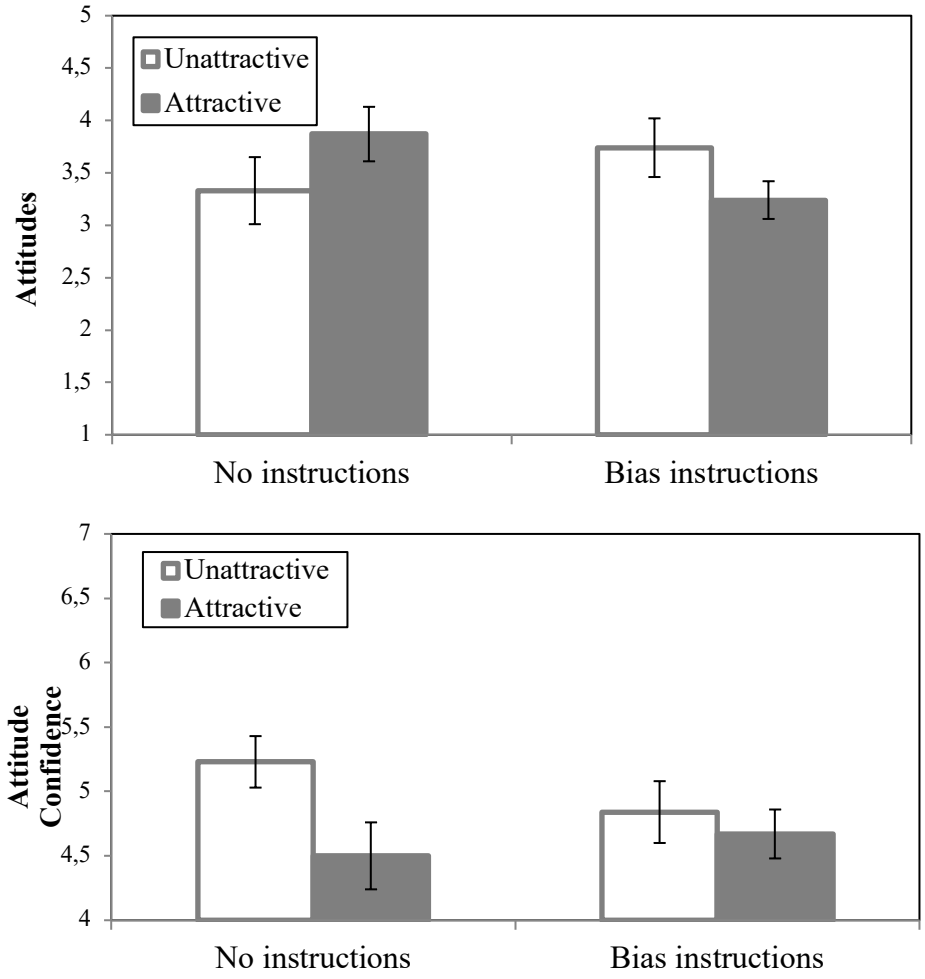


Figure 2: Top panel: Attitudes as a function of the condition of Physical Attractiveness of the source and Correction Manipulation in Experiment 3.

Bottom panel: Attitude confidence as a function of the condition of Physical Attractiveness of the source and Correction Manipulation in Experiment 3. Error bars represented standard errors.

Attitude Confidence

A separate 2 × 2 factorial ANOVA on attitude confidence revealed only a main effect of attractiveness, $F(1, 120) = 4.08$, $p = .046$, $\eta^2_p = .03$. This effect indicated that an attractive face was associated with less confidence ($M = 4.59$, $SD = 1.25$) than an unattractive face ($M = 5.03$, $SD = 1.29$). No significant main effect of the correction manipulation emerged, and therefore no differences between the no-instruction ($M = 4.87$, $SD = 1.31$) and the correction instructions condition ($M = 4.75$, $SD = 1.22$) were evident, $F(1, 120) = 0.26$, $p = .612$, $\eta^2_p = .002$. Finally, we found no significant interaction between the two factors, $F(1, 120) = 1.57$, $p = .213$, $\eta^2_p = .013$ (see Figure 2, bottom panel).

Discussion

Experiment 3 provided another replication of the effect of attractiveness on attitude confidence. Regardless of whether people were explicitly told to correct their judgments or not, people were less confident in their attitudes when the message was presented by an attractive than an unattractive source. In contrast, the correction instructions did have an impact on attitudes. When no particular instructions were given to participants, the tendency was for attractiveness to have a positive impact on attitudes and there was no evidence of correction. However, when participants were instructed to correct their judgments, attitudes tended to be less favorable when the source was attractive than when it was not. This moderation effect on attitudes replicated prior research on bias correction (e.g., Wegener and Petty, 1995).

The pattern of results we obtained on the attitude and confidence measures is consistent with our suggestion that when no correction instructions were given, participants spontaneously formed their positive attitudes toward the issue based on the attractiveness of the source. However, when instructed to correct, they adjusted their attitudes away from the presumed direction of the bias. Thus, a correction on attitudes occurs because individuals' attention was directed to the possibility of a bias and they adjusted their attitude to remove this bias. More importantly, we found that regardless of whether instructed to correct or not, participants corrected for the attractiveness of the source on their ratings of attitude confidence (i.e., an attractive face was associated with less attitude confidence than an unattractive face). Thus, asking participants about their confidence in their attitudes might make them think more about the potential bias of attractiveness on their judgments. In this sense, the meta-cognition required by thinking about confidence serves

in a similar role to when we gave explicit instructions to correct the influence of attractiveness. However, one open question is whether the change in attitude confidence induced by the correction for attractiveness is of any consequence. Thus, Experiment 4 was designed to test whether a decrease in attitude confidence as invoked by correction would reduce resistance to attitude change.

Experiment 4

In Experiment 4 we tested whether the effect of an attractive source on attitude confidence matters for attitude strength outcomes. Specifically, we examined whether the effect of attractiveness on attitude confidence was consequential for resistance to persuasion. Attitudinal resistance refers to the ability of an attitude to maintain itself in the face of an attack and is one of the defining features strong attitudes (see Petty & Cacioppo, 1986; Petty & Krosnick, 1995).

In Experiment 4, we used the same topic as in Experiment 1 (i.e., children owning a cell phone). However, two important changes in the procedure were made. First, at the end of the study, we exposed participants to a second message that opposed the arguments in the first message. Second, we measured attitudes about the topic a second time after the presentation of the second message. This method of assessing resistance to persuasion is important because attitudes held with more confidence are less likely to change as a result of being attacked (see Gross et al., 1995; Tormala & Rucker, 2007).

The general prediction was that individuals whose attitudes were held with less confidence would show less resistance to the influence of the attack. We expected that individuals exposed to an attractive source would be less likely to maintain their initial attitudes than those exposed to an unattractive source. Thus, for participants in the attractive source condition, we expected a lower consistency between attitudes measured before and after the attacking message. We also expected that this effect would occur regardless of whether physical attractiveness initially affected attitudes or not. More importantly, we expected attitude confidence to mediate the effect of physical attractiveness on resistance to change.

Method

Participants and Design

One hundred and twenty-two participants (M_{age} = 27.1, 53.3% male) were recruited from the Prolific Academic platform and received £0.80 (approximately $1.00) to complete

a study to collect their opinions about different topics. In this study, participants were randomly assigned to one of two conditions of the physical attractiveness of the source (unattractive vs. attractive). The desired sample size for the one-way analysis of variance based on the minimum effect sized planned for previous experiments (f = .25) to detect the impact of attractiveness on attitude confidence with .80 power, was *N* = 128. The final sample size was determined based on the maximum number of people who participated during the day in which the study was posted aiming to achieve an approximate number to the previous experiment. We performed a sensitivity power analysis (Faul et al., 2007) assuming an alpha significance criterion of 0.05. With a sample of one hundred and twenty-two participants, the analysis had 80% power to detect a minimum effect size of f = .26.

Procedure

Participants were told that they would be required to read a message written by the author of a blog. First, participants were asked to read a message advocating against the use of cell phones by children. This message was the same as used in Experiment 1. Then, they were exposed to the face of the source of the message. The photo was manipulated to be perceived as either high or low in attractiveness. After being exposed to this manipulation of attractiveness, participants reported their attitudes toward the message (measure at Time 1) and attitude confidence. At the end of the study, participants were asked to read a second message. This second message presented arguments advocating in favor of children having a cell phone. More specifically, it presented five arguments in the direction opposite to the initial message, therefore arguing about the benefits for children to have this device (e.g., "*Against popular views, it turns out that children using cell phones are more in touch with their parents*"). Finally, participants reported their attitudes toward the topic a second time (measure at Time 2), then were thanked and debriefed.[3]

Independent Variables

Physical attractiveness of the source. Physical attractiveness was manipulated using the same materials as in the previous experiments.

Dependent Variables

Attitude Confidence. Attitude confidence was assessed using the same item as in the prior experiments.

[3] Due to a technical problem, one participant did not complete the measure of attitudes at Time 2.

Attitudes at Time 1 and attitudes at Time 2. Participants' attitudes were measured at both times using the same item as in the prior experiments. Both measures were scored such that higher values indicated a higher agreement with the direction of the original message (i.e., the message presented at Time 1).

Results

Attitude Confidence

Replicating the previous experiments using a message that was irrelevant to attractiveness, the 2 group ANOVA revealed a significant effect on attitude confidence, F (1, 120) = 4.28, p = .041, η^2_p = .03. Participants reported more attitude confidence when exposed to an unattractive face (M = 5.37, SD = 1.03) than when exposed to an attractive face (M = 4.90, SD = 1.90) (Figure 3, top panel).

Attitudes at Time 1

The one-way ANOVA on time 1 attitudes revealed no significant effect of attractiveness of the source, suggesting no differences between the unattractive (M = 3.19, SD = 1.03) and attractive source condition (M = 3.17, SD = 1.40), F (1, 120) = 0.003, p = .958, η^2_p = .0001.

Attitudes at Time 2

Likewise, a separate one-way ANOVA revealed no significant effect of attractiveness of the source, suggesting no differences between the unattractive (M= 2.34, SD = 1.12) and attractive source condition (M = 2.49, SD = 1.13) on attitudes measured at Time 2, F (1, 119) = 0.52, p = .474, η^2_p = .004.

Attitude-change from Time 1 to Time 2

Attitude change was analyzed using a 2 (Attractiveness of the source) × 2 (Time of measure of attitudes: Pre-Post treatment) repeated-measures ANOVA, with the last factor as a repeated measure. This model reveled a main effect of time of measure, F(1, 119) = 34.14, p < .001, η^2_p = .22, such that participants reported higher agreement with the original message when attitudes were measured at time 1 (M = 3.17, SD = 1.22) compared with time 2 (M = 2.42, SD = 1.12). No main effect of attractiveness was found, F(1, 119) = 0.24, p = .629, η^2_p = .002, nor did an interaction emerge with attitudes as a repeated measure, F(1, 119) = 0.25, p = .618, η^2_p = .002. This suggests that all participants changed their attitudes in the same direction across time.

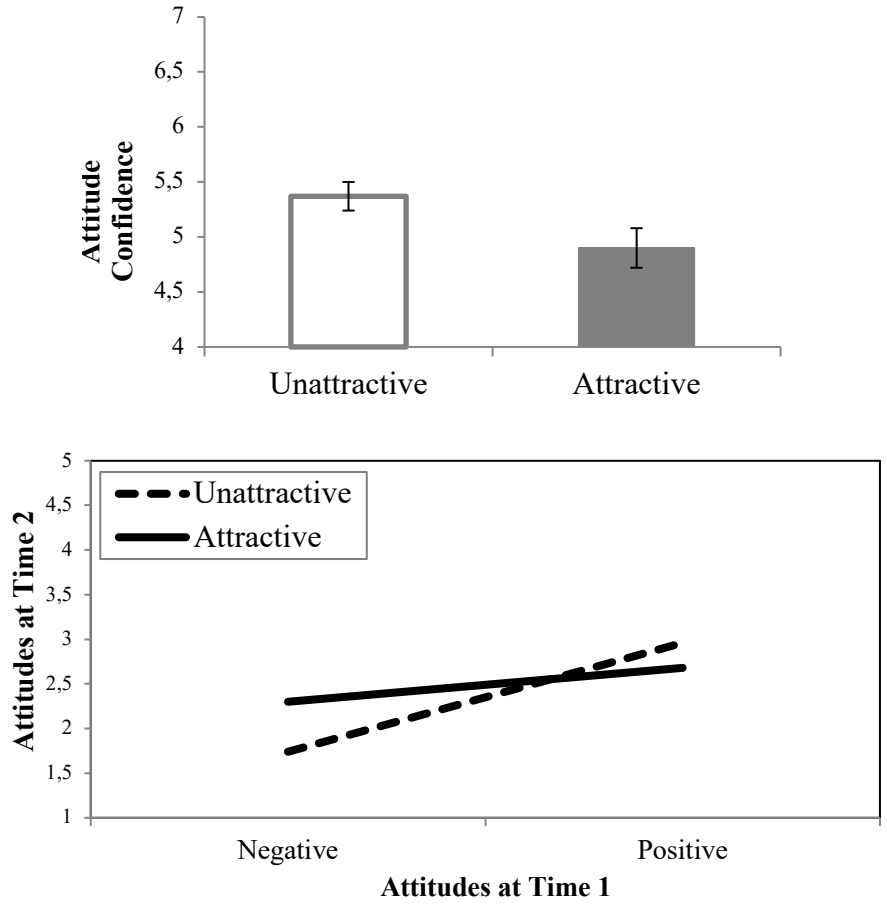


Figure 3: Top panel*:* Attitude confidence as a function of the condition of Physical Attractiveness of the source in Experiment 4.

Bottom panel*:* Attitudes at Time 2 as a function of attitudes at Time 1 and the condition of Physical attractiveness of the source in Experiment 4.

Attitudes at Time 1 predicting attitudes at Time 2

Another analysis relevant for our purposes was whether attitudes at time 2 were predicted by attitudes at time 1 differently based on source attractiveness. Prior research has used this analysis to gauge attitude stability (e.g., Cunningham et al., 2001; Krosnick, 1988; Xu et el., in press). We first centered and then regressed attitudes at time 2 on attitudes at time 1. This analysis showed that attitudes at time 1 predicted attitudes at time 2, B = .28, $t(117)$ = 3.30, p = .001, 95% CI: [.11, .45]. Using the PROCESS add-on for SPSS (Hayes, 2018), we then tested the interaction between the Physical attractiveness of the source and attitudes at time 1 on attitudes at time 2, which was significant, B = -.17, $t(117)$ = - 2.04, p = .044, 95% CI: [-.36, -.01]. As expected, this interaction revealed that attitudes at time 1 were a better predictor of attitudes at time 2 for those exposed to an

unattractive face (higher in certainty), B = .53, t(117) = 3.56, p < .001, 95% CI: [.23, .82], compared to those exposed to an attractive face (lower in certainty), B = .16, t(117) = 1.58, p =.117, 95% CI: [-.03, .36] (see bottom panel of Figure 3).

Mediation

The physical attractiveness of the source significantly predicted attitude confidence and moderated the relationship between Time 1 and Time 2 attitudes. We next examined whether attitude confidence at Time 1 mediated the impact of physical attractiveness on the relationship between Time 1 and Time 2 attitudes. This is a case of mediated moderation. To do this, we first tested the hypothesis that attitude confidence at Time 1 also moderates the relationship between Time 1 and Time 2 attitudes. Using the PROCESS add-on for SPSS (Hayes, 2018), we tested the interaction between attitude confidence and attitudes at Time 1 on attitudes at Time 2, which was significant, B = .10, t(117) = - 2.04, p = .044, 95% CI: [.02, .18]. This interaction revealed that attitudes at Time 1 were a better predictor of attitudes at Time 2 for those that report more confidence in their attitudes at Time 1, B = .24, t(117) = 2.75, p = .007, 95% CI: [.07, .42], compared to those who report less attitude confidence, B = .04, t(117) = .47, p =.637, 95% CI: [-.13, .26].

We then tested the mediated moderation analysis. We tested this analysis since the proposed mediator (attitude confidence at Time 1) is causally determined by the experimental manipulation of physical attractiveness as the proposed predictor. Also, the outcome (i.e., the path between Time 1 and Time 2 attitudes) is causally determined by the sequential logic of both measures. To examine this relationship, we conducted a path analysis using Mplus (Muthén & Muthén, 2011). In this model, we first predicted the mediator (attitude confidence at Time 1), from physical attractiveness of the source (coded -1 for unattractive source, +1 for attractive sources). We then simultaneously predicted attitudes at Time 2 from attitudes at Time 1, physical attractiveness of the source, attitude confidence, and the interactions of the latter two variables with attitudes at Time 1 (see Figure 4).

In this model, physical attractiveness of the source as an antecedent of attitude confidence at Time 1 was significant (B = -.23, SE = .11, p = .042). After showing that attitude confidence also emerges as a potential mediator for this model we test for the remaining paths. Attitudes at Time 2 were significantly predicted by attitude confidence at Time 1 (B = -.71, SE = .29, p = .013), physical attractiveness of the source (B = .93, SE =

.34, p = .007), and by the interaction between attitudes at time 1 × physical attractiveness of the source (B = -.30, SE = .11, p = .008). The interaction between attitudes at Time 1 × attitude confidence did not emerge as significant (B = .11, SE = .08, p = .151). Critically and most importantly, bootstrap confidence intervals for the indirect effect of the physical attractiveness of the source (estimate = .07, 95% CI: [.001; .19]) through attitude confidence (interacting with attitudes at Time 1) did not contain 0, consistent with the predicted mediation. This suggests that attitude confidence at Time 1 mediates, at least in part, the impact of physical attractiveness on the relation between attitudes measured at Time 1 and at Time 2.

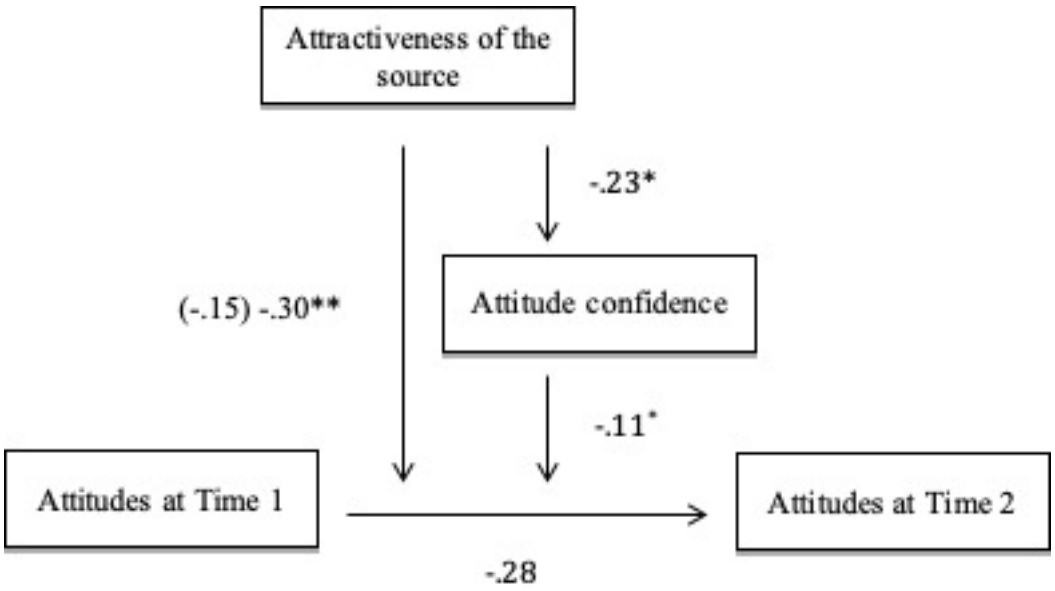


Figure 4. Mediated moderation model predicting Attitudes at Time 2 as a function of Attitudes at Time 1, Physical attractiveness of the source, with Attitude confidence at Time 1 as the mediating variable (Experiment 4). Value in parentheses represents remaining direct effect (an interaction in this context) when controlling for the Attitudes at Time 1 × Attitude confidence interaction. Confidence interval for the indirect effect did not include 0, indicating significant indirect effects. Values in the figure are unstandardized coefficients.

(Supporting information can be found in Appendix D of this thesis).

Discussion

Experiment 4 replicated the effect of physical attractiveness on attitude confidence. Importantly, the results showed that this effect matters for attitude strength outcomes. That is, the decrease in attitude confidence associated with an attractive source led to less relative

attitudinal stability in the face of an attacking message compared to an unattractive source. Beyond identifying an important consequence, the results of this study are also critical in showing that changes between attitudes at time 1 and time 2 were mediated by attitude confidence.

General Discussion

Past research has focused on examining the persuasive impact of source physical attractiveness on attitudes. In the present research, we explored the influence of attractiveness not only on attitudes but also on attitude confidence. We focused on attitude confidence because of its novelty, importance, and potential malleability.

Across four studies, we found that attractiveness is capable of affecting attitude confidence regardless of its observable impact on attitudes and can even have opposite effects on each such as when attractiveness makes attitudes more positive but attitude confidence weaker (i.e., less confident). When participants were exposed to a message presented by a source whose attractiveness was irrelevant to the nature of the message, they reported less attitude confidence than when exposed to the identical messaged presented by an unattractive source. We replicated this effect across different attitude objects and samples. In Experiment 1, we explored the effect of physical attractiveness on attitudes and attitude confidence and showed that physical attractiveness decreased attitude confidence. In Experiment 2 we proposed and tested bias correction as the most likely explanation for the effect. The results obtained in the second study confirmed that attractiveness reduced attitude confidence only when the attractiveness was irrelevant to the message suggesting that attractiveness was viewed as an unwanted biasing factor in this context. Importantly, we found the opposite effect when attractiveness was relevant to the persuasive topic. This suggests that when attractiveness was relevant to the attitude object, it augmented attitude confidence much as source expertise has been shown to do in prior research (Tormala & Petty, 2004).

To the best of our knowledge, this is the first empirical evidence in a persuasion context that people can correct for a perceived biasing effect of some variable (i.e., source attractiveness) on a dimension other than the attitude itself. In Experiment 3 we proposed and show that the corrections for attitudes and confidence are differentially affected by explicit correction instructions. The results from this study suggest that a correction process stemming from a perception of bias can be activated either by simply posing a confidence

question or by explicitly providing correction instructions. Finally, Experiment 4 demonstrated the consequential nature of this new effect by showing that individuals report attitudes that are less capable of resisting a persuasive attack when an initial message was presented by an attractive relative to an unattractive source.

It is worth noting that beyond correction, there might be other possible explanations for the effects we observed. It is possible that attractiveness might have captured most of the attentional resources, thus distracting participants from the content of the message and in turn reducing attitude confidence. This seems unlikely because Experiment 2 showed that attractiveness does not always reduce confidence but can also increase it when the attractiveness is relevant to the advocacy. Another possibility is that an attractive face can promote self-comparison on self-evaluations (Cash, Cash, & Butters, 1983; Thornton & Moore, 1993). Similarly, this mental comparison could cause distraction, which may reduce confidence in one's attitude toward the object. Once again, however, although distraction could account for the drop in attitude confidence, it would be unlikely to accommodate the moderation obtained by the manipulation of the relevance of the topic in Experiment 2.

One caveat is that the effects obtained in this research are likely to be dependent on the meaning that people ascribe to source attractiveness. That is, the effect of physical attractiveness on attitude confidence might also vary also according to individuals' naive theories about the role and effect of this feature within persuasive contexts (Briñol, Petty, Santos, & Mello, 2018). For example, if attractiveness is seen as an acceptable tactic to attend to a message, then less correction on confidence judgments would be expected. However, if attractiveness is seen as a manipulative and deceptive tool, then correction effects on attitude confidence would be expected. Thus, individuals' naïve theories of the appropriateness and role of attractiveness in their judgments play an important role in understanding correction effects (e.g., Wegener & Petty, 1997). Previous research already shows that, when motivated to do so, naïve theories can influence individuals' anticipation of persuasive success from an attractive person (Vogel, Kutzner, Fiedler, & Freytag, 2010). This can suggest a trade-off between a correction effect promoted by physical attractiveness with other relevant features, such as the meaning of attractiveness, sufficient to lead individuals to adjust their ratings of attitude confidence. A second aspect for future research is that, although the present research examined the consequences of attractiveness on attitude confidence and attitude resistance, subsequent research should also examine other

properties of attitude strength, including the impact of attitudes and confidence on real-world behaviors.

Finally, future research should also address the timing of the presentation of the source and message. In this research, we first presented the message followed by the source of the message. If the information about the source preceded rather than followed, then the processes and outcome might be different. Past research on source credibility (Tormala, Briñol, & Petty, 2007) and power (Briñol, et al., 2007) has shown that when the key source variable precedes rather than follows information processing, it is more likely to influence the amount and direction of thoughts people generate in response to the proposal, therefore, affecting attitudes and attitude confidence by affecting the amount of thought the message receives. Therefore, future research should examine the multiple processes by which attractiveness can influence not only attitudes but also attitude confidence.

References

Bargh, J. A., Chaiken, S., Raymond, P., & Hymes, C. (1996). The automatic evaluation effect: Unconditional automatic attitude activation with a pronunciation task. *Journal of Experimental Social Psychology*, 31, 104-128.

Bassili, J. N. (1996). Meta-judgmental versus operative indexes of psychological attributes: The case of measures of attitude strength. *Journal of Personality and Social Psychology*, *71*, 637-653.

Bizer, G. Y., Tormala, Z. L., Rucker, D. D., & Petty, R. E. (2006). Memory-based versus on-line processing: Implications for attitude strength. *Journal of Experimental Social Psychology*, *42*, 646-653.

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

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

Briñol, P., Petty, R. E., Stavraki, M., Lamprinakos, G., Wagner, B., & Díaz, D. (2018). Affective and cognitive validation of thoughts: An appraisal perspective on anger, disgust, surprise, and awe. *Journal of Personality and Social Psychology*, *114*, 693-718.

Briñol, P., Petty, R. E., Valle, C., Rucker, D. D., & Becerra, A. (2007). The effects of message recipients' power before and after persuasion: A self-validation analysis. *Journal of Personality and Social Psychology*, *93*, 1040- 1053.

Cacioppo, J. T., & Petty, R. E. (1982). The need for cognition. *Journal of Personality and Social Psychology*, *42*, 116-131.

Cash, T. F., Cash, D. W., & Butters, J. W. (1983). " Mirror, Mirror, on the Wall...?" Contrast Effects and Self-Evaluations of Physical Attractiveness. *Personality and Social Psychology Bulletin*, *9*, 351-358.

Chaiken, S. (1980). Heuristic versus systematic information processing in the use of source versus message quest in persuasion. *Journal of Personality and Social Psychology*, *39*, 752–766.

Chaiken, S., & Maheswaran, D. (1994). Heuristic processing can bias systematic processing: Effects of source credibility, argument ambiguity, and task importance on attitude judgment. *Journal of Personality and Social Psychology*, *66*, 460–473.

Clarkson, J. J., Tormala, Z. L., & Rucker, D. D. (2008). A new look at the consequences of attitude certainty: The amplification hypothesis. *Journal of Personality and Social Psychology*, *95*, 810-825.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.

Cunningham, W. A., Preacher, K. J., & Banaji, M. R. (2001). Implicit attitude measures: Consistency, stability, and convergent validity. *Psychological Science, 12*(2), 163–170.

DeBono, K.G., & Harnish, R.J. (1988). Source expertise, source attractiveness, and processing or persuasive information: A functional approach. *Journal of Personality and Social Psychology*, *55*, 541–546.

Dipboye, R. L., Arvey, R. D., & Terpstra, D. E. (1977). Sex and physical attractiveness of raters and applicants as determinants of resume evaluations. *Journal of Applied Psychology*, *62*, 288-294.

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

Fabrigar, L. R., MacDonald, T. K., & Wegener, D. T. (2005). The structure of attitudes. In D. Albarracín, B. T. Johnson, & M. P. Zanna (Eds.), *The handbook of attitudes* (pp. 79–124). Mahwah, NJ: Erlbaum.

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

Fazio, R. H. (1995). Attitudes as object-evaluation associations: Determinants, consequences, and correlates of attitude accessibility. In R. E. Petty, & J. A. Krosnick (Ed.), *Attitude strength: Antecedents and consequences* (pp. 247-282). New York, NY: Psychology Press.

Fazio, R. H., & Roskos-Ewoldsen, D. (2005). Acting as we feel. *Persuasion: Psychological insights and perspectives*, 281-303.

Gross, S. R., Holtz, R., & Miller, N. (1995). Attitude certainty. In R.E. Petty & J.A. Krosnick (Eds.), *Attitude strength: Antecedents and consequences* (pp. 215-245). New York, NY: Psychology Press.

Guyer, J. J., Briñol, P., Petty, R. E., & Horcajo, J. (2019). Nonverbal behavior of persuasive sources: A multiple process analysis. *Journal of Nonverbal Behavior*, *43*, 1-29.

Haugtvedt, C. P., Petty, R. E., Cacioppo, J. T., & Steidley, T. (1988). Personality and ad effectiveness. *Advances in Consumer Research, 15*, 209-212.

Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis* (2nd Ed.). New York: The Guilford Press.

Hovland, C. I., Janis, I. L., & Kelley, H. H. (1953). *Communication and persuasion: Psychological studies of opinion change*. New Haven, CT: Yale University Press.

Kang, Y. S., & Herr, P. M. (2006). Beauty and the beholder: Toward an integrative model of communication source effects. *Journal of Consumer Research*, *33*, 123-130

Kelman, H. C. (1958). Compliance, identification and internalization: Three processes of attitude change. *Journal of Conflict Resolution*, *2*, 51–60.

Krosnick, J. A. (1988). Attitude importance and attitude change. *Journal of Experimental Social Psychology, 24*, 240–255.

Kruglanski, A.W., Raviv, A., Bar-Tal, D., Raviv, A., Sharvit, K., Ellis, S., Bar, R., Pierro, A., & Mannetti, L. (2005). Says who? Epistemic authority effects in social judgment. In M.P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 37, pp. 346-392). San Diego: Academic Press.

Luttrell, A., Petty, R. E., & Briñol, P. (2016). Ambivalence and certainty can interact to predict attitude stability over time. *Journal of Experimental Social Psychology, 63*, 56-68.

Martin, R., & Hewstone, M. (2008). Majority versus minority influence, message processing and attitude change: The source-context-elaboration model. In M. Zanna (Ed.), *Advances in experimental social psychology.* San Diego, CA: Academia Press.

Mello, J., & Loureiro, F. (2015). Pretest of images for the beauty dimension. *Análise Psicológica, 33*, 453-466.

Moscovici, S. (1980). Toward a theory of conversion behavior. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 13, pp. 209-239). New York: Academic Press.

Mugny, G., & Perez, J. A. (1991). *The social psychology of minority influence*. Cambridge, UK: Cambridge University Press.

Muthén, L. K., & Muthén, B. O. (2011). *Mplus User's Guide.* 1998–2011. Los Angeles, California.

Pallak, S. R. (1983). Salience of a communicator's physical attractiveness and persuasion: A Heuristic versus systematic processing interpretation. *Social Cognition*, *2*, 158-170.

Paredes, B., Santos, D., Briñol, P., Gómez, A., & Petty, R. E. (2019). The impact of meta-cognitive certainty on the relationship between identity fusion and endorsement of extreme pro-group behavior. *Self and Identity*, 1-21.

Petrocelli, J. V., Tormala, Z. L., & Rucker, D. D. (2007). Unpacking attitude certainty: Attitude clarity and attitude correctness. *Journal of Personality and Social Psychology*, *92*, 30-41.

Petty, R. E., & Briñol, P. (2012). The elaboration likelihood model. In P. A. M. Van Lange, A. Kruglanski, & E. T. Higgins (Eds.), *Handbook of theories of social psychology* (Vol. 1, pp. 224–245). London: Sage.

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

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

Petty, R. E., & Cacioppo, J. T., (1981). Issue involvement as a moderator of the effects on attitude of advertising content and context. *Advances in Consumer Research*, *8*, 20-24.

Petty, R. E., & Cacioppo, J. T. (1986). *Communication and persuasion: Central and peripheral routes to persuasion*. New York: Springer–Verlag.

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

Petty, R. E., & Wegener, D. T. (1998). Attitude change: Multiple roles for persuasion variables. In D. Gilbert, S. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (4th ed., Vol. 1, pp. 323–390). New York, NY: McGraw-Hill.

Petty, R. E., & Wegener, D. T. (1999). The Elaboration Likelihood Model: Current status and controversies. In S. Chaiken & Y. Trope (Eds.), *Dual process theories in social psychology* (pp. 41-72). New York: Guilford Press.

Petty, R. E., Wegener, D. T., & White, P. H. (1998). Flexible correction processes in social judgment: Implications for persuasion. *Social Cognition*, *16*, 93-113.

Priester, J. M., & Petty, R. E. (1995). Source attributions and persuasion: Perceived honesty as a determinant of message scrutiny. *Personality and Social Psychology Bulletin*, *21*, 637-654.

Puckett, J. M., Petty, R. E., Cacioppo, J. T., & Fischer, D. L. (1983). The relative impact of age and attractiveness stereotypes on persuasion. *Journal of Gerontology*, *38*, 340-343.

Robins, R. W., Hendin, H. M., & Trzesniewski, K. H. (2001). Measuring global self-esteem: Construct validation of a single-item measure and the Rosenberg Self-Esteem Scale. *Personality and Social Psychology Bulletin*, *27*, 151-161

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

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

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

Thornton, B., & Moore, S. (1993). Physical attractiveness contrast effect: Implications for self-esteem and evaluations of the social self. *Personality and Social Psychology Bulletin*, *19*, 474-480.

Till, B. D., & Busler, M. (2000). The match-up hypothesis: Physical attractiveness, expertise, and the role of fit on brand attitude, purchase intent and brand beliefs. *Journal of advertising*, *29*, 1-13.

Tormala, Z. L., Briñol, P., & Petty, R. E. (2006). When credibility attacks: The reverse impact of source credibility on persuasion. *Journal of Experimental Social Psychology*, *42*, 684-691.

Tormala, Z. L., Briñol, P., & Petty, R. E. (2007). Multiple roles for source credibility under high elaboration: It's all in the timing. *Social Cognition*, *25*, 536-552.

Tormala, Z. L., DeSensi, V. L., & Petty, R. E. (2007). Resisting persuasion by illegitimate means: A metacognitive perspective on minority influence. *Personality and Social Psychology Bulletin, 33*, 354-367.

Tormala, Z. L., & Petty, R. E. (2004). Source credibility and attitude certainty: A metacognitive analysis of resistance to persuasion. *Journal of Consumer Psychology*, *14*, 427-442.

Tormala, Z. L., & Rucker, D. D. (2007). Attitude certainty: A review of past findings and emerging perspectives. *Social and Personality Psychology Compass*, *1*, 469-492.

Visser, P. S., Bizer, G. Y., & Krosnick, J. A. (2006). Exploring the latent structure of strength-related attitude attributes. *Advances in Experimental Social Psychology*, *38*, 1-67.

Xu, M., Briñol, P., Gretton, J.D., Tormala, Z.L., Rucker, D.D., & Petty, R.E. (in press). Individual differences in attitude consistency over time: The personal attitude stability scale. *Personality and Social Psychology Bulletin.*

Watkins, L. M., & Johnston, L. (2000). Screening job applicants: The impact of physical attractiveness and application quality. *International Journal of Selection and Assessment*, *8*, 76-84.

Wegener, D. T., & Petty, R. E. (1995). Flexible correction processes in social judgement: The role of naive theories in corrections for perceived bias. *Journal of Personality and Social Psychology*, *68*, 36–51.

Wegener, D. T., & Petty, R. E. (1997). The flexible correction model: The role of naive theories of bias in bias correction. *Advances in experimental social psychology, 29*, 141-208.

Wood, W., Lundgren, S., Quellette, J. A., Busceme, S., & Blackstone, T. (1994). Minority influence: A meta-analytic review of social influence processes. *Psychological Bulletin, 115*, 323-345.

Ziegler, R., Diehl, M., Ruther, A. (2002). Multiple source characteristics and persuasion: Source inconsistency as a determinant of message scrutiny. *Personality and Social Psychology Bulletin, 28*, 496-508.

Ziegler, R., von Schwichow, A., & Diehl, M. (2005). Matching the message source to attitude functions: Implications for biased processing. *Journal of Experimental Social Psychology*, *41*, 645-653.

Second set of studies

The influence of message acceptance on attitude confidence. The specific case of source physical attractiveness

Introduction

People can perceive and correct for potential influence on their attitudes. This process of correction is more likely to occur if individuals become aware of an influence on their attitudes (Petty et. al, 1998; Wegener & Petty, 1995). So far, we established that a process of correction from this feature occurs not only on attitudes but also on attitude confidence (Mello, Garcia-Marques, Briñol, Cancela & Petty, 2020). When unrelated to the context, physical attractiveness is associated with less attitude confidence. Our first set of studies suggests that this influence is detrimental and independent from an effect on attitudes. Participants exposed to an attractive (vs. unattractive) source report less attitude confidence, regardless if physical attractiveness was responsible for any change on attitudes. In this case, it was the perception of a potential, and not an actual, change driven by this attribute that lead to a correction effect. Consequently, participants who were exposed to such type of source reported less confidence in their attitudes.

Research on attitude resistance suggest that when people resist an actual, or potential, influence they also perceive their attitudes as more valid (e.g. Tormala & Petty, 2002). In other words, a successful resistance to a persuasive appeal, i.e., when individuals do not accept the arguments of a message, promotes an increase of confidence on those attitudes, as they were strong enough to resist a persuasive attack. Subsequently, work from Tormala and Petty (2004) suggested that features of the context, such as source credibility, can interact with this effect. Only when participants counterargued a persuasive message presented by a high (vs. low) credible source they became more certain of their attitudes. This evidence supports the idea that when participants resist a persuasive attack, and this was originated by a source of validity (i.e., credible), they perceived their attitudes as more valid and have more confidence on them. In our research (Mello et. al, 2020) participants that were exposed to an attractive source report less attitude confidence independently of attitude change. That is, both in situations that participants were successful in resisting a message from an attractive source (i.e., when no differences emerged between the attractive and unattractive condition) and when attitudes were affected by the presence of an attractive source (i.e., when participants exposed to attractive sources reported higher agreement with the message than those exposed to a message from an unattractive source). However, this data reports to actual resistance and not to perceived resistance. It is possible that change

on attitude confidence was driven by those that perceived to have resisted a source of bias. As such, it becomes relevant to understand the extent in which the individual perceives bias on their attitudes. The more individuals perceive that their initial attitudes (pre-message) are challenged by an illegitimate source, the less confidence they report about their attitudes.

In order to provide support of this hypothesis, we run two experiments. Experiment 1 directly addresses the influence from the context on attitudes and attitude confidence. In this experiment, we expect that when individuals are exposed to arguments discrepant from their views, they perceived this as a challenge to their attitudes. Experiment 2 addresses how attitude expression relates to attitude confidence when an attractive source presents a message. We expect that the attractiveness is perceived as the potential source of bias on attitudes. In the next sections we detail the reasoning beyond each of these experiments.

(Supporting information can be found in Appendix B of this thesis)

Experiment 1

Previous research called attention to the fact that people can carefully attend to the direction of the arguments advocated in a persuasive message. Thus, when encountering a persuasive message, people can evaluate if the arguments are considered as pro (consistent with the individual view of the topic) or counter attitudinal (discrepant from the individual view of the topic). The extent in which a message is perceived as in favor or against one's attitudes has been shown to moderate attitude change processes (e.g. attitude accessibility, Clark, Wegener, & Fabrigar, 2008a; ambivalence, Clark et al., 2008b; mood, Wegener, Petty, & Smith, 1995). Baker and Petty (1994) tested the impact of a persuasive variable on message processing. More specifically, the authors tested the impact of the numerical status of the source (as representing a majority or a minority) and show that an effect on the level of elaboration is dependent on the direction of the message, being pro or counter attitudinal. Participants elaborated more about the arguments presented in a counter attitudinal message, when the source was the majority of students, and the pro attitudinal arguments when the source was a minority of students (see also Clark & Wegener, 2013). Clark et al. (2008) reasoned that a message discrepant from highly accessible attitudes is perceived as threatening, inducing a higher level of argument scrutiny. A pro attitudinal message, on the other hand, might be perceived as redundant and therefore less prone to exert an influence.

Relevant to the present research, the direction of thoughts generated depends if the individual perceives the arguments to be challenging or supporting to their personal attitudes (Petty & Cacioppo, 1986). The direction of such thoughts informs individuals about the validity of their attitudes (e.g, Tormala & Petty, 2002) consequently determining attitude confidence.

In the present experiment, we apply the assumption that when the direction of the arguments of a message matches with initial attitudes, individuals perceived change as desirable. In this case, because no detrimental influence on attitudes was identified, we should not expect a decrease on attitude confidence. However, when attitudes are challenged by the counter attitudinal content of a message, any influence on attitudes is perceived as undesirable. As a consequence, the perception of a successful or unsuccessful resistance to change can drive upward or downward adjustments to judgments of confidence (see Tormala, Clarkson, & Petty, 2006; Petty et. al, 2004; Tormala, 2008). In other words, it is only expected that a lack of resistance to a counter attitudinal message decreases attitude confidence.

To test this hypothesis, we assess participants' attitudes about a set of topics. After this, we ask them to read a message about the topic of plastic bags. This message was framed to be in opposition to the ban of plastic bags on supermarkets. Based on participants responses on the measure of attitudes previous to the message, we classified as having a favourable or unfavorable attitude towards the arguments presented in the message. We then test for the relation between attitude post-message and attitude confidence for the two groups.

Method

Participants and Design

Seventy-one participants (M_{age} = 29.27, 67.6% male) were recruited from the Prolific Academic platform and received £0.70 for their participation.

A power analyses was conducted using G*Power (Faul, et. al, 2007). We anticipated a generic overall medium effect size (f^2 = .15; Cohen, 1988). The results of the power analysis indicated that the desired sample size for a linear regression model with .80 power was N = 43. The final sample size was achieved to ensure a sufficient number between categories of participants, i.e., as in favor or against the message proposal.

Material

Message features. Participants were asked to read a message about the topic of plastic bags. This message presented six arguments against the proposal to ban plastic bags in supermarkets (e.g., "*By reducing the number of products we consume, we will also reduce the number of plastic bags we use without using an official ban on such bags.*").

Source of the message. Participants were exposed to a black and white photo of the source of the message, as the same gender as the participants. We aimed to present a face with neutral levels of attractiveness. These faces were selected from a set previously rated on physical attractiveness. This pre-test was conducted on fifty-eight participants (65.5% male, M_{age} = 25) on a 7-point scale, by fifty-eight participants (65.5% male, M_{age} = 25) on a 7-point scale (M_{Female} = 4.5, SD_{Female} = 2.1; M_{Male}= 4.0, SD_{Male} = 1.9).

Procedure

Participants were invited to participate in a set of tasks. The first task accessed their opinions about twelve topics (e.g., access of internet in public places; security lessons for children to ride a bicycle; the plastic bags ban). Participants were asked to report their agreement/disagreement with each of the twelve independent topics, by selecting one of two options: bad/disagree or good/agree. This served as a screening to divide participants based on their opinions on the message that would be presented after (pre-message attitudes). For the topic of the plastic bags ban, those that answer "bad/disagree" were categorized as pro attitudinal and those that answer "good/agree" as counter attitudinal towards the message.

After this, participants were asked to read to a message about the topic of the plastic bags ban. After reading the message, participants were exposed to the face of the source of the message. We then measured their attitudes toward the plan and confidence on those attitudes. Attitudes were measured by one single item "*What is your opinion about the plastic bags ban?*" on a 7-point scale (1 = against; 7 = in favor). This item was reversed, so that higher values translate a higher agreement with the message. Attitude confidence was measured by using the same item as in previous experiments "*How confident are you of your attitude toward the message you just read?*" on a 7-point scale (1 = not confident at all; 7 = very confident).

Results and Discussion

Message direction

Participants who report to be in favor of the plastic bag plan, and therefore against the message proposal, were classified to be in a counter attitudinal message condition (N = 35) and those who report to be against the initiative, as therefore in favor of the message arguments were classified in the pro attitudinal message condition (N = 36).

Attitude and Attitude confidence.

We compared the participants' responses to the measure of attitudes and attitude confidence between the two natural groups: those for whom the message was pro attitudinal and those for whom the message was counter attitudinal. To do this, we conducted an independent sample t-test on attitudes. As expected, those to whom the message was pro attitudinal reported a higher agreement with the message (M = 5.42, SD = 1.68) than those to whom the message was counter attitudinal (M = 3.06, SD = 1.92), $t(69) = 5.51$, $p < .001$, d = 1.32.

Attitude confidence did not differ between those to whom the message was pro attitudinal (M = 5.22, SD = 1.66) and those from whom the message was counter attitudinal message (M = 5.37, SD = 1.33), $t(69) = .42$, $p = .678$.

Moderation by Message Direction

To test our hypothesis, we analyzed how the extremity of attitudes is associated with attitude confidence for the two natural groups of participants. We expected that if resistance to change is relevant to attitude confidence, any change in attitude extremity would be associated with a decrease of attitude confidence. Importantly, because this will only occur when participants perceived an influence as undesirable, we expect an opposite direction of this relation between the two natural groups.

To test for the relation between participants' attitudes and attitude confidence, we first centered both variables. After this, we conducted a regression model on attitude confidence with attitudes as predictor and with message direction as an interaction factor. To do this, we use the PROCESS add-on for SPSS (Hayes, 2018). There was no significant effect of attitudes on attitude confidence, B = .10, p = .446, $t(67) = 4.07$, CI 95%: [-.17, .37] suggesting that overall no relation between attitudes and attitude confidence emerges. However, the expected interaction with message direction was significant, B = -.49, p =

.001, $t(67) = -3.62$, CI 95%: [-.76, -.22]. As predicted, this suggests that attitude confidence vary on the direction of change.

In order to better understand this dependence, we conduct two simple regressions separated by the natural group of participants. Results show two significant but opposing relations. For those to whom the message was pro attitudinal, we found a positive relation between attitudes and attitude confidence. The more they agree with the message the more confidence they report about their attitudes, $B = .59$, $p = .011$, $t(34) = 2.68$, CI 95%: [.14, 1.04]. For those to whom the message was counter attitudinal, we found an opposite relation. The more participants agreed with the message the less confidence they report about their attitudes, $B = -.39$, $p = .021$, $t(33) = -2.42$, CI: [-.71; -.06].

(Supporting information can be found in Appendix E of this thesis)

Results of Experiment 1 provides extra support to the assumption that when individuals resist a persuasive message, they report more confidence in their attitudes. Importantly, show this is dependent on how people perceive the message, as pro or as counter attitudinal. Only when change occurs in the opposite direction as the original attitude, and therefore perceived as undesirable, individuals report less confidence in their attitudes. For those that are exposed to a counter attitudinal message, the more successfully they resist to a message, the more confident they feel about their attitudes. This is consistent with previous evidence showing that the successful resistance to persuasion, or lack of it, promotes an individual adjustment on attitude confidence (e.g., Tormala & Petty, 2002). However, this resistance does not occur for those who already agreed with the arguments presented in the message.

These results suggest then that agreeing with counter attitudinal arguments is related with a decrease on attitude confidence. However, as our work suggests this may occur specially for those that already perceive the source as a biasing factor. In Experiment 2 we approach if this relationship is stronger when a potential source of bias, a physical attractive source, is presented in the context.

Experiment 2

Previous evidence shows that when people are exposed to an attractive source, they report less attitude confidence (Mello et al, 2020). The proposed process for this effect is a correction, as a form of resistance, that emerges when people perceived a potential bias from this source. Adjustments of attitude confidence are likely related with perceptions of

a successful or unsuccessful correction from a potential source of unwanted bias

In Experiment 2, we test if the relation between the agreement with a message with a decrease of attitude confidence is accentuated by the presence of an attractive source. To do this, Experiment 2 had two differences for the previous. First, we only selected those participants expected to perceive the message as against their attitudes. Second, we manipulated the level of attractiveness of the source of this message. We expect to replicate the effects from Experiment 1 and show that a higher agreement with the message is associated with less attitude confidence and that this negative relation occurs mostly for those that are exposed to an attractive source. Moreover, we hypothesized that this moderation occurs regardless of the influence that this feature has on attitudes.

Method

Participants and Design

Ninety-one participants (M_{age} = 27.38, 53.8% male) from the Prolific Academic platform received **£**0.80 for their participation. In the initial pre-screening these participants gave an answer as "Agree/good" to the topic of Plastic bag ban, indicating that the message would be counter attitudinal.[4]

Participants were randomly assigned to one of two conditions of physical attractiveness of the source (unattractive vs. attractive). We conducted a power analysis considering the moderation by physical attractiveness on the relation between attitudes and attitude confidence as a small to medium effect (f^2 = .25; Cohen, 1988). We planned for an effect able to detected on a two-tailed test (α = .05) with .80 power. This analysis suggested a final sample of fifty-five participants. The final sample size was achieved based on collecting the maximum number of participants who signed up to participate in the study during the week in which it was posted.

Material

Physical attractiveness of the source. Participants were exposed to one of two faces from their gender: an attractive or an unattractive face. The two unattractive faces, female and male, were selected from the same set of faces from Experiment 1 rated as having low ratings in physical attractiveness (M_{Female} = 3.0, SD_{Female} = 1.7; M_{Male}= 2.2,

[4] Those that select the option *bad/disagree* were redirected to other study and receive the same compensation as the selected participants.

SD_{Male} = 1.3). The attractive faces were selected from an image search online, to account for the reduced number of faces highly rated in attractiveness. We select the final photos using the following criteria: the images were available for public use; the features of the faces were not enhanced or altered to have a commercial use (i.e., no extra make-up or accessories were included); the faces had a white background with no other stimuli in the background. These two attractive faces used in this experiment were selected from an evaluation made by a group of 10 judges (M_{Female} = 4.9, SD_{Female} = 1.00; M_{Male}= 4.5, SD_{Male} = 0.9).

Procedure

The procedure was similar to Experiment 1 with two exceptions. First, after the presentation of the message, participants were exposed to an attractive or to an unattractive source. Second, at the end of the study participants rate a set of 10 faces in their level of physical attractiveness, including the one they were previously exposed. Participants were asked to rate each photo in a 7-point scale (1 = Very unattractive; 7 = Very attractive). This served as a manipulation check for physical attractiveness.

Results and Discussion

Manipulation-check of Physical Attractiveness

Participants exposed to an attractive source perceived the face of the source as more attractive (M = 4.78, SD = 1.53) than those exposed to an unattractive source (M =2.38, SD = 1.01), $t(89) = -8.69$, $p < .001$.

Attitudes and Attitude confidence

We first conducted a one-way ANOVA with the level of attractiveness (attractive vs. unattractive) as a between-participants factor, on attitudes. We found no significant differences on attitudes from those exposed to the unattractive (M =3.27, SD = 1.86) and the attractive source (M = 4.93, SD = 1.47, $F(1,89) = .90$, $p = .346$, $\eta^2_p = .010$.

We then conducted the same analysis for attitude confidence. We found no significant differences between the unattractive (M = 5.16, SD = 1.34) and the attractive source condition (M = 4.81, SD = 1.53) on ratings of attitude confidence, $F(1, 89) = 1.38$, $p = .244$, $\eta^2_p = .02$.

Moderation by Physical Attractiveness

As it was in Experiment 1, we regressed attitude confidence on the attitudes reported toward the message. We found a negative relation between attitudes and attitude confidence, B = -.45, p < .001, $t(89)$ = - 4.73, CI: [-.64, -.26]. This suggests that the more participants agree with the message they report less confidence in their attitudes.

We then tested the interaction between physical attractiveness of the source and attitudes on attitude confidence. To do this we use the PROCESS add-on for SPSS (Hayes, 2018). The interaction factor emerged as significant, B = -.21, $t(87)$ = - 2.15, p = .035, 95% CI: [-.40, -.02]. As expected, this suggests that attitudes were a better predictor of attitude confidence for those exposed to an attractive source, B = -.74, $t(87)$ = -4.72, p < .001, 95% CI: [-1.05, -.43] than those exposed to an unattractive source, B = -.32, $t(87)$ = -2.80, p = .006, 95% CI: [-.55, -.09] (see Figure 1).

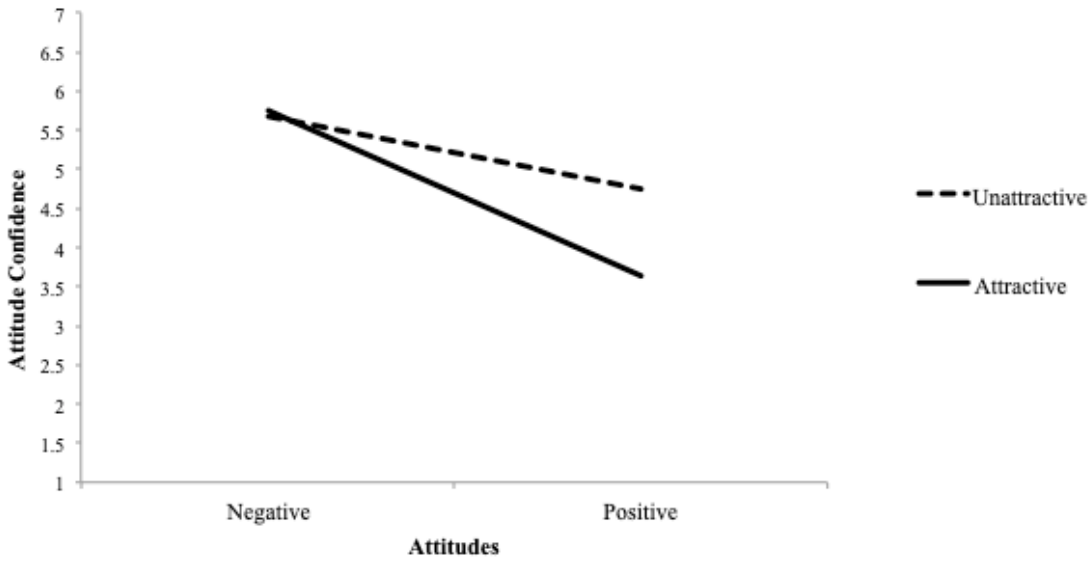


Figure 1. Attitude confidence as a function of attitudes and physical attractiveness of the source in Experiment 2.

We further test if the effect of attitudes and its interaction with attractiveness of the source was preventing us from assessing any effect of the source on attitudes and attitude confidence. We first test the regression model of physical attractiveness on attitudes adding both the effect of attitude confidence and the interaction component with attractiveness into the model. We found no significant effect from the condition of attractiveness on attitudes, B = -.14, $t(84)$ = -1.50, p =.137, 95% CI: [-.36, .05]

We conducted the same analysis on attitude confidence, adding both the effect of attitudes and its interaction with physical attractiveness. Results suggest that when controlling for changes on attitudes and the consequent effect on attitude confidence, an effect of physical attractiveness on attitude confidence emerged, B = -.21, $t(84)$ = -2.28, p =.025, 95% CI: [-.39, -.03]. This pattern suggests that with higher levels of physical attractiveness of the source participants also report less confidence in their attitudes.

Experiment 2 replicated the findings from Experiment 1, showing that the more participants change their attitudes, as a result of being exposed to a counter attitudinal message, the less confidence they report about their attitudes. In addition to this, in Experiment 2 we show that the presence of an attractive (vs. unattractive) source intensifies this relationship. It is then likely that the more individuals agree with a counter attitudinal message, as resulting from lack of resistance, the more likely they infer the presence of an undesirable influence and as a consequence reduce their attitude confidence.

(Supporting information can be found in Appendix E of this thesis)

Discussion

Results gathered from previous research shows that the influence of physical attractiveness on attitude confidence occurs regardless of any change on attitudes (Mello et. al, 2020). In that research an effect occurred even when physical attractiveness did not have an impact on attitudes, i.e., attitudes did not differ between those exposed to attractive and those exposed to unattractive sources. Importantly, this was assumed to occur because individuals perceive physical attractiveness as an unwanted source of influence. Here we raised as possibility that the experience of lack of resistance emerges when the change is perceived as undesirable. That is, the effects are more likely when the individual perceives some type of undesirable influence from the context (e.g., a counter attitudinal message). It is then expected that only in this condition individuals misattribute physical attractiveness as the source of this undesirable change.

In Experiment 1, we show that the more participants agreed with a counter attitudinal message (i.e., lack of successful resistance) the less confidence they report about their attitudes. This is consistent with the idea that being more or less successful in resisting a persuasive influence leads to different type of adjustments on attitude confidence (Tormala & Petty, 2002). In Experiment 2 we replicate this relation adding physical

attractiveness as the source of a message. We show that a decrease of confidence associated to attitude change is more likely to occur if this was linked to a physical attractive source. In other words, a physical attractive source magnified the decrease of confidence for those that change their attitudes.

These results clarified then that the effect of physical attractiveness on attitude confidence is related with perceptions of bias. In fact, it is already known that the impact of the level of agreement with a persuasive attempt can interact with features of the source. When individuals are able to resist a persuasive attack, and this comes from a source potentially perceived as valid this is expected to strengthen attitude confidence (Tormala & Petty, 2004). Relevant to our purposes, compliance with a source perceived as a potential and unwanted source of bias, decreases attitude confidence.

Critically, in the present research we did not address the influence of attractiveness at a less challenging context, i.e., when participants were exposed to pro attitudinal messages. It has been shown that attitudinal similarity prompt positive evaluations towards the message (e.g., Byrne, 1969), and as a consequence to even increase agreement (e.g. Rhoads & Cialdini, 2002). Results from our Experiment 1 suggests that in this situation agreement is associated with higher validation and as a consequence with more attitude confidence. Future research should then explore if a physical attractive source continues to be perceived as an unwanted potential source of influence even in situations where no such correction is expected to occur. Based on the evidence gathered so far, it is possible that a correction effect is less likely to emerge when the context is already validating attitudes (e.g. Eagly & Chaiken, 1975).

In addition, future research should evaluate and measure the extent in which physical attractiveness is perceived as a source of bias. It might be that people can have different theories about if and how this type of feature is affecting one's attitudes. As previously described, process of correction is more likely to occur if individuals have the ability to identify the source of bias and to use their naïve theories about the strength and direction of such influence (Petty & Wegener, 1993; Wegener & Petty, 1997). Thus, approaching perception of bias might help to clarify the role of physical attractiveness in correction process, and consequently on attitude confidence. Nevertheless, people tend to be less prone to identify potential sources of bias on the self when compared to identify potential sources of bias on others (see Garcia-Marques & Loureiro, 2016; Pronin, Gilovich, & Ross, 2004; Pronin, Lin, & Ross, 2002).

It is critical to identify the relevance of physical attractiveness to the self. Individuals might perceive a potential influence from this type of feature, but as not as relevant and central to them. It is critical to provide a broad approach of the influence of physical attractiveness on attitude confidence. With this regard, self-ratings of physical attractiveness, as it is with other individual features from the recipient (see Tormala & Briñol, 2015 for a review), are likely to have an impact on attitude change process. This individual feature becomes even more relevant to approach in this context as it is linked with levels of overall confidence (Gurari, Hetts & Strube, 2006). It is then likely that the extent in which people evaluates themselves can determine how much bias they might perceived from an attractive source, and as a consequence affecting attitude confidence.

Third set of studies

Attitude confidence in persuasion. The role of source and recipient physical attractiveness

Introduction

This line of research focuses on the relation between self-evaluations of physical attractiveness with judgments of attitude confidence. We approach how individuals perceived their physical attractiveness and how this informs confidence on attitudes towards a message. Despite previous evidence suggesting the critical role of features of the recipient of a message on attitude change (see Tormala & Briñol, 2015 for a review) there is no clear understand on the influence of such features on other judgments such as attitude confidence.

In the present research, we take a step further in contributing to the research on the impact of physical attractiveness. We approach the impact of this judgment on the amount of confidence someone reports about their attitudinal judgments. We aim to do this by focusing this attribute as a self-evaluation from the recipient of a persuasive message. From our knowledge no previous research addressed physical attractiveness as a relevant individual feature on attitude change processes. This is especially relevant as the extent to which people perceive themselves as more attractive is informative to their judgments on general confidence. More specifically, those that report be more physical attractive also report to have more general confidence (e.g., Felisberti, & Musholt, 2014; Langlois et al., 2000; Wade, 2000; Wade & Cooper, 1999). In the present research, we test if this general association with confidence translates into attitudinal judgments.

The study of physical attractiveness, as a feature of the recipient of a message, is especially relevant taking into account that is sensible to influences from the context. Importantly, individuals can report to be more or less physical attractive depending on the level of attractiveness of others. Previous research show that when participants were exposed to highly attractive people, they were more likely to report lower self-evaluations of this attribute than when they are exposed to unattractive people (e.g., Cash et. al, 1983). In a persuasive context, this type of influence can also be expected to occur, if recipients of a message are exposed to an attractive source. This is important, as this type of persuasive context can then undermine individuals' general confidence and self-esteem (e.g., Thornton & Moore, 1993).

In the present research we test an alternative avenue for the effect of source

attractiveness on attitude confidence. In our previous lines of research, we show that physical attractiveness of the source modulates attitude confidence (Mello, et al., 2020; Mello et al, to be submitted). Here we address if this decrease on attitude confidence is explained, at least in part, by the relation between self-evaluations of physical attractiveness with confidence. To test this hypothesis, we first approach the relation between self-evaluations of physical attractiveness with judgments of attitude confidence. Second, we address the contexts in which physical attractiveness of others is expected to modulate self-evaluations (e.g., Brown et. al, 1992; Cash et. al, 1983). We further test if this influence explains the effect of physical attractiveness of others on attitude confidence. Finally, we approach these effects at a persuasive context, by manipulating physical attractiveness as the source of a message. Bellow we review how the literature support these claims.

Recipient Factors and Confidence on Thoughts and Attitudes

Research on the field of attitudes and attitude change suggest that factors of the recipient of a message are critical to understand influences on attitude change (see Tormala & Briñol, 2015 for a review). Apart from the direct influence on attitudes, dispositional factors are also capable of influencing the amount of confidence on thoughts generated towards a message (see Briñol & Petty, 2008 for a review). For example, Briñol et. al, (2007) tested the influence of perceptions of power on thought confidence. In this study, participants were manipulated to adopt a physical posture that lead them to perceive to held more or less power. Those that were asked to put themselves in a physical posture of higher power reported more confidence on their thoughts about a message when compared to those who were asked to put themselves in a less powerful posture.

Individual features can also influence attitude confidence. The perceived validity on attitudes towards a topic is expected to be related with individuals' general confidence (e.g., Bell, 1967), with the amount of knowledge the individual has about that topic (Fazio & Zanna, 1978; Wu & Shaffer, 1987), and/or with how much attitudes are shared by others (Festinger, 1950, 1954). Nevertheless, there is a limited amount of research on how individual dispositions can modulate judgments of attitude confidence. More relevant to our goals, to our knowledge, there is no previous research to approach the influences of self-ratings of physical attractiveness both on attitudes change and on attitude confidence.

Physical Attractiveness of Others and the Influence on Individual Evaluations

In a meta-analytical and theoretical review on physical attractiveness Langlois et.

al (2000) shows that attractive people are perceived as having other overall positive attributes such as occupational success and social skills. This positive perception also influences how people evaluate themselves based on this attribute, being associated with judgments of general confidence and high self-esteem (Gurari et. al, 2006). Importantly, this self-evaluation and as a consequence its relation with other traits, can change based on the context. When perceiving others in the context, individuals tend to compare themselves in terms of physical attractiveness, promoting *contrast effects.* In the research conducted by Cash et. al (1983) the authors directly addressed contrast effects on judgments of physical attractiveness. In this experiment, female participants were asked to report their level of attractiveness. Critically, previous to this, participants were asked to rate the attractiveness of a set of female faces, either attractive or unattractive. As expected, participants report to be less attractive when they were previously exposed to attractive (vs. unattractive) faces. Extending this approach, Brown et. al (1992) added a control group in which female participants were asked to rate their level of physical attractiveness after conducting the same evaluation of male faces. The analysis on the control group show a weaker contrast effect than the upwards comparison condition, i.e., when female participants were asked to rate female attractive faces. This suggests that self-evaluations of physical attractiveness are influenced by relevant social comparison. In Brown et al (1992) control condition, self-evaluations of attractiveness by women were expected to be less affected by the context as rating male faces does not provide a relevant comparison group.

This type of comparisons also emerges when this physical attribute is presented as a persuasive context (e.g., media settings). In the research conducted by Harper and Tiggerman (2008), participants were exposed to different magazine advertisements. Participants that were exposed to thin models, perceived as highly attractive, reported higher levels of body dissatisfaction when compared to a control condition with no exposing to others. The exposure of attractive models, in this type of settings, can significantly influence self-views on recipients such as decreasing body image (Groesz, Levine & Murnen, 2002).

Overview of the Present Research

The present research has two main goals. First, we explore the relation between self-evaluations of physical attractiveness with judgments of confidence on thoughts and attitudes. Given the novelty of this, we approach the validity of this relation using different

methodologies across experiments. Second, we address the influence of the exposure of different levels of physical attractiveness on self-evaluations and the consequential effect to attitude confidence. Finally, we address how these influences emerge in persuasive contexts.

First, we conducted a correlational study to test the relation between self-evaluations of physical attractiveness with attitude confidence. After this, Experiment 1 test this relation using an experimental paradigm designed to promote different ratings of self-evaluations of attractiveness. In both, we measure attitudes and two metacognitive judgments – attitude confidence and thought confidence. We expected that participants who report to be more attractive also have more confidence on their thoughts and on their attitudes. In Experiments 2 and Experiment 3 we directly address the influence of asking participants to compare themselves with faces varying in physical attractiveness. With this, we aim to test the influence of such comparisons on self-evaluations and test the consequential impact on attitude confidence. Finally, in Experiment 4 we replicate these assumptions with physical attractiveness as a source of a message.

We hypothesized that when participants are exposed to attractive faces, they report to be less attractive and have less attitude confidence. In line with our previous research, we expect that in a persuasive context, a physical attractive source is associated with less attitude confidence. In the present work, we test if this effect can add to an influence on self-evaluations.

(Supporting information can be found in Appendix C of this thesis)

Correlational Study

Method

Participants

Forty-nine participants (M_{age} = 32.27, 61.2% male) recruited from the Amazon Mechanical Turk platform, received $1 to participate in this study. We conducted a power analyses using G*Power. We planned our sample size to test the predicted single linear regression model with one predictor with a relatively small to medium effect (f^2 = .15; Cohen, 1988) with a .80 power, with a suggested N = 55. The final sample size was achieved based on collecting the maximum number of participants who signed up to participate in the study during the days in which it was posted.

Procedure

Participants were informed that the purpose of this study was to measure their opinions about a new law. We then provide a description about this new law "*Very briefly, this law would stipulate a limitation of a minimum of 2 years for a release of a new version of a specific software. In other words, this law defines that, for example, a new version of computer software will be legally made available for general usage only after 2 years of the release of the last version.*" Participants were then asked to think if they agree with this proposal and to write their thoughts in a set of text boxes that appeared on the screen. Then, we measure thought confidence by asking participants the following question "*How much confidence do you have about the thoughts you just reported*?" on a 7-point scale (1 = Not at all; 7 = Extremely).

In a second block of questions we measure attitudes towards the law using 7 semantic differentials using a 7-point scale: Disagree-agree; bad-good; negative-positive; worthless-worthy; useless-useful; undesirable-desirable; unhelpful-helpful. Responses for these items demonstrated high internal consistency (α = .99) and were averaged to create a composite attitudes index. After this, we measure attitude confidence by asking the following question "*How much confidence do you have about the attitudes you just reported*?" on a 7-point scale (1 = Not at all; 7 = Extremely).

Finally, participants completed the measure of self-evaluation of physical attractiveness. We used four statements retrieved from the research conducted by Vogel, Kutzner, Fiedler, and Freytag (2010) designed to measure this self-rating of physical attractiveness. Participants were asked to complete the following statements using a 7-point scale: *In general, my face is perceived as…* (1 = Not beautiful at all; 7 = Extremely); *Compared to average, my appearance is…* (1 = Not attractive at all; 7 = Very attractive); *At the moment, I look…* (1 = Not great at all; 7 = Very great) and finally, *I think that I am…* (1 = Not beautiful at all; 7 = Very beautiful).

Results and Discussion

Self-evaluations of Physical Attractiveness

Responses to the four items of this measure demonstrated high internal consistency (α = .96) and were averaged to create a composite of self-evaluations of physical attractiveness. Higher values indicate more favorable evaluations of physical

attractiveness. Our sample show an average reported around the middle point of the scale (M = 4.2, SD = 1.46).

Attitudes

We first conducted a simple regression model of self-evaluations of physical attractiveness on attitudes. We found no significant relation between ratings of self-evaluations of physical attractiveness and attitudes towards the proposed law**,** B = .10*,* p = .608, t(47) = .52, CI 95%: [-.29, .49].

Attitude Confidence

We conducted the same analysis to test the relationship between self-evaluations of physical attractiveness and attitude confidence. This analysis emerged as significant, B = .47*,* p = .004, t(47) = 3.04, CI 95%: [.16, .77]. This suggests that those that report higher ratings of physical attractiveness report more confidence on attitudes towards the law. We then test if ratings of attitude confidence were affected by the direction of attitudes, which emerged as significant, B =-.22*,* p = .058, t(46) = -1.95, CI 95%: [-.45, .01]. This suggest that judgments of confidence were also affected by the direction of attitudes, and the more participants report to agree with the law, the less confidence they report. Importantly, when testing the relation between self-evaluations with attitude confidence, controlling for the effect on attitudes, the effect continues to be significant, B = .49*,* p = .002, t(47) = 3.27, CI 95%: [.19, .79].

Thought Confidence

As it was with attitude confidence, we test the same regression model on thought confidence. This model emerged as significant, B = .42*,* p = .004, t(47) = 3.02, CI 95%: [.14, .70]. This suggests that the more participants report higher ratings of self-evaluations the more confidence they have about their thoughts.

(Supporting information can be found in Appendix F of this thesis)

This preliminary correlational study aimed to provide evidence on the relation between self-evaluations of physical attractiveness with judgments of confidence. Results show that the more participants report to be more attractive the more confidence they have about their thoughts and attitudes towards the proposed law. This preliminary evidence

suggests that self-evaluations of physical attractiveness are associated with a general sense of confidence.

In Experiment 1 we add two manipulations to the design. First, we add a manipulation where participants received false feedback about their evaluations of physical attractiveness. We aimed to create different conditions in which participants perceive that their level of physical attractiveness was either high or low. Second, we manipulated the direction of thoughts towards a topic. In this, we asked participants either to report positive or negative thoughts about a topic. We aim to create variability when it comes to the direction of thoughts generated.

Experiment 1

Method

Participants and Design

One hundred and sixteen participants (M_{age} = 29.64, 57.8% male) recruited from the Amazon Mechanical Turk platform, received $1.5 to participate in this study. We test the expected regression model adding two more predictors (thought direction and false feedback) as potential moderators. We conducted a power analysis for the linear regression with a relatively small to medium effect (f^2 = .15; Cohen, 1988) and .80 power. This analysis suggested N = 55 participants. The final sample size was achieved based on collecting the maximum number of participants who signed up to participate in the study during the week in which it was posted. Also, we aim to achieve a final sample with at least 30 participants per condition. Participants were randomly distributed by one of four conditions defined by 2 (Thought direction: positive vs. negative) × 2 (Self-evaluations of physical attractiveness: High vs. low).

Self-evaluation of Physical Attractiveness

We created conditions to manipulate self-evaluations of physical attractiveness. To do this, we used a false feedback paradigm. Participants were first asked to answer to a physical self-concept inventory (e.g. “I like the appearance of my body”) (Ninot, Delignières, & Fortes, 2000) using a 4-point scale ranging from “Nothing characteristic of me” to “In some situations characteristic of me”. Participants were randomly distributed to one of the two conditions. Half of participants were asked to select one of the four options of response using the following scale numbers: 1-2-3-4. The other half select one of the four options of response using 1-3-5-7 as scale number. After this, participants were asked

to sum their answers, to write the number on a text box, and to identify the percentile in which their scores are included. This information was provided on a table format, establishing *Percentile 100* - scores higher than 41; *Percentile 75* - scores between 36 and 40; *Percentile 50* - scores between 20 and 35; *Percentile 25* - scores below 20). Critically, due to the different scale points between conditions, this allowed us to match the task with the false feedback given to participants. Thus, participants in the first condition received low ratings of self-evaluations feedback, as the sum of their responses would be in the low percentile. On the other hand, those in the second condition received high self-evaluations feedback as the total sum of responses was expected to be in the higher percentile. This manipulation was adapted from similar research and shows to be capable of influencing people's beliefs about themselves (Horcajo, Petty & Briñol, 2010; Petty et. al, 2002).

Procedure

Participants were informed that the purpose of this study was to measure their general opinions about the topic of *online shopping*. First, we asked participants to think about this topic and to write down any fact, argument, or considerations they have about it. Participants then responded to the self-concept inventory and received feedback about their task. This feedback was shown on the screen with the following information *"Your score shows that you usually see yourself, regardless of your actual level of attractiveness, as someone with* ***high/low*** *physical attractiveness*".

In a second block of questions, we measure attitudes and attitude confidence towards the topic. Attitudes towards online shopping were measured using a 7-point scale for eight semantic differentials: bad-good; negative-positive; harmful-beneficial; worthless-worthy; useless-useful; undesirable-desirable; unhelpful-helpful; unpractical-practical. Attitude confidence was measured using the using the same item as in the previous study. We then measure self-evaluations of physical attractiveness using the same four items as in the previous experiment. At the end of the study, participants were thanked and debriefed.

Results and Discussion

Self-evaluations of Physical Attractiveness

Responses to the four items of this measure demonstrated high internal consistency (α = .92), and were averaged to create a composite self-evaluation of physical attractiveness. Higher values indicate more favorable self-evaluations of physical

attractiveness. In our first test on the efficacy of the manipulation of false feedback, we included this measure in a 2 (Thought direction: positive vs. negative) × 2 (Induced ratings of attractiveness: High vs. low) ANOVA. The analysis suggested that the manipulation of ratings of physical attractiveness lead to non-significant differences between conditions, F (1,111) = 3.01, p = .086, η^2_p = .03. In fact, if we can assume any effect, it is one that suggests that those that were in the low self-evaluations condition reported higher ratings of physical attractiveness (M = 4.72, SD = 1.04) than those that were in a condition of high self-evaluations (M = 4.35, SD = 1.27). The model also suggests that the manipulation of the direction of thoughts influenced ratings of physical attractiveness. This analysis suggests that those asked to list positive thoughts reported to be more attractive (M = 4.73, SD = 1.19) than those asked to list negative thoughts about the topic (M = 4.30, SD = 1.11), F (1,111) = 3.81, p = .053, η^2_p = .03. No significant interaction emerged between the two factors, F (1,111) = .39, p = .53, η^2_p = .004.

Attitudes

Responses on the eight items used to measure attitudes demonstrated high internal consistency (α = .95) and were averaged to create a composite attitudes index. This index was introduced as a dependent variable in an ANOVA defined by our design. Only a significant main effect of thought direction on attitudes emerged, F (1,112) = 12.49, p = .001, η^2_p = .10. Those asked to list positive thoughts, reported more positive attitudes (M = 6.33, SD = 0.70) than those asked to list negative thoughts about online shopping (M = 5.82, SD = 0.85). We found no significant differences between those in the low self-evaluations of physical attractiveness (M = 6.17, SD = 0.82) from those in the high self-evaluation condition (M = 6.02, SD = 0.80), F (1,112) = .90, p = .345, η^2_p = .01- We found no significant interaction between the two factors, F (1,112) = 1.28, p = .26, η^2_p = .01.

Attitude Confidence

We conducted the same analysis on the measure of attitude confidence. A main effect of thought direction emerged suggesting that when participants were asked to list positive thoughts about the topic they also report more attitude confidence (M = 6.22, SD = 0.79) than those that were asked to list negative thoughts (M = 5.91, SD = 0.93), F (1,112) = 3.85, p = .052, η^2_p = .03. No significant differences emerged between participants in the low self-evaluation condition (M = 6.08, SD = 0.83) from those in the high self-evaluation condition (M = 6.08, SD = 0.91), F (1,112) = .001, p = .973, η^2_p = .001. Finally, we found

no significant interaction between the two factors, suggesting that the effect of thought direction was not dependent on participants responses to the false feedback task, F (1,112) = .42, p = .517, η^2_p = .004.

Correlational Evidence

We further test our hypothesis regressing attitude confidence on the measure of self-evaluations of physical attractiveness. This model emerged as significant, supporting the hypothesis that higher ratings of self-evaluations of attractiveness also associated with more attitude confidence, B = .23, p = .001, t(113) = 3.45, CI 95%: [.10, .36]. We further test this regression model adding thought direction as a new predictor of attitude confidence. No significant effect emerged, B = .11, p = .148, t(112) = 1.46, CI 95%: [-.04, .27], and the effect promoted by self-evaluations of attractiveness remained significant, B = .21, p = .002, t(112) = 3.15, CI 95%: [.08, .34].

(Supporting information can be found in Appendix F of this thesis)

In this experiment we aimed to provide an approach to the relation between self-evaluations of physical attractiveness with attitude confidence. However, we failed to provide such experimental evidence. It is possible that the lack of the emergence of this effect is driven by the subtle manipulation used in this experiment. Importantly, this experiment provided the extra correlational evidence of the association between self-evaluations of physical attractiveness with judgments of attitude confidence. In Experiment 2 we changed the experimental approach by exposing participants to sets of faces with different levels of attractiveness.

Experiment 2

In Experiment 2 we replicate the previous experiment with a different and stronger manipulation of self-evaluations of physical attractiveness. As we know from previous research, this self-evaluation is likely to be shaped by the direct comparison with others' physical attractiveness (Brown et. al, 1992). In this experiment, we asked participants to compare themselves with sets of faces, either attractive or unattractive (e.g., Thornton & Moore, 1993).

Method

Participants and Design.

Sixty-four participants (M_{age} = 24.10, 59.4% male) recruited from the Prolific Academic platform received **£**0.40 to participate in this study. We conducted a power analysis using the same criteria as in the previous experiments. Participants were randomly distributed by one of three conditions of face-comparison task (Unattractive faces vs. No faces vs. Attractive faces).

Material

Comparison self vs. sets of faces. Participants were randomly attributed to one of three conditions, depending on exposure to faces: unattractive, attractive, and no-faces. In the first two conditions, participants were exposed to three sets of faces, one at a time, from the same gender as the participant. Depending on the condition, they were exposed to either attractive or unattractive faces. Each set was organized in a 7-point continuum of attractiveness from less to the more attractive within each type. The faces used in this experiment were selected from a set previously tested on ratings of physical attractiveness (Mello & Loureiro, 2015). Critically, it was ensured that each range of faces presented in each condition only included faces previously tested as being part of that spectrum, unattractive or attractive. Thus, no faces previously rated with lower values than the mean point were included in the condition of attractive faces. In the same logic, no faces previously rated with higher values than the mean point were included in the unattractive condition. In the no-faces condition, participants were not asked to do any self-comparison task neither were presented with sets of faces, and therefore served as a control condition.

Procedure

First, we informed participants that the purpose of the first task was to measure opinions about an advertisement. We then presented an image of a bottle of pills with the message "*Painkillers are addictive. Stop using it*!" and asked them to think if they agree with the message.

After this, participants were randomly assigned to one of three conditions. Only for those who were in the conditions of self-comparison tasks were asked to rate their own level of attractiveness compared with faces. They were informed that they would be exposed to three continuums of faces, one at a time. We averaged participants' responses to these three continuous to form a response index.

We then measured attitudes and attitude confidence about the topic of painkillers. Attitudes were measured using a 7-point scale to the question "*What do you think about the free decision to use painkillers whenever you want?*" (1 = Completely disagree; 7 = completely agree). Answers to this item were then reversed so that higher values suggested a higher agreement with the advertisement previously presented. Attitude confidence was measured using the same item used in previous experiments.

Finally, we measure self-evaluations of physical attractiveness using the same four items as in the previous experiments.

Results and Discussion

Self-comparison Task

We included the response index in a 2 (Type of face in the comparison task: Attractive vs. Unattractive) ANOVA. We found no effect promoted by the manipulation on participants' responses in this task. This lack of effect suggests no differences between unattractive (M = 5.02, SD = 1.08) and the attractive face condition (M = 4.48, SD = 1.18), $F(1,40) = 2.38$, $p = .131$, $\eta^2_p = .06$. This suggests that participants position themselves in the same level of the scale, regardless of the type of face presented.

Measure of Self-evaluations of Physical Attractiveness

The four items used to measure self-evaluations demonstrated high internal consistency ($\alpha = .93$) and were averaged to create a composite self-perceive attractiveness index. Our sample show an average reported evaluation around the middle point of the scale (M = 4.55, SD = 1.33).

We included this index in a 3 (conditions of face-comparison task: Unattractive vs. control vs. Attractive) ANOVA. Congruently with the absence of effects of the manipulation, we found no significant differences between the conditions. This suggests that there were no differences between those exposed to unattractive (M = 4.87, SD = 1.13), the no-face condition (M = 4.25, SD = 1.50), and the attractive face condition (M = 4.55, SD = 1.33), F (2, 61) = 1.16, $p = .320$, $\eta^2_p = .04$. Important, ratings on self-evaluations were correlated with the answers in the self-comparison task, $r = .74$, $p <. 001$.

Attitudes

The same ANOVA was conducted on the measure of attitudes towards the advertisement. A marginal effect of condition on attitudes emerged, F (2, 61) = 2.69, p =

.076, η^2_p = .08. Post-hoc analysis suggested a significant difference promoted by type of face, as those who were exposed to attractive faces reported more positive attitudes towards the advertisement (*M* = 5.29, *SD* = 1.38) than those exposed to unattractive faces (*M* = 3.95, *SD* = 1.91).

Attitude Confidence

We conducted the same analysis on the ratings of attitude confidence. This analysis suggested no significant effect of conditions of attractiveness on attitude confidence, *F* (2,61) = 1.20, *p* = .308, η^2_p = .04. We found no significant differences between those that were exposed to unattractive (*M* = 5.90, *SD* = 1.09), those who were in the no face condition (*M* = 5.23, *SD* = 1.88), and those who were exposed to attractive faces (*M* = 5.62, *SD* = 1.20).

Correlational Evidence

As it was in previous experiments, the regression model for attitude confidence on self-evaluations of physical attractiveness was significant, *B* = .47, *p* < .001, *t*(62) = 3.74, CI 95%: [.22, .71]. This supports the hypothesis that the more participants report to be more attractive the more confidence they have about their attitudes.

Next we approach the relation between self-evaluation with attitude confidence for each experimental condition. To do this, we use the PROCESS add-on for SPSS (Hayes, 2018) with the experimental condition as a multicategorical moderator variable (Hayes & Montoya, 2017). This regression equation showed a significant interaction between the two factors, *B* = -.54, *p* = .009, *t*(58) = -3.49, CI 95%: [-.85, -.23]. The pattern of this effect suggests that the relation between self-evaluations of physical attractiveness and attitude confidence decreases with higher values attributed to the experimental condition. The analysis of the conditional effects suggest that a relation between self-evaluations and attitude confidence only emerges when participants are exposed to unattractive faces, *B* = .55, *p* = .016, *t*(58) = 2.49, CI 95%: [.11, .99] or when they were not exposed to any face, *B* = .76, *p* < .001, *t*(58) = 4.64, CI 95%: [.43, 1.08] but is no longer significant in the condition where participants were exposed to an attractive face, *B* =- .16, *p* = .399, *t*(58) = -.85, CI 95%: [-.53, .22] (see Figure 1).

(Supporting information can be found in Appendix F of this thesis)

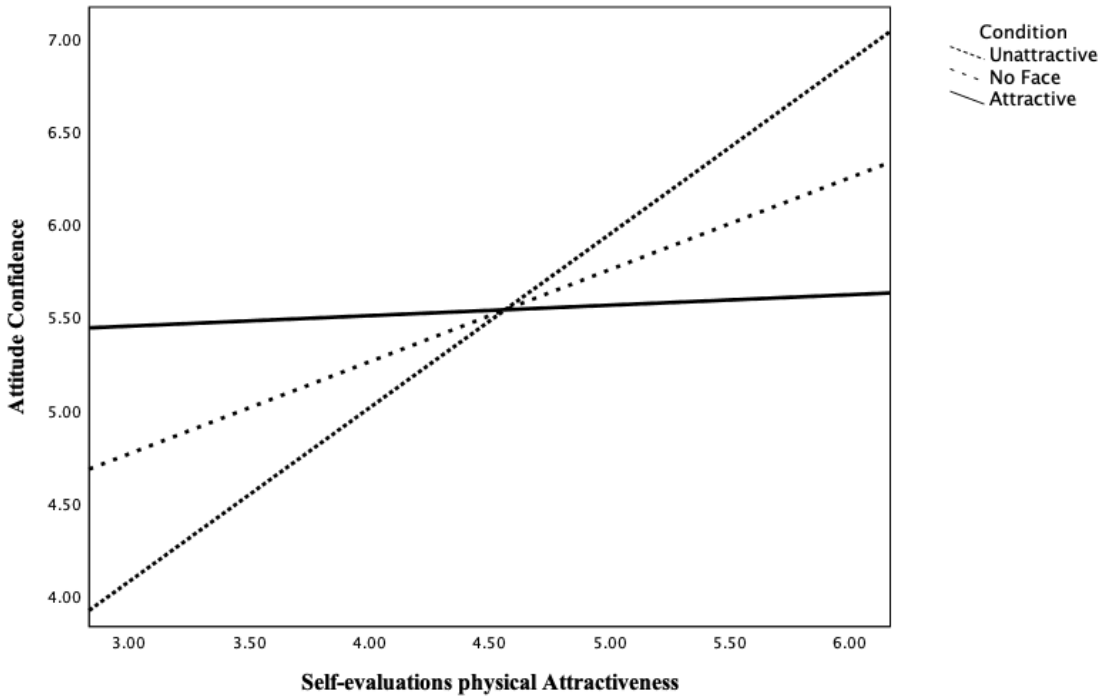


Figure 1. Attitude confidence as a function of ratings of self-evaluations of physical attractiveness and Physical attractiveness of faces in Experiment 2.

This experiment provides further support to the relationship between self-evaluations and attitude confidence. The activation of physical attractiveness appears to have an influence on how individuals use this as informative to attitude confidence. Nevertheless, the measure used to access such influence was not able to detect the direct influence of physical attractiveness of faces on participants' ratings.

Importantly, although physical attractiveness did not directly influence self-evaluations, it did determine how this attribute was informative to judgments of attitude confidence. For those that were exposed to unattractive faces or no faces, the relation between self-evaluations of attractiveness is positively related with attitude confidence. And so, the more participants rated as more attractive the more attitude confidence they report. For those that were previously exposed to attractive faces this relation is no longer significant. This suggests that the presence of highly attractive faces decrease the use of this concept and indirectly affected attitude confidence.

In Experiment 3 we change the manipulation to promote a context in which self-evaluation are expected to be directly influenced by the context. In this experiment,

participants were again asked to rate their level of physical attractiveness compared to a set of faces. In this experiment however participants only saw one face at a time.

Experiment 3

Method

Participants and Design

Seventy-one participants (M_{age} = 26.34, 56.3% male), recruited from the Prolific Academic platform received £0.40 to participate in this study. Participants were randomly distributed by one of three conditions defined by the condition of self-comparison task (Unattractive faces vs. No faces vs. Attractive faces).

Material

Self-comparison with faces. Participants were randomly attributed to one of three conditions of comparison: unattractive, attractive, and no-faces. In the first two conditions participants were exposed to 10 faces one at a time, from the same gender as the participant. Depending on the condition, they were exposed to either attractive or unattractive faces with a description "other". Next to this picture, participants saw an image with a silhouette of a person with the description "*you*". The faces used in this experiment were randomly selected from the set used on previous experiments. Responses to these 10 faces were averaged to form a single index. In the no-faces condition participants were neither asked to do any self-comparison task nor were presented with faces, and therefore served as a control condition.

Procedure

The procedure was identical to Experiment 2 with the exception of the self-comparison task. In this task, participants in the attractive or unattractive condition were exposed to one face at the time. In this task, participants were asked to rate their level of physical attractiveness compared to the face. For each face they had to compare themselves with the picture, using a 7-point scale (1 = I am much less attractive; 7 = I am much more attractive).

Results and Discussion.

Self-comparison task

We conducted a 2 (Conditions of comparison with faces: Attractive vs. Unattractive) one-way ANOVA on the index of the self-comparison task. We found a significant effect of the type of face, suggesting that those exposed to attractive faces reported lower ratings of physical attractiveness (M = 4.09, SD = 1.31) than those exposed to unattractive faces (M = 5.20, SD = 0.85), $F(1,49) = 12.79$, $p = .001$, $\eta^2_p = .21$. We then tested a relation between this measure and the measure of self-evaluations of attractiveness. Results show a significant positive relation between the two, suggesting that the more participants report to be more attractive than the faces, the more they report higher self-evaluation of physical attractiveness, $r = .74$, $p < .001$.

Attitudes

We conducted the same analysis on the measure of attitudes towards the advertisement. We found no significant effect of condition of attractiveness, suggesting that there were no differences on attitudes between those exposed to unattractive (M = 4.12, SD = 1.97), no face (M = 3.95, SD = 1.67), and attractive faces condition (M = 3.88, SD = 1.97), $F(2, 68) = .10$, $p = .901$, $\eta^2_p = .003$.

Attitude Confidence

We conducted the same analysis on attitude confidence and found no significant effect of condition of attractiveness, $F(2,68) = 1.24$, $p = .297$, $\eta^2_p = .04$. This suggested that there were no significant differences between those that were exposed to an attractive face (M = 5.44, SD = 1.39), no face (M = 5.85, SD = 1.18), and those exposed to an unattractive face (M = 5.96, SD = 1.11).

Correlational Evidence

As it was in previous experiments, we tested a regression model for the relation between attitude confidence and the measure of self-evaluations of physical attractiveness. This regression equation showed however a non-significant relation, $B = .16$, $p = .205$, $t(69) = 1.28$, CI 95%: [-.09, .40]. Thus, we did not replicate the correlation evidence of previous experiments. Nevertheless, this might have happened because of the effective manipulation of self-evaluations of physical attractiveness. The successful manipulation of self-evaluations might had interfered in how this attribute was informative to attitude

confidence. As such, we test for the same regression model, with the responses to the self-comparison task as a predictor. This regression equation emerged as significant, $B = .40$, $p = .005$, $t(49) = 2.92$, CI 95%: [.12, .67]. This suggests that the more participants perceive themselves as attractive, in comparison with others, the more confidence they report in their attitudes.

(Supporting information can be found in Appendix F of this thesis)

This experiment adds to this line of research by providing experimental support on the relationship between physical attractiveness, as an individual feature, and attitude confidence. Importantly, this experiment further suggests that self-evaluations of physical attractiveness, and its relation with attitude confidence, are context dependent (e.g., Brown et. al, 1992). Results from this experiment offers an additional pathway for the effects previously found, suggesting that physical attractiveness is capable of decreasing attitude confidence, when perceived as unrelated to the context (Mello et al, 2020). In this experiment we add as evidence that this type of faces can also influence self-evaluations.

Nevertheless, data gathered in this experiment does not allow us to provide a clear overview of these effects as we did not found a direct influence of physical attractiveness on attitude confidence. Nevertheless, there are some relevant experimental differences. In Mello et. al. (2020) experiments, physical attractiveness was presented as the source of a message. We identified a correction process as the explanatory mechanism for such effect. In other words, when individuals perceived physical attractiveness as an unwanted source of bias they correct for such influence, decreasing attitude confidence. In the present research however, participants were exposed to faces varying their physical attractiveness, not being however the source of the message. In this sense, it is less likely that this feature is perceived as a potential source of bias on attitudes. In Experiment 4, we aim to provide an overview of the impact of physical attractiveness on attitude confidence and its relationship with self-evaluations. To do this, we replicate the setting of our previous studies and add a manipulation of physical attractiveness as the source of a message.

Experiment 4

Experiment 4 had three goals. First, to consolidate the evidence gathered so far in a context where physical attractiveness is manipulated as a feature of a persuasive source. To do this, we presented a source of a message, as attractive or unattractive, and test its effect

on attitude confidence. In addition, we test if the relationship between self-evaluations and attitude confidence is dependent on the attractiveness of the source of a message. Second, we explore if a persuasive context, where individuals are asked to form an opinion on a message, is sufficient to activate any kind of comparison with the source necessary to promote changes in self-evaluations. Finally, assuming all of the above, we aim to approach self-evaluations of physical attractiveness as an additional pathway for reducing attitude confidence.

Method

Participants and Design

One hundred sixty-seven Amazon.com's *Mechanical Turk* workers (M_{age} = 23.7, 56.3% male) received $1.50 to participate in this study. Participants were randomly distributed to one of two conditions defined by the manipulation of the level of physical attractiveness (unattractive vs. attractive) of the source of a message.

Procedure

Participants were informed that the purpose of the first task was to measure their opinions about a message. Participants were asked to read a message retrieved from an opinion blog against the implementation of governmentally controls on American industry, to minimize the effects of pollution (Worth & Mackie, 1987; Garcia-Marques & Mackie, 2001). After this, participants were exposed to the face of the source of the message. Physical attractiveness was manipulated using an attractive or an unattractive, using the same materials as in previous experiments.

Participants were asked to report their attitudes towards the message. Attitudes were measured using on eight 7-point semantic differentials: bad-good, disagree-agree, negative-positive, harmful-beneficial, worthless-worthy, useless-useful, undesirable-desirable, and unhelpful-helpful. After this, attitude confidence was measured using the same item used in previous experiments.

Finally, self-ratings of attractiveness were measured using the same items as in the previous experiments.

Results and Discussion

Measure of Self-evaluations of Physical Attractiveness

Responses on the four items demonstrated high internal consistency (α =.91) and were averaged to create a composite self-evaluations of physical attractiveness index. We then compare self-evaluation from those exposed to unattractive sources with those exposed to attractive sources. To do this we compare both conditions in a unilateral t-test, given that the only expected effect was that attractive sources would reduce perceived attractiveness. As expected, participants exposed to unattractive report to be more attractive (M = 4.26, SD = 1.06) than those exposed to attractive sources (M = 3.94, SD = 1.25), $t(162)$ = 1.72, p = .044, d = 0.27.

Attitudes

The items used to measure attitudes demonstrated a good internal reliability (α = .98) and were averaged to form an index of attitudes toward the message. Higher scores of this index indicate a higher agreement with the direction of the message presented by the source. We found no effect promoted by condition of the source on attitudes towards the message. This suggests that were no differences on attitudes between those exposed to the unattractive (M = 2.50, SD = 1.52) and those exposed to the attractive sources (M = 2.78, SD = 1.55), t(165) = - 1.21, p = .115, d = 0.02.

Attitude Confidence

We found evidence of the unilateral hypothesis suggesting that those exposed to an unattractive source reported more attitude confidence (M = 5.58, SD = 1.27) than those exposed to an attractive source (M = 5.17, SD = 1.40), t (165) = 1.96, p = .026, *d =0.47*

Correlational Evidence

As expected, the general regression model for attitude confidence on self-evaluations of physical attractiveness was significant, B = .41, p < .001, $t(162)$ = 4.79, CI 95%: [.24, .57]. The more participants report to perceive themselves as attractive the more confidence they report on their attitudes. Given that source manipulation affected both perceived attractiveness and attitude confidence, we further address if this offers an alternative pathway for the effect found by Mello et. al (2020)

Mediational Analysis

To address the possibility that an influence on self-evaluations can provide an additional route for the influence of source attractiveness on attitude confidence, we run a mediational analysis. This model included self-evaluations as a likely mediator of the relationship between physical attractiveness of the source on attitude confidence.

To do this, we conducted a bias corrected bootstrapping procedure with 10.000 resamples. The result of this bootstrapping procedure revealed that the 95% confidence interval of the indirect effect include zero (Indirect Effect a × b = - .06, 95% CI [-.146, 003]. This suggests that the mediation is non-significant and self-ratings of self-evaluations are an unlikely mediator. However, the analysis of this model suggests that by controlling the effect of self-evaluations on attitude confidence, B = .39, p < .001, $t(162)$ = 4.58, CI 95%: [.22, .56], the unilateral effect of physical attractiveness of the source strongly loses its significance, B = -.14, p = .085, $t(162)$ = -1.38, CI 95%: [-.33, .06]. Thus, although the mediation emerged as non-significant, an effect of self-evaluations of physical attractiveness and this attribute as a source share some variability in determining attitude confidence.

(Supporting information can be found in Appendix F of this thesis)

We raised the possibility that physical attractiveness, as a feature of the recipient of a message, is a potential predictor of attitude confidence, which could provide an additional explanation of the effects previously found (Mello et al, 2020). Results from this experiment suggests that not might be the case. Data suggests that, in a persuasive context, self-evaluations of physical attractiveness are informative to attitude confidence. Important, this context prone individuals to compare their level of physical attractiveness with the source of a message. By comparing themselves with an attractive source, they report to be less attractive and as a consequence have less confidence in their attitudes. As previously described, evidence gathered so far provides an additional effect of physical attractiveness of the source but it does not allow us to provide extra explanations for our effects. As such, attractive sources can not only affect how individuals evaluate their attractiveness but also reduce participants' attitude confidence as a consequential or simultaneous effect.

Discussion

Evidence gathered in five experiments suggests that approaching physical attractiveness as a feature of the recipient of a message is relevant to understand judgments of attitude confidence. In five experiments, we show a relation between self-evaluations of physical attractiveness with attitude confidence. In the first two sets of studies we show that this individual judgment is positively related with attitude confidence. Data from Experiment 2 suggests that the strength of this relation is sensitive to physical cues from the context. In this experiment, although attractiveness of faces did not directly influence participants' self-evaluations of this attribute it did affect how this attribute determines attitude confidence. In Experiment 3, we created a context in which these self-ratings were sensitive to physical attractiveness of the context. In this setting, an influence on this attribute also determined the level of attitude confidence. Finally, Experiment 4 replicates this effect manipulating physical attractiveness as the source of a message.

The evidence gathered in these experiments leads us to three main conclusions. First, self-evaluations of physical attractiveness are related with attitude confidence. This is congruent with research showing that this physical attribute is highly associated with other evaluative dimensions such as general confidence (e.g., Felisberti & Musholt, 2014; Langlois et al., 2000; Wade, 2000; Wade & Cooper, 1999). Second, this self-evaluation, and its relationship with attitude confidence, is sensitive to influences from the context, more specifically by the presence of attractive or unattractive faces. Our studies show that physical attractiveness of others may directly interfere with the relation between self-evaluations and attitude confidence. More specifically, in Experiment 2, when participants were exposed to attractive faces, their self-views of this attribute were no longer informative to judgments of attitude confidence. Third, we cannot explain the influence of physical attractiveness of a source, on attitude confidence, by its influence on self-evaluations. As such, this relationship does not offer a valid alternative explanation for the effects found by Mello et al (2020). Nevertheless, in this work we focus on understanding the relevance of considering recipient factors, i.e., characteristics of the target audience, at a persuasive context. This experiment is the first to provide evidence that recipient features can influence not only attitudes but also metacognitive judgments relevant to persuasion as thought and attitude confidence (see Briñol & Petty, 2008 for a review).

Taken together, this research suggests that the presence of attractive faces can, in specific contexts, impact self-evaluations of physical attractiveness. Important, even in

contexts where no such comparison is promoted, the presence of attractiveness can still have an effect on the individual. Our data suggests that it can modulate the relation between self-evaluations and attitude confidence. In this case, when participants were exposed to attractive faces, and this did not influence the self, it did moderate the relation between how the people perceived themselves with their judgments of attitude confidence. In this situation, this feature was no longer predicting judgments of attitude confidence. From the data gathered in the present research, we can only assume that physical attractiveness can have an influence both on self-evaluations and on attitude confidence, without any establishment of a relation between the two effects. We believe that this research opens new questions to better understand the dynamic interrelationship of persuasive factors.

Section III

General Discussion

General Discussion

In this thesis, we examine a detrimental effect promoted by the presentation of an attractive face as the source of a persuasive message. We raised this as a possibility and based our assumptions on the existing literature that already sets the path to an influence on judgments of confidence. We approach this by isolating the effects of physical attractiveness, as a feature of the source, on judgments of attitude confidence. We approach if and how this determines attitude confidence. We started by showing that an attractive source, when perceived as an unwanted source of bias, reduces attitude confidence. In addition, we test how this effect can impact self-evaluations from the recipient of a message. We show that a physical attractive source can influence self-evaluations of physical attractiveness and can determine how these judgments are informative to the individual. Taken together, data from this thesis show that physical attractiveness can be detrimental to persuasion, by affecting the perceived validity on attitudes.

Bellow we address each of these conclusions and focus on how they strengthen our assumptions and identify the opportunities for future directions of research.

The effect: Source Physical Attractiveness Reduces Attitude Confidence

In our first paper, we test the influence of physical attractiveness, as a feature of the source, on attitude confidence. We show that individuals correct from the potential influence from an attractive source on their attitudes. As a consequence of this, individuals who report less attitude confidence become less capable to resist a persuasive attack. To our knowledge, this line of research was the first empirical evidence that people can correct for a perceived biasing effect on a dimension other than the attitude itself. Nevertheless, when relevant to the context, this feature can increase attitude confidence, as this was previously shown with other types of sources as for example source credibility (Tormala & Petty, 2004). It is likely that credibility would be, in most cases, relevant when evaluating a message, whereas source physical attractiveness might be more dependent on messages directly related with this physical attribute. This research provided clear evidence of the detrimental effect of physical attractiveness on persuasion.

Future Directions

In this line of research, we identify correction as the most likely mechanism explaining this detrimental effect. As previously described, correction seems the most

likely mechanism explaining why physical attractiveness reduces attitude confidence, either by simply posing a confidence question or by explicitly providing correction instructions. Future research should approach the conditions in which this effect is more likely to occur. As an example, it might be that for some people, a physical attractive source is perceived as an unwanted bias but for others as an appealing attribute. In addition, exposing this physical attribute could also lead individuals to allocate their attentional resources either to the source or to themselves, through a process of objectification (Fredrickson & Roberts, 1997), determining how the individual evaluates their own attitudes. Nevertheless, we describe how we approach some of open questions raised by this first line of research and discuss how future research could continue to contribute to this research.

In the next sections we described open questions about this effect. Based on the findings of this thesis there are some conditions for the replication of this effect. Based on our findings, it appears that a detrimental effect of physical attractiveness on attitude confidence emerges when exposing to a message that is perceived both as counter attitudinal and unrelated to attractiveness. In other words, our effects are more likely to emerge in situations that promote correction from a potential bias. In addition, it seems that encouraging individuals to any social comparison to others or those who are low in self-evaluations are probably more likely to enhance the detrimental effects of physical attractiveness on attitude confidence.

Approaching the Acceptance of a Counter attitudinal Message

Our second paper provided insights on the dependence of perceiving physical attractiveness as a source of bias. The assumption that physical attractiveness is treated as a potential bias assumes that individuals perceive an influence from this type of source, even when no such effect occurs. We argue that even in the absence of an influence from this attribute, people can still perceive this as a possibility. It seems more likely that a correction effect occurs in a context where an actual bias occurs, even if not directly promoted by the source. This assumption is congruent with previous research suggesting that individuals are sensible to changes (or lack of it), on their attitudes, when exposed to a persuasive message. When individuals perceive that they are successful in resisting a persuasive message, they feel more confident about their attitudes (e.g. Tormala & Petty, 2002), especially if it was associated to a valid feature (e.g., a credible source, Tormala &

Petty, 2004). As raised by Tormala and Rucker (2017), physical attractiveness might be perceived as a less valid and as an illegitimate attribute. Any lack of resistance to such type of feature might promote a decrease on judgments of confidence.

In this line of studies, we tested this assumption and show that a process of correction from physical attractiveness is more likely to occur in situations where attitudes were challenged. By accepting a counter attitudinal message, individuals have less confidence on their attitudes and tried to find a biasing source explaining such change. In our experiments, when individuals were exposed to a source perceived as biased (i.e., an attractive source), they appear to misattribute this as the promoter of change.

Future Directions

These results clarified that an effect of physical attractiveness on attitude confidence is related with the perception of influence from the context. What is then the reason that the mere possibility of an influence promoted by physical attractiveness is sufficient to promote correction? And would this happen regardless of the meaning that people associate to this attribute? Future studies should approach if a correction on attitude confidence is specific to this physical attribute. Next, we describe two lines of research to address the conditions in which features, such as physical attractiveness, are more likely to be sources of bias and to influence judgments of attitude confidence.

Meaning Associated to Physical Attractiveness. People might perceive a potential influence from the source and feel the need to correct for this influence. This correction occurs because individuals perceive the illegitimate and/or unrelated value of the source as a basis for their judgment. Nevertheless, this could be dependent on the general associations that individuals have about this source. Although physical attractiveness has been shown to be associated with general positivity (see Eagly, et. al, 1991; Langlois et. al, 2000) even translating this positivity to attitudes (e.g., Dion, et. al, 1972; Mello & Garcia-Marques, 2018) the meaning that this feature has on persuasive contexts is still open for discussion.

Previous research suggests that the variability of meaning towards persuasion can determine its impact. Some people perceive advertising as deceptive and manipulative and others as informative and entertaining (see e.g., Calfee & Ringold, 1994). In such, people can hold different naive theories about the meaning of persuasion as something good or as something bad. Previous research conducted by Briñol et. al (2015), provided evidence that these different meanings associated with advertisement can influence persuasion by

determining the amount of elaboration consumers spent on a persuasive message. Thus, the meaning associated with a specific context, or even with some specific physical actions within this context (see Briñol, Petty, Santos & Mello, 2017) matters and can determine its effect on attitudes. It is then relevant to comprehend the general associations people might have about the use of physical attractiveness as a source of a message. According to the flexible correction model (see Petty & Wegener, 1993; Wegener & Petty, 1995), for a process of correction to occur, recipients need to have a theory about the direction of a potential influence. People can adjust their judgments correcting for the expected influence. In the present research, we found that this process of correction occurs not necessarily on the judgment itself. It is then possible that the influence of attractiveness on attitude confidence depends on the meaning individuals associated with this type of source.

Previous research provided support to the idea that naive theories can have a relevant role on this metacognitive judgment. In the study of Tormala et. al (2011) participants received false feedback about the amount of time they took to evaluate a topic. Depending on their beliefs about the quality of the judgment as a consequence of more or less thoughtful consideration of a topic (i.e., as producing better or worse judgments) this false feedback produced differences on attitude confidence. When participants believed that thoughtful consideration produced better judgments, and received feedback congruent with this (i.e., that they spend more time evaluating the topic), they also report more confidence in those judgments. In contrast, those that believe that going with their first reactions produces better judgments, and received feedback in this direction, reported less attitude confidence. An equivalent effect was found regarding naïve theories about resistance to persuasion, as something good or bad (e.g., Rydell, Hugenberg, & McConnell, 2006). Rucker et. al. (2014) proposed that in this case naïve theories can activate appraisals of legitimacy, and as a consequence, moderate whether resistance to persuasion is perceived as a more or as a less legitimate source of confidence.

Future research should then approach the role of naïve theories both about the direction of the potential influence of attractiveness within a persuasive context and the meaning associated with that influence, as something more or less positive. More specifically, people might have different perceptions about an attractive person and how this should influence their attitudes and attitude confidence.

Timing and message elaboration. Across experiments, we manipulated physical attractiveness after the presentation of the message/attitudinal topic. We know, from

previous research, that if participants would be exposed to the source before, and not after, the message this attribute could eventually also influence attitude confidence due to the higher expected impact on thought direction (Briñol, et al., 2007; Tormala, et. al, 2007). Future research should examine the multiple processes by which attractiveness can influence not only attitudes but also attitude confidence.

Another relevant variable to approach is elaboration. We raised correction process as the mechanism explaining the effects found in this thesis. However, for this to be the case, individuals need to elaborate so they can correct for any possible influence from the context (Petty & Wegener, 1993; Wegener & Petty, 1995; 1997). Although this might be the case, in this thesis we did not actively created conditions to favor such level of elaboration. Future research should examine the multiple processes by which attractiveness can influence not only attitudes but also attitude confidence.

Approach Physical Attractiveness as a Feature of the Recipient of a Message

In the last set of studies, we address physical attractiveness as a feature of the self. We hypothesized and show that this self-evaluation can be informative to attitude confidence. These findings are important for several reasons. First, it became clear that when studying influences on attitudes, it should be also accounted the variability promoted by the individual traits. In this research, we showed that self-judgments of physical attractiveness are related with the amount of confidence people report about their attitudes. This is congruent with research suggesting that this physical attribute is highly associated with other evaluative dimensions such as general confidence (e.g., Felisberti, & Musholt, 2014; Langlois et al., 2000; Wade, 2000; Wade & Cooper, 1999). Nevertheless, to our knowledge no previous research approached the consequential impact of such individual states for the attitude change process.

Future Directions

Future research should provide a better understanding of these indirect effects of physical attractiveness. From our data we can only assume that this attribute can influence both self-evaluations and attitude confidence, without any establishment of a relation between the two effects. We believe that is critical to approach relevance of physical attractiveness to the self. Individuals might perceive a potential influence from this type of feature, but as not as relevant and central to them. With this regard, self-ratings of physical attractiveness, as it is with other individual features from the recipient (see e.g. Tormala &

Briñol, 2015 for a review), are likely to have an impact on attitude change process. This individual feature becomes even more relevant to approach in this context as it is linked with levels of overall confidence (Gurari et al, 2006). It is then likely that the extent in which people evaluates themselves can determine how much bias they might perceived from an attractive source, and as a consequence affecting attitude confidence.

Previous research already suggested that physical attractiveness of others can influence self-evaluations of physical attractiveness (Brown et. al, 1992; Cash et. al, 1983). The continuous exposure to ideal physical attributes in persuasive contexts, such as advertisements, can have negative consequences to the recipient of such images (see e.g., Groesz et. al 2002). In fact, being exposed to attractive models in advertisements can lead not only to lower evaluations of the body, and to an increase of body dissatisfaction, but also to general feelings of depression, frustration, and self-esteem (e.g., Major, Testa, & Bylsma, 1991, Richins, 1991). In the study conducted by Heinberg and Thompson (1995) half of participants were exposed to TV commercials manipulated to represent ideals of thinness and attractiveness, but the other half received no such videos. Data from this study suggested that participants exposed to the appearance related videos reported higher feelings of anger, lower overall appearance, and general confidence on themselves. Some authors have suggested that these effects are explained due to an activation of schematic, investment-driven processing of self-evaluative information about one's appearance (e.g., Cash, 1994; Markus, 1977) and the upward social comparisons which are often associated with negative effects on the self (Major et. al, 1991).

Although a wide amount of research already approached the negative consequences of attractiveness on self-evaluations in this type of contexts, to our knowledge the consequences of such influence on attitudes and attitude change were not yet accounted. In other words, previous research has only approached the negative consequences of attractive and thin ideals presented in advertisement to the self, without taking into consideration the consequential effect for the efficacy of such advertisements. Taking into account the known effects of exposing people with this feature, including on general confidence, future research should approach how this influence on the individual accounts for the effects on attitudes and attitude confidence. Relevant to this is the focus on self-objectification literature.

Self-objectification. Objectification refers to seeing and treating people as physical objects. The objectification theory (Fredrickson & Roberts, 1997; Fredrickson, Roberts,

Noll, Quinn, & Twenge, 1998) argues that people, mostly women, are subject to interpersonal experiences in which the body is treated as an object. By engaging in such process, i.e., self-objectification, attention resources are directed to the body as if looking on as a critical observer, and as a consequence it decreases the focus on the mind and one's cognitive capacities (e.g., Quinn, Kallen, Twenge, & Fredrickson, 2006, see Briñol, Petty & Belding, 2017).

Previously it has been theorized that this objectification could be the psychological mechanism explaining the effects of media exposure on body image effects (e.g., Harper & Tiggerman, 2008). This sense of self-objectification can be achieved mostly when people are asked to engage in a behavior that promotes a higher focus on the body (e.g., asking participants to try a swimsuit, Fredrickson et. al, 1998; Martins, Tiggemann, & Kirkbride, 2007). Nevertheless, self-objectification also seems to be sensitive in contexts where no explicit direction of focus on physical appearance occurs (e.g. Calogero, 2004; Roberts & Gettman, 2004). In the study conducted by Harper and Tiggerman (2007) the authors tested the influence of the exposure of images of media portraying thin attractive ideals on women's self-objectification. In this research, the authors found that the exposure of these images not only increasingly influenced body dissatisfaction and negative mood but also on state self-objectification. Although the authors were unable to show self-objectification as the explanation of the influence of attractiveness on body image, it seems clear that the exposure of this type of stimulus can promote higher focus on the body. In other words, people do not need to be asked to think about their physical appearance to think about it as a critical observer.

It seems relevant to understand the multiplicity of effects promoted by physical attractiveness. Exposing individuals to attractiveness, as a feature of the source, might promote individuals to become a critical observer. As a consequence of this, it can be that physical attractiveness is making individuals critical about their responses and decrease the amount of confidence, not only on their ratings of physical attractiveness but also to their attitudes.

Evidence gathered in this thesis on the influence of Physical Attractiveness

As reviewed, previous research provided evidence of an influence of physical attractiveness on attitude change and persuasion. Research show that physical attractiveness influence attitudes, either serving as cue or as an argument to the validity of

a message (for a review see Guyer et. al, 2019). In this thesis, we presented evidence of an influence from this feature on attitude confidence. Across three sets of studies we show that attractiveness can be detrimental to attitude confidence. The evidence gathered in these lines of research strengthen the validity and understand of our effects; focusing the mechanisms and conditions in which this effect is more likely to occur. In Table 1 we summarized the results integrating them in a unified approach to the effect.

Table 1

Summary of Mechanisms, Moderators, and Consequences of the effect of Physical Attractiveness on Attitude Confidence

Effect	Mechanisms/Moderators		Consequences
Exposure to an attractive source of a persuasive message decreases attitude confidence.	Correction from an undesirable influence on attitudes.	1. **Perception potential bias from the source.** Source is perceived as undesirable and as irrelevant to the content of the message - First set of studies; Experiment 2 and 3. 2. **Perception of bias on attitudes**. Source is associated to an agreement with a counter attitudinal message. Attitude change is not necessarily driven by the source, but is likely misattributed as the cause of change. - Second set of studies, Experiment 1 and 2.	**Attitude Strength.** Low attitudinal stability in the face of an attacking message. - First set of studies, Experiment 4.
	Influencing self-evaluations of Physical attractiveness	1. **Influence on self-evaluations.** A contrast effect on self-views of attractiveness is likely to be associated with less confidence. - Third set of studies. As an **additional** mechanism and less likely to provide a direct explanation of the effect on attitude confidence. - Third set of studies, Experiment 4.	

We started by identifying the effect and provide the first demonstration of the detrimental influence from physical attractiveness on attitude confidence. We show that this effect is explained by a correction process and therefore identified perceived bias, from an attractive source, as a key moderator for the emerge of this effect. We show that this effect is more likely to occur when physical attractiveness is unrelated to the context (First set of studies; Experiment 2) and that just by questioning about confidence is sufficient to promote this effect (First set of studies; Experiment 3). We clarified this effect by testing conditions for the emerge of this effect, i.e., a perception of bias on attitudes, even if not driven by physical attractiveness. We show that an effect of physical attractiveness is more likely to occur when individuals are exposed, to a counter attitudinal message and change their attitudes (Second set of studies, Experiment 2). Therefore, when people change their attitudes after being exposed to counter attitudinal messages, they evaluate not only the bias but also on how much they perceived change as legitimate. This provides an explanation to why throughout this thesis attitude confidence was determined by physical attractiveness even when this attribute did not directly influenced attitudes. Contrary, when exposed to pro attitudinal messages, it is expected that individuals generate favorable thoughts, validating their previous attitudes (Tormala & Petty, 2002). Thus, it is unlikely that in other set of studies, participants perceived the different messages as pro attitudinal, as this would imply an increase of attitude confidence, even if the source of this message was attractive. Thus, we state that an influence of physical attractiveness on attitude confidence occurs due to a process of correction and *depends on the perception of bias from this attribute*. A decrease on attitude confidence is more likely to occur if physical attractiveness is viewed as unrelated and if this is linked to change, driven by the acceptance of contra-attitudinal message.

Nevertheless, when testing the influence of this attribute on attitude confidence, we tested for an additional path by which attractiveness of a source could influence attitude confidence. In five studies (third set of studies), we show that self-evaluations of physical attractiveness determine judgments of confidence. Nevertheless, we show that any influence of physical attractiveness of others on self-evaluations could account only in part for the effect of perceived bias from physical attractiveness as a source of a message.

This set of studies show that attractiveness, not only as a feature of the source but also as a recipient, influences judgments of confidence. We show that this self-evaluation (Third set of studies, Experiment 3), and its informative value to confidence (Third set of

studies, Experiment 2), is determined by the level of physical attractiveness presented in the context. Thus, in the first two sets of studies, physical attractiveness could have directly or indirectly influenced attitude confidence through an influence on self-evaluations. We hypothesized that when exposed to attractive sources, some participants may have contrasted their self-evaluations and felt as less attractive. However, we assume that this possibility can explain the detrimental effect of physical attractiveness, but only because physical attractiveness was already perceived as an unwanted source of bias. Participants' low self-evaluations of physical attractiveness *per se* cannot justify some oresults in this thesis. It is less likely that low self-evaluations explain why in the first set (Experiment 2) and second set of studies (Experiment 2), an attractive source was not associated with less confidence than an unattractive. In the first case, when the message was related to attractiveness, participants reported more confidence in their attitudes than when compared to an unattractive source. On the second case, the less participants agree with a counter attitudinal message the most similar were the confidence ratings between conditions of attractiveness.

In one study we show the consequential effect (First line of studies, Experiment 4), by showing that a physical attractive (vs. unattractive) source promotes less attitudinal stability in the face of an attacking message. Based on the experimental developments in this thesis, it is more likely that attitudes towards a message presented by an attractive source become less stable, especially when this source was unrelated to the message, perceived as a potential source of bias, and individuals had less overall confidence in themselves.

Implications for Theoretical Models

This thesis follows the ongoing developments on the concept of attitudes and the focus on attitude strength and its antecedents. It provides evidence supporting the idea that attitudes can be associated with more or less confidence, which as a consequence can promote differences in attitude strength.

In a context of change, models such as the ELM proposed that people want to be confident that they hold correct attitudes. More recently, researchers focus their attention to confidence as a dimension of attitude strength. The data from this thesis contributes to the field of attitude change in several ways. First, it contributes to the extensive research on the multiplicity of effects promoted by a feature of the persuasive context, either present

as the source or as recipient of a message. Second, our research shows that process of correction can emerge with consequences not on the judgment itself but on the confidence about those judgments. Third, it supports the argument that a process of change, and therefore lack of resistance, can be associated with a decrease of confidence. This implies that changing attitudes is associated with lack of perceived validity and therefore with an impact on attitude strength. And finally, that the persuasive context can have detrimental influence to the individual with consequences to attitudes and attitude strength.

This thesis contributes to the field of attitudes by not only expanding the already existent literature of the variety of effects on attitude change context, but also in providing evidence of a process of correction on metacognitive measures such as attitude confidence. The Appraisal-Based Certainty Approach defined a set of appraisals that can contribute to individual adjustments to attitude confidence. Rucker et. al (2014) raised the hypothesis that one of such adjustments is the perceived relevance of the information underlying an attitude. The authors even gave as an example the use of an attractive model as the source of a message unrelated with this feature. This thesis contributes by testing this hypothesis and by showing that due to its effect on attitude confidence, attractiveness can promote weaker attitudes with significant and important consequences such as attitude stability, resistance to change, and impact on future behavior.

Finally, this research is relevant to other consequential effects of decreasing attitude confidence. More especially, decreasing attitude confidence on specific attitudes can have additional detrimental effects. This because, a feeling of lower confidence might spread to other coherent attitudes (e.g., McGuire, 1989). Activating physical attractiveness in the context, could eventually lead to a decrease of confidence not only on the attitude target at that specific context but can undermine the confidence on related attitudes.

Conclusion

This thesis provides clear support to the hypothesis that attitude confidence is malleable to the influence of features such as physical attractiveness. We show that physical attractiveness informs individuals about the validity of their attitudes. When unrelated to the context, the illegitimate value of physical attractiveness decreases attitude confidence. In this thesis, we add this detrimental effect to the list of known influences from physical attractiveness on attitudes and attitude change process. We also show the relevance of understanding individual attributes relevant to study in the field of attitude change process

such as self-evaluations of physical attractiveness. We show that studying the multiplicity of factors determining the confidence and perceived validity is crucial to gain deeper understanding on how our attitudes.

References

Ahearne, M., Gruen, T. W., & Jarvis, C. B. (1999). If looks could sell: Moderation and mediation of the attractiveness effect on salesperson performance. *International Journal of Research in Marketing*, *16*, 269-284.

Allport, G. W. (1935). Attitudes. In C. Murchinson (Ed.), *A handbook of social psychology* (pp.798-844). Worcester, Mass.: Clark University Press.

Asch, S. E. (1956). Studies of independence and conformity: I. A minority of one against a unanimous majority. *Psychological monographs: General and applied*, *70*, 1-70.

Baker, S. M., & Petty, R. E. (1994). Majority and minority influence: Source-position imbalance as a determinant of message scrutiny. *Journal of personality and social psychology*, *67*, 5-19.

Barden, J., & Petty, R. E. (2008). The mere perception of elaboration creates attitude certainty: Exploring the thoughtfulness heuristic. *Journal of Personality and Social Psychology*, *95*, 489-509.

Bargh, J. A., Chaiken, S., Raymond, P., & Hymes, C. (1996). The automatic evaluation effect: Unconditional automatic attitude activation with a pronunciation task. *Journal of Experimental Social Psychology*, 31, 104-128.

Bassili, J. N. (1996). Meta-judgmental versus operative indexes of psychological attributes: The case of measures of attitude strength. *Journal of Personality and Social Psychology*, *71*, 637-653.

Bell, G. D. (1967). Self-confidence and persuasion in car buying. *Journal of Marketing Research*, *4*, 46-52.

Berger, I. E., & Mitchell, A. A. (1989). The effect of advertising on attitude accessibility, attitude confidence, and the attitude-behavior relationship. *Journal of Consumer Research*, *16*, 269-279.

Bizer, G. Y., Larsen, J. T., & Petty, R. E. (2011). Exploring the valence-framing effect: Negative framing enhances attitude strength. *Political Psychology*, *32*, 59-80.

Bizer, G. Y., & Petty, R. E. (2005). How we conceptualize our attitudes matters: The effects of valence framing on the resistance of political attitudes. *Political Psychology*, *26*, 553-568.

Bizer, G. Y., Tormala, Z. L., Rucker, D. D., & Petty, R. E. (2006). Memory-based versus on-line processing: Implications for attitude strength. *Journal of Experimental Social Psychology*, *42*, 646-653.

Bohner, G., Ruder, M., & Erb, H. P. (2002). When expertise backfires: Contrast and assimilation effects in persuasion. *British Journal of Social Psychology*, *41*, 495-519.

Briñol, P., & Petty, R. E. (2008). Embodied persuasion: Fundamental processes by which bodily responses can impact attitudes. In G. R. Semin & E. R. Smith (eds), *Embodiment grounding: Social, cognitive, affective, and neuroscientific approaches* (184-207), Cambridge, England: Cambridge University Press.

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

Briñol, P., Petty, R. E., & Barden, J. (2007). Happiness versus sadness as a determinant of thought confidence in persuasion: A self-validation analysis. *Journal of Personality and Social Psychology, 93*, 711-727.

Briñol, P., Petty, R. E., & Belding, J. (2017). Objectification of people and thoughts: An attitude change perspective. *British Journal of Social Psychology, 56*, 233-249.

Brinol, P., Petty, R. E., & Tormala, Z. L. (2004). Self-validation of cognitive responses to advertisements. *Journal of Consumer Research*, *30*, 559-573.

Briñol, P., Petty, R. E., Valle, C., Rucker, D. D., & Becerra, A. (2007). The effects of message recipients' power before and after persuasion: A self-validation analysis. *Journal of Personality and Social Psychology*, *93*, 1040-1053.

Briñol, P., Rucker, D. D., & Petty, R. E. (2015). Naïve theories about persuasion: Implications for information processing and consumer attitude change. *International Journal of Advertising*, *34*, 85-106.

Briñol, P., Petty, R. E., Santos, D., & Mello, J. (2017). Meaning moderates the persuasive effect of physical actions: Buying, selling, touching, carrying, and cleaning thoughts as if they were commercial products. *Journal of the Association for Consumer Research*, *2*, 460-471.

Briñol, P., Petty, R. E., Stavraki, M., Lamprinakos, G., Wagner, B., & Díaz, D. (2018). Affective and cognitive validation of thoughts: An appraisal perspective on anger, disgust, surprise, and awe. *Journal of Personality and Social Psychology*, *114*, 693-718.

Brown, J. D., Novick, N. J., Lord, K. A., & Richards, J. M. (1992). When Gulliver travels: Social context, psychological closeness, and self-appraisals. *Journal of Personality and Social Psychology, 62*, 717-727.

Buhlmann, U., Teachman, B. A., & Kathmann, N. (2011). Evaluating implicit attractiveness beliefs in body dysmorphic disorder using the Go/No-go Association Task. *Journal of Behavior Therapy and Experimental Psychiatry*, *42*, 192-197.

Byrne, D. (1969). Attitudes and attraction. *Advances in experimental social psychology*, *4*, 35-89.

Cacioppo, J. T., & Petty, R. E. (1982). The need for cognition. *Journal of Personality and Social psychology*, *42*, 116-131.

Calfee, J. E., & Ringold, D. J. (1994). The 70% majority: Enduring consumer beliefs about advertising. *Journal of Public Policy & Marketing*, *13*, 228-238.

Calogero, R. M. (2004). A test of objectification theory: The effect of the male gaze on appearance concerns in college women. *Psychology of Women Quarterly*, *28*, 16-21.

Cash, T. F. (1994). Body-image attitudes: Evaluation, investment, and affect. *Perceptual and Motor skills*, *78*, 1168-1170.

Cash, T. F., Cash, D. W., & Butters, J. W. (1983). " Mirror, Mirror, on the Wall...?" Contrast effects and self-Evaluations of physical attractiveness. *Personality and Social Psychology Bulletin*, *9*, 351-358.

Chaiken, S. (1979). Communicator physical attractiveness and persuasion. *Journal of Personality and Social Psychology, 37*, 1387-1397

Chaiken, S. (1980). Heuristic versus systematic information processing in the use of source versus message quest in persuasion. *Journal of Personality and Social Psychology*, *39*, 752–766.

Chaiken, S. (1987). The heuristic model of persuasion. In M. P Zanna, J. M. Olson, & C. P. Herman (eds.), *Social influence: The Ontario symposium* (Vol. 5, pp.3-39), Mahwak, NJ: Erlbaum.

Chaiken, S., & Eagly, A. H. (1983). Communication modality as a determinant of persuasion: The role of communicator salience. *Journal of Personality and Social Psychology, 45*, 241-256.

Chaiken, S., Liberman, A., Eagly, A. H. (1989). Heuristic and systematic processing within and beyond the persuasion context. In J. S. Uleman & J. A. Bargh (eds), *Unintended thought* (pp. 212-252). New York: Guilford Press

Chaiken, S., & Maheswaran, D. (1994). Heuristic processing can bias systematic processing: Effects of source credibility, argument ambiguity, and task importance on attitude judgment. *Journal of Personality and Social Psychology*, *66*, 460–473.

Clark, J. K., & Wegener, D. T. (2013). Message position, information processing, and persuasion: The discrepancy motives model. In P. Devine, & A. Plant (Eds.), Advances in experimental social psychology, Vol. 47. (pp. 189–232). San Diego, CA: Academic Press

Clark, J. K., Wegener, D. T., & Fabrigar, L. R. (2008). Attitudinal ambivalence and message-based persuasion: Motivated processing of pro attitudinal information and avoidance of counter attitudinal information. *Personality and social psychology bulletin*, *34*, 565-577.

Clarkson, J. J., Tormala, Z. L., & Rucker, D. D. (2008). A new look at the consequences of attitude certainty: The amplification hypothesis. *Journal of Personality and Social Psychology*, *95*, 810-825.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.

Cunningham, W. A., Preacher, K. J., & Banaji, M. R. (2001). Implicit attitude measures: Consistency, stability, and convergent validity. *Psychological Science, 12*, 163–170.

Debevec, K., Madden, T. J., & Kernan, J. B. (1986). Physical attractiveness, message evaluation, and compliance: a structural examination. *Psychological Reports*, *58*, 503-508.

DeBono, K.G., & Harnish, R.J. (1988). Source expertise, source attractiveness, and processing or persuasive information: A functional approach. *Journal of Personality and Social Psychology*, *55*, 541–546.

Dion, K., Berscheid, E., & Walster, E. (1972). What is beautiful is good. *Journal of Personality and Social Psychology, 24*, 285-290.

Dipboye, R. L., Arvey, R. D., & Terpstra, D. E. (1977). Sex and physical attractiveness of raters and applicants as determinants of resume evaluations. *Journal of Applied Psychology*, *62*, 288-294.

Eagly, A. H., Ashmore, R. D., Makhijani, M. G., & Longo, L. C. (1991). What is beautiful is good, but…: A meta-analytic review of research on the physical attractiveness stereotype. *Psychological bulletin*, *110*, 109-128.

Eagly, A. H., & Chaiken, S. (1975). An attribution analysis of the effect of communicator characteristics on opinion change: The case of communicator attractiveness. *Journal of Personality and Social Psychology, 32*, 136-144.

Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes*. Harcourt Brace Jovanovich College Publishers.

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

Fabrigar, L. R., MacDonald, T. K., & Wegener, D. T. (2005). The structure of attitudes. In D. Albarracín, B. T. Johnson, & M. P. Zanna (eds.), *The handbook of attitudes* (pp. 79–124). Mahwah, NJ: Erlbaum.

Fabrigar, L. R. & Wegener, D. T. (2010). Attitude structure. In R F. Baumeister & E. J. Finkel (eds.), *Advanced social psychology: The state of the science* (pp. 177–216). New York, NY, US: Oxford University Press

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

Fazio, R. H. (1995). Attitudes as object-evaluation associations: Determinants, consequences, and correlates of attitude accessibility. In R.E. Petty & J. A. Krosnick (Eds), *Attitude strength: Antecedents and consequences* (pp. 247-282). Mahwah, NJ: Erlbaum.

Fazio, R. H., & Roskos-Ewoldsen, D. (2005). Acting as we feel. In T. C. Brock & M. C Green (eds), *Persuasion: Psychological insights and perspectives* (281-303). Thousand Oaks, CA: Sage.

Fazio, R. H., & Zanna, M. P. (1978). Attitudinal qualities relating to the strength of the attitude-behavior relationship. *Journal of Experimental Social Psychology*, *14*, 398-408.

Felisberti, F. M., & Musholt, K. (2014). Self-face perception: Individual differences and discrepancies associated with mental self-face representation, attractiveness and self-esteem. *Psychology & Neuroscience*, *7*, 65-72.

Festinger, L. (1950). Informal social communication. *Psychological review*, *57*, 271-299.

Festinger, L. (1954). A theory of social comparison processes. *Human relations*, *7*, 117-140.

Fredrickson, B. L., & Roberts, T. A. (1997). Objectification theory: Toward understanding women's lived experiences and mental health risks. *Psychology of women quarterly*, *21*(2), 173-206.

Fredrickson, B. L., Roberts, T. A., Noll, S. M., Quinn, D. M., & Twenge, J. M. (1998). That swimsuit becomes you: sex differences in self-objectification, restrained eating, and math performance. *Journal of personality and social psychology*, *75*, 269.

Garcia-Marques, T., & Loureiro, F. (2016). Dispositional beliefs regarding affect as information determine the perception of persuasive self-efficacy. *Análise Psicológica*, *34*, 73-86.

Garcia-Marques, T., & Mackie, D. M. (2001). The feeling of familiarity as a regulator of persuasive processing. *Social Cognition*, *19*, 9-34.

Golding, J. M., Fowler, S. B., Long, D. L., & Latta, H. (1990). Instructions to disregard potentially useful information: The effects of pragmatics on evaluative judgments and recall. *Journal of Memory and Language*, *29*, 212-227.

Greenwald, A. G. (1968). Cognitive learning, cognitive response to persuasion, and attitude change. *Psychological foundations of attitudes*, 147-170.

Groesz, L. M., Levine, M. P., & Murnen, S. K. (2002). The effect of experimental presentation of thin media images on body satisfaction: A meta-analytic review. *International Journal of Eating Disorders*, *31*, 1-16.

Gross, S. R., Holtz, R., & Miller, N. (1995). Attitude certainty. In R.E. Petty & J.A. Krosnick (Eds.), *Attitude strength: Antecedents and consequences* (pp. 215-245). New York, NY: Psychology Press.

Gurari, I., Hetts, J. J., & Strube, M. J. (2006). Beauty in the" I" of the beholder: Effects of idealized media portrayals on implicit self-image. *Basic and applied social psychology*, *28*, 273-282.

Guyer, J. J., Briñol, P., Petty, R. E., & Horcajo, J. (2019). Nonverbal behavior of persuasive sources: A multiple process analysis. *Journal of Nonverbal Behavior*, 1-29.

Harper, B., & Tiggemann, M. (2008). The effect of thin ideal media images on women's self-objectification, mood, and body image. *Sex roles*, *58*, 649-657.

Haugtvedt, C. P., Petty, R. E., Cacioppo, J. T., & Steidley, T. (1988). Personality and ad effectiveness. *Advances in Consumer Research, 15*, 209-212.

Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis*. (2nd Ed.). New York: The Guilford Press.

Hayes, A. F., & Montoya, A. K. (2017). A tutorial on testing, visualizing, and probing an interaction involving a multicategorical variable in linear regression analysis. *Communication Methods and Measures*, *11*, 1-30.

Heesacker, M., Petty, R. E., & Cacioppo, J. T. (1983). Field dependence and attitude change: Source credibility can alter persuasion by affecting message-relevant thinking. *Journal of Personality*, *51*, 653-666.

Heinberg, L. J., & Thompson, J. K. (1995). Body image and televised images of thinness and attractiveness: A controlled laboratory investigation. *Journal of Social and Clinical Psychology*, *14*, 325-338.

Holland, R. W., Verplanken, B., & van Knippenberg, A. (2003). From repetition to conviction: Attitude accessibility as a determinant of attitude certainty. *Journal of Experimental Social Psychology*, *39*, 594-601.

Horcajo, J., Briñol, P., & Petty, R. E. (2010). Consumer persuasion: Indirect change and implicit balance. *Psychology & Marketing*, *27*, 938-963.

Hovland, C. I., Janis, I. L., & Kelley, H. H. (1953). *Communication and persuasion: Psychological studies of opinion change*. New Haven, CT: Yale University Press.

Jost, J. T., Kruglanski, A. W., & Nelson, T. O. (1998). Social metacognition: An expansionist review. *Personality and Social Psychology Review*, *2*, 137-154.

Kang, Y. S., & Herr, P. M. (2006). Beauty and the beholder: Toward an integrative model of communication source effects. *Journal of Consumer Research*, *33*, 123-130

Kelley, H. H., & Lamb, T. W. (1957). Certainty of judgment and resistance to social influence. *The Journal of Abnormal and Social Psychology, 55*, 137-139.

Kelman, H. C. (1958). Compliance, identification and internalization: Three processes of attitude change. *Journal of Conflict Resolution*, *2*, 51–60.

Krishnan, H. S., & Smith, R. E. (1998). The relative endurance of attitudes, confidence, and attitude-behavior consistency: The role of information source and delay. *Journal of Consumer Psychology*, *7*, 273-298.

Krosnick, J. A. (1988). Attitude importance and attitude change. *Journal of Experimental Social Psychology, 24*, 240–255.

Krosnick, J. A., & Abelson, R. P. (1992). The case for measuring attitude strength in surveys. *Questions about questions: Inquiries into the cognitive bases of surveys*, 177-203.

Krosnick, J. A., & Petty, R. E. (1995). Attitude strength: An overview. In R. E. Petty & J. A. Krosnick (Eds.), *Attitude strength: Antecedants and consequences* (pp. 1-24). Mahwah, NJ: Erlbaum.

Kruglanski, A.W., Raviv, A., Bar-Tal, D., Raviv, A., Sharvit, K., Ellis, S., Bar, R., Pierro, A., & Mannetti, L. (2005). Says who? Epistemic authority effects in social judgment. In M.P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 37, pp. 346-392). San Diego: Academic Press.

Langlois, J. H., Kalakanis, L., Rubenstein, A. J., Larson, A., Hallam, M., & Smoot, M. (2000). Maxims or myths of beauty? A meta-analytic and theoretical review. *Psychological Bulletin*, *126*, 390-423.

Leippe, M. R., & Elkin, R. A. (1987). When motives clash: Issue involvement and response involvement as determinants of persuasion. *Journal of Personality and Social Psychology, 52*, 269-278.

Little, A. C., & Mannion, H. (2006). Viewing attractive or unattractive same-sex individuals changes self-rated attractiveness and face preferences in women. *Animal Behaviour*, *72*, 981-987.

Lord, C. G., Ross, L., & Lepper, M. R. (1979). Biased assimilation and attitude polarization: The effects of prior theories on subsequently considered evidence. *Journal of Personality and Social Psychology*, *37*, 2098-2109.

Luttrell, A., Petty, R. E., & Briñol, P. (2016). Ambivalence and certainty can interact to predict attitude stability over time. *Journal of Experimental Social Psychology, 63*, 56-68.

Maio, G. R., Haddock, G., & Verplanken, B. (2018). *The psychology of attitudes and attitude change*. Los Angeles, CA: Sage

Major, B., Testa, M., & Bylsma, W. (1991). Responses to upward and downward social comparisons: The impact of esteem relevance and perceived control. In J. Suls & T . Wills (Eds.), *Social comparison: Contemporary theory and research* (pp. 237-260). Hillside, NJ: Erlbaum.

Markus, H. (1977). Self-schemata and processing information about the self. *Journal of Personality and Social Psychology, 35*, 63-78.

Martin, L. L. (1986). Ste/reset: Use and disuse of concepts in impression formation. *Journal of Personality and Social Psychology,* 51, 493-504

Martin, R., & Hewstone, M. (2008). Majority versus minority influence, message processing and attitude change: The source-context-elaboration model. In M. Zanna (Ed.), *Advances in experimental social psychology.* San Diego, CA: Academia Press.

Martins, Y., Tiggemann, M., & Kirkbride, A. (2007). Those speedos become them: The role of self-objectification in gay and heterosexual men's body image. *Personality and Social Psychology Bulletin*, *33*, 634-647.

McGuire, W. J. (1968). Personality and attitude change: An informative-processing theory. In A. G. Greenwald, T. C. Brock, & T. A. Ostrom (eds), *Advances in experimental social psychology* (Vol 16, pp-1-47). San Diego, CA: Academic Press.

Mello, J., & Garcia-Marques, T. (2018). The attractiveness-positivity link: Let's contextualize it. *The Journal of social psychology*, *158*, 639-645.

Mello, J., Garcia-Marques, T., Briñol, P., Cancela, A., & Petty, R. E. (2020). The influence of physical attractiveness on attitude confidence and resistance to change. *Journal of Experimental Social Psychology*, *90*, 104018.

Mello, J., & Loureiro, F. (2015). Pretest of images for the beauty dimension. *Análise Psicológica, 33*, 453-466.

Milgram, S. (1963). *Behavioral study of obedience. Journal of Abnormal and Social Psychology,* 67, 71-378.

Monin, B. (2003). The warm glow heuristic: When liking leads to familiarity. *Journal of Personality and Social Psychology, 85*, 1035-1048

Moscovici, S. (1967). Communication processes and the properties of language. In L. Berkowitz (Ed.), *Advances in Experimental social Psychology* (225-270). New York: Academic Press.

Mugny, G., & Perez, J. A. (1991). *The social psychology of minority influence*. Cambridge, UK: Cambridge University Press.

Murphy, C., Hussey, T., Barnes-Holmes, D., & Kelly, M. E. (2015). The Implicit relational assessment procedure (IRAP) and attractiveness bias. *Journal of Contextual Behavioral Science*, *4*, 292-299.

Muthén, L. K., & Muthén, B. O. (2011). *Mplus user's guide.* Los Angeles, California.

Muthukrishnan, A. V., Pham, M. T., & Mungale, A. (2001). Does greater amount of information always bolster attitudinal resistance? *Marketing Letters*, *12*, 131-144.

Ninot, G., Delignières, D., & Fortes, M. (2000). L'évaluation de l'estime de soi dans le domaine corporel. *Staps*, *53*, 35-48.

Oosterhof, N. N., & Todorov, A. (2008). The functional basis of face evaluation. *Proceedings of the National Academy of Sciences*, *105*, 11087-11092.

Pallak, S. R. (1983). Salience of a communicator's physical attractiveness and persuasion: A heuristic versus systematic processing interpretation. *Social Cognition*, *2*, 158-170.

Paredes, B., Santos, D., Briñol, P., Gómez, A., & Petty, R. E. (2019). The impact of meta-cognitive certainty on the relationship between identity fusion and endorsement of extreme pro-group behavior. *Self and Identity,*1-21.

Patzer, G. L. (1983). Source credibility as a function of communicator physical attractiveness. *Journal of Business Research*, *11*, 229-241

Petrocelli, J. V., Tormala, Z. L., & Rucker, D. D. (2007). Unpacking attitude certainty: Attitude clarity and attitude correctness. *Journal of Personality and Social Psychology*, *92*, 30-41.

Petty, R. E., & Briñol, P. (2006). Understanding social judgment: Multiple systems and processes. *Psychological Inquiry*, 17, 217–223.

Petty, R. E., & Briñol, P. (2012). The elaboration likelihood model. In P. A. M. Van Lange, A. Kruglanski, & E. T. Higgins (eds.), *Handbook of theories of social psychology* (Vol. 1, pp. 224–245). London: Sage.

Petty, R. E., & Briñol, P. (2015). Emotion and persuasion: Cognitive and meta-cognitive processes impact attitudes. *Cognition and Emotion*, *29*, 1-26.

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

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

Petty, R. E., & Cacioppo, J. T., (1981). Issue involvement as a moderator of the effects on attitude of advertising content and context. *Advances in Consumer Research*, *8*, 20-24.

Petty, R. E., & Cacioppo, J. T. (1990). Involvement and persuasion: Tradition versus integration. *Psychological Bulletin, 107*, 367–374

Petty, R. E., & Cacioppo, J. T. (1984). The effects of involvement on response to argument quantity and quality: Central and peripheral routes to persuasion. *Journal of Personality and Social Psychology,46,* 69–81.

Petty, R. E., & Cacioppo, J. T. (1986). *Communication and persuasion: Central and peripheral routes to persuasion*. New York: Springer–Verlag.

Petty, R. E., Cacioppo, J. T., & Goldman, R. (1981). Personal involvement as a determinant of argument-based persuasion. *Journal of Personality and Social Psychology, 41*, 847-855.

Petty, R. E., Cacioppo, J. T., & Schumann, D. (1983). Central and peripheral routes to advertising effectiveness: The moderating role of involvement. *Journal of consumer research*, *10*, 135-146.

Petty, R. E., Haugtvedt, C. & Smith, S. M. (1995). Elaboration as a determinant of attitude strength: Creating attitudes that are persistent, resistant and predictive of behavior. In R. E. Petty & J. A Krosnick (eds), *Attitude strength: Antecedents and consequences* (pp.93-130), Mahwak, NJ: Erlbaum.

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

Petty, R. E., Tormala, Z. L., & Rucker, D. D. (2004). Resisting persuasion by counterarguing: An attitude strength perspective. In J. T. Jost, M. R. Banaji, & D. A. Prentice (Eds.), *APA science series. APA decade of behavior series. Perspectivism in social psychology: The yin and yang of scientific progress* (pp. 37-51). Washington, DC, US: American Psychological Association.

Petty, R. E., & Wegener, D. T. (1993). Flexible correction processes in social judgment: Correcting for context-induced contrast. *Journal of Experimental Social Psychology*, *29*, 137-165.

Petty, R. E., & Wegener, D. T. (1998). Attitude change: Multiple roles for persuasion variables. In D. Gilbert, S. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (Vol. 1, pp. 323–390). New York, NY: McGraw-Hill.

Petty, R. E., & Wegener, D. T. (1999). The Elaboration Likelihood Model: Current status and controversies. In S. Chaiken & Y. Trope (Eds.), *Dual process theories in social psychology* (pp. 41-72). New York: Guilford Press.

Petty, R. E., Wegener, D. T., & White, P. H. (1998). Flexible correction processes in social judgment: Implications for persuasion. *Social cognition*, *16*, 93-113.

Praxmarer, S. (2011). How a presenter's perceived attractiveness affects persuasion for attractiveness-unrelated products. *International Journal of Advertising*, *30*, 839-865.

Priester, J. M., & Petty, R. E. (1995). Source attributions and persuasion: Perceived honesty as a determinant of message scrutiny. *Personality and Social Psychology Bulletin*, *21*, 637-654.

Pronin, E., Gilovich, T., & Ross, L. (2004). Objectivity in the eye of the beholder: divergent perceptions of bias in self versus others. *Psychological review*, *111*, 781-799.

Pronin, E., Lin, D. Y., & Ross, L. (2002). The bias blind spot: Perceptions of bias in self versus others. *Personality and Social Psychology Bulletin*, *28*, 369-381.

Puckett, J. M., Petty, R. E., Cacioppo, J. T., & Fischer, D. L. (1983). The relative impact of age and attractiveness stereotypes on persuasion. *Journal of Gerontology*, *38*, 340-343.

Quinn, D. M., Kallen, R. W., Twenge, J. M., & Fredrickson, B. L. (2006). The disruptive effect of self-objectification on performance. *Psychology of Women Quarterly*, *30*, 59-64.

Richins, M. L. (1991). Social comparison and the idealized images of advertising. *Journal of Consumer Research*, *18*, 71-83.

Rhodes, N., & Wood, W. (1992). Self-esteem and intelligence affect influenceability: The mediating role of message reception. *Psychological bulletin*, *111*, 156-171.

Roberts, T. A., & Gettman, J. Y. (2004). Mere exposure: Gender differences in the negative effects of priming a state of self-objectification. *Sex Roles*, *51*, 17-27.

Robins, R. W., Hendin, H. M., & Trzesniewski, K. H. (2001). Measuring global self-esteem: Construct validation of a single-item measure and the Rosenberg self-Esteem scale. *Personality and Social Psychology Bulletin*, *27*, 151-161

Rucker, D. D., & Petty, R. E. (2004). When resistance is futile: Consequences of failed counterarguing for attitude certainty. *Journal of Personality and Social Psychology, 86*, 219-235.

Rucker, D. D., Petty, R. E., & Briñol, P. (2008). What's in a frame anyway?: A meta-cognitive analysis of the impact of one versus two sided message framing on attitude certainty. *Journal of Consumer Psychology*, *18*, 137-149.

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

Rydell, R. J., Hugenberg, K., & McConnell, A. R. (2006). Resistance can be good or bad: How theories of resistance and dissonance affect attitude certainty. *Personality and Social Psychology Bulletin*, *32*, 740-750.

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

Schwarz, N., & Bless, H. (1992). Constructing reality and its alternatives. An inclusion/exclusion model of assimilation and contrast effects in social judgment. In L. L. Martin & A. Tesser (eds.), *The construction of social judgments* (pp. 217-245). Hillsdale, NJ:Erlbaum.

Schwarz, N., & Clore, G. L. (1983). Mood, misattribution, and judgments of well-being: Informative and directive functions of affective states. *Journal of personality and social psychology*, *45*, 513-523.

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

Snyder, M., & Kendzierski, D. (1982). Choosing social situations: Investigating the origins of correspondence between attitudes and behavior. *Journal of Personality*, 50, 280–295.

Staats, A. W., & Staats, C. K. (1958). Attitudes established by classical conditioning. *The Journal of Abnormal and Social Psychology*, *57*, 37-40.

Till, B. D., & Busler, M. (2000). The match-up hypothesis: Physical attractiveness, expertise, and the role of fit on brand attitude, purchase intent and brand beliefs. *Journal of Advertising*, *29*, 1-13.

Thornton, B., & Moore, S. (1993). Physical attractiveness contrast effect: Implications for self-esteem and evaluations of the social self. *Personality and Social Psychology Bulletin*, *19*, 474-480.

Tormala, Z.L. (2008). A new framework for resistance to persuasion: The resistance appraisals hypothesis. In W. D. Crano & R. Prislin (Eds.), *Attitudes and Attitude Change* (pp. 213-234). New York, NY: Psychology Press.

Tormala, Z. L. (2016). The role of certainty (and uncertainty) in attitudes and persuasion. *Current Opinion in Psychology*, *10*, 6-11.

Tormala, Z. L., & Briñol, P. (2015). Attitude change and persuasion: Past, present and future directions. In M. I. Norton, D. D. Rucker, & C. Lamberton (eds.) *Cambridge handbook of Consumer Psychology* (pp. 29-64). Cambridge, MA: Cambridge University Press.

Tormala, Z. L., Briñol, P., & Petty, R. E. (2006). When credibility attacks: The reverse impact of source credibility on persuasion. *Journal of Experimental Social Psychology*, *42*, 684-691.

Tormala, Z. L., Briñol, P., & Petty, R. E. (2007). Multiple roles for source credibility under high elaboration: It's all in the timing. *Social Cognition*, *25*, 536-552.

Tormala, Z. L., Clarkson, J. J., & Petty, R. E. (2006). Resisting persuasion by the skin of one's teeth: The hidden success of resisted persuasive messages. *Journal of Personality and Social Psychology*, *91*, 423.

Tormala, Z. L., DeSensi, V. L., & Petty, R. E. (2007). Resisting persuasion by illegitimate means: A metacognitive perspective on minority influence. *Personality and Social Psychology Bulletin, 33*, 354-367.

Tormala, Z. L., & Petty, R. E. (2002). What doesn't kill me makes me stronger: The effects of resisting persuasion on attitude certainty. *Journal of Personality and Social Psychology, 83*, 1298-1313.

Tormala, Z. L., & Petty, R. E. (2004). Source credibility and attitude certainty: A metacognitive analysis of resistance to persuasion. *Journal of Consumer Psychology*, *14*, 427-442.

Tormala, Z. L., & Rucker, D. D. (2007). Attitude certainty: A review of past findings and emerging perspectives. *Social and Personality Psychology Compass*, *1*, 469-492.

Tormala, Z. L., & Rucker, D. D. (2018). Attitude certainty: Antecedents, consequences, and new directions. *Consumer Psychology Review*, *1*(1), 72-89.

Van Leeuwen, M. L., & Macrae, N. C. (2004). Is beautiful always good? Implicit benefits of facial attractiveness. *Social cognition*, *22*, 637-649.

Visser, P. S., Bizer, G. Y., & Krosnick, J. A. (2006). Exploring the latent structure of strength-related attitude attributes. *Advances in Experimental Social Psychology*, *38*, 1-67.

Visser, P. S., & Krosnick, J. A. (1998). Development of attitude strength over the life cycle: Surge and decline. *Journal of Personality and Social Psychology, 75*, 1389-1410.

Visser, P. S., & Mirabile, R. R. (2004). Attitudes in the social context: the impact of social network composition on individual-level attitude strength. *Journal of Personality and Social Psychology*, *87*, 779-795.

Vogel, T., Kutzner, F., Fiedler, K., & Freytag, P. (2010). Exploiting attractiveness in persuasion: Senders' implicit theories about receivers' processing motivation. *Personality and Social Psychology Bulletin*, *36*, 830-842.

Xu, M., Briñol, P., Gretton, J.D., Tormala, Z.L., Rucker, D.D., & Petty, R.E. (in press). Individual differences in attitude consistency over time: The personal attitude stability scale. *Personality and Social Psychology Bulletin.*

Wade, T. J. (2000). Evolutionary theory and Self-perception: Sex differences in body esteem predictors of self-perceived physical and sexual attractiveness and self-esteem. *International Journal of Psychology*, *35*, 36-45.

Wade, T. J., & Cooper, M. (1999). Sex differences in the links between attractiveness, self-esteem and the body. *Personality and Individual Differences*, *27*, 1047-1056.

Watkins, L. M., & Johnston, L. (2000). Screening job applicants: The impact of physical attractiveness and application quality. *International Journal of Selection and Assessment*, *8*, 76-84.

Wegener, D. T., & Petty, R. E. (1995). Flexible correction processes in social judgement: The role of naive theories in corrections for perceived bias. *Journal of Personality and Social Psychology*, *68*, 36–51.

Wegener, D. T., & Petty, R. E. (1997). The flexible correction model: The role of naïve theories of bias in bias correction. Advances in Experimental Social Psychology, *29*, 141–208.

Wegener, D. T., Petty, R. E., & Smith, S. M. (1995). Positive mood can increase or decrease message scrutiny: The hedonic contingency view of mood and message processing. *Journal of personality and social psychology*, *69*, 5-15.

Wells, G. L., & Petty, R. E. (1980). The effects of over head movements on persuasion: Compatibility and incompatibility of responses. *Basic and Applied Social Psychology*, *1*, 219-230.

Wilson, T. D., & Brekke, N. (1994). Mental contamination and mental correction: Unwanted influences on judgments and evaluations. *Psychological Bulletin, 116*, 117-142.

Wood, W., Lundgren, S., Quellette, J. A., Busceme, S., & Blackstone, T. (1994). Minority influence: A meta-analytic review of social influence processes. *Psychological Bulletin, 115*, 323-345.

Worth, L. T., & Mackie, D. M. (1987). Cognitive mediation of positive affect in persuasion. *Social cognition*, *5*, 76-94.

Wu, C., & Shaffer, D. R. (1987). Susceptibility to persuasive appeals as a function of source credibility and prior experience with the attitude object. *Journal of Personality and Social Psychology, 52*, 677-688

Zanna, M.P. & Rempel, J.K. (1988) Attitude: a new look at an old concept. In D. Bar-tal & A.W. Kruglanski (eds), *The Social Psychology of Knowledge* (pp. 315-334). Cambridge, Cambridge University.

Ziegler, R., Diehl, M., Ruther, A. (2002). Multiple source characteristics and persuasion: Source inconsistency as a determinant of message scrutiny. *Personality and Social Psychology Bulletin, 28*, 496-508.

Ziegler, R., von Schwichow, A., & Diehl, M. (2005). Matching the message source to attitude functions: Implications for biased processing. *Journal of Experimental Social Psychology*, *41*, 645-653.

APPENDIXES

Appendix A: Materials of the Experiments in the First set of studies

Message (Experiment 1 and 4)

Children Should Not Be Allowed to Have Cell Phones

What's the right age for a child to get his or her first cell phone? The answer varies from parent to parent. This much is clear: The average age seems to be getting younger and younger.

Research indicates that being constantly wired-in to technology in effect rewires the human brain. It makes deeper friendships harder to come by and more difficult to maintain. Children's brains are still developing, and they are still learning how to have and be a friend. According to research by the Child Mind Institute, dependence on devices can make it that much harder for children to develop appropriate social skills. These young people have trouble initiating interactions. They don't have as much experience doing it because they're not engaging in it ever. Conversation takes practice, and a dependence on devices makes it even harder for children who already struggle socially.

Additionally, numerous peer-reviewed studies have also shown that children are irresponsible and ungrateful. These children do not value any of their possessions as much as their elders would, so they will lose their phone, throw it around and drop it because they are unable to comprehend its value. These phones are very expensive, and children who cannot respect this value should be forbidden from owning them. This, of course, applies to most kids in the United States. Because of how expensive these devices are, it makes no sense to allow children to have them when they are likely to leave them in public places or give them away to strangers.

Message Unrelated to Attractiveness (Experiment 2 and 3)

We all can agree with the fact that we want to live in a good and clean environment in our homes. The conditions where we live, specially where we eat and store our food, are important and we all need to make sure that we have clean dishes in our kitchen.

Research indicates that the hygiene of the dishes where we store and eat our food is an important factor that can affect our health, so we need to promote conditions to guarantee that the utensils that we use to eat are clean. To do this, people generally use detergents at a regular basis. However, this will probably affect your health more than to just simply clean them using water. Sometimes, with the use of water we can clean the dirt and we can avoid at the same

time the risk of harming our health with unnecessary chemicals that, in a regular basis, will eventually enter our system, either through our food or through the direct contact with our skin.

Although we are accustomed to do this every day, it is known it isn't necessary to use detergents with this regularity to clean the dishes and the utensils in the kitchen, but only from time to time. The option to reduce the use of detergents and the use of just water will help to decrease the risk of having some health problems that can be associated with the continuous ingestion of chemicals in our food and the continuously contact with our body.

Indeed, sometimes we need to use these types of products to clean some difficult stains and rest of food but there are also times where we don't need this type of help. A clean environment is also achieved with the reduced of chemicals, especially when we eat.

Message Related to Attractiveness (Experiment 2)

How can we define beauty? The answer varies from person to person. This much is clear: It's good to feel beautiful and everyone likes to feel beautiful, but to do that people should spend some time taking care of themselves.

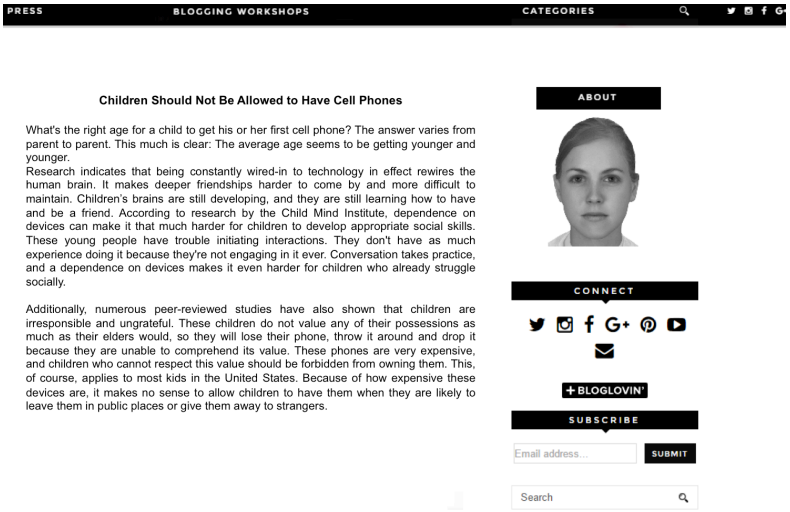
Research indicates that the skin is the most important indicator of our health, and its general appearance translates a person's health and the amount of care that each person dedicates on it. Because of this, it's important to make every effort to preserve it and to keep it beautiful, not just by hiding the imperfections, like pimples and blackheads, but by eliminating these problems. It is known that if a person dedicates a small amount of time taking care of herself this will have surprising results.

Generally, people only use the regular soap and water in a regular bath, without any use of specialized cleansing products. This isn't enough and it will probably even damage the appearance of the skin. It is known that the use of these regular soaps is ineffective and these normal soaps have ingredients that can even make the skin dirtier! It's necessary to take more care of the skin, and not just with the use of regular soaps.

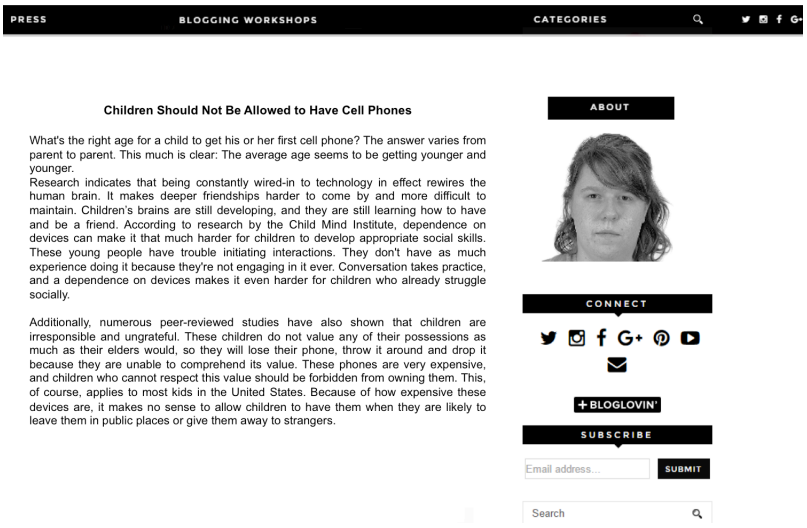
It is known that for people to obtain a cleaner skin it is necessary to use, on a daily basis without exception, facial cleansing special products. These behaviors and the use of this type of products will help to soften the skin and at the same time the use of these products makes the skin clean and purified.

Indeed, there are those who are beautiful and have special skin without needing to have a lot of care, but there are also those who have to use a little help. This little help will not be obtained with the simple use of normal soaps and products. A beautiful and clean skin makes people feel more beautiful, and this will only be obtained with the use of specific cleansing products.

Examples of Presentation of Attractive Source



Example of Presentation of an Unattractive Source



Appendix B: Materials of the Experiments in the Second set of studies

Message (Experiment 1 and 2)

Plastic Bag Bans: An Ineffective Solution

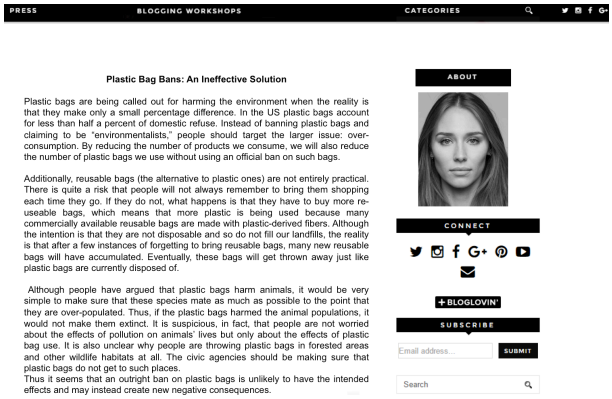
Plastic bags are being called out for harming the environment when the reality is that they make only a small percentage difference. In the US plastic bags account for less than half a percent of domestic refuse. Instead of banning plastic bags and claiming to be "environmentalists," people should target the larger issue: over-consumption. By reducing the number of products we consume, we will also reduce the number of plastic bags we use without using an official ban on such bags.

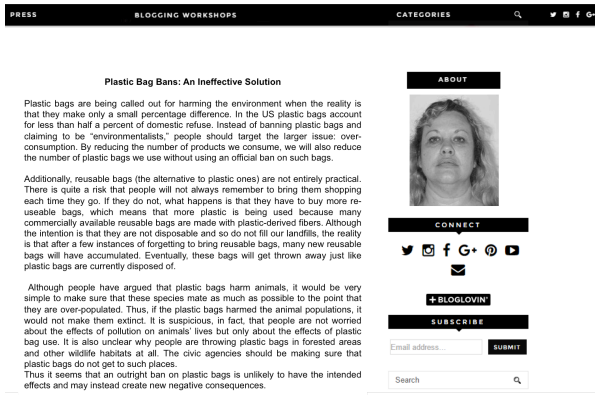
Additionally, reusable bags (the alternative to plastic ones) are not entirely practical. There is quite a risk that people will not always remember to bring them shopping each time they go. If they do not, what happens is that they have to buy more re-useable bags, which means that more plastic is being used because many commercially available reusable bags are made with plastic-derived fibers. Although the intention is that they are not disposable and so do not fill our landfills, the reality is that after a few instances of forgetting to bring reusable bags, many new reusable bags will have accumulated. Eventually, these bags will get thrown away just like plastic bags are currently disposed of.

Although people have argued that plastic bags harm animals, it would be very simple to make sure that these species mate as much as possible to the point that they are over-populated. Thus, if the plastic bags harmed the animal populations, it would not make them extinct. It is suspicious, in fact, that people are not worried about the effects of pollution on animals' lives but only about the effects of plastic bag use. It is also unclear why people are throwing plastic bags in forested areas and other wildlife habitats at all. The civic agencies should be making sure that plastic bags do not get to such places.

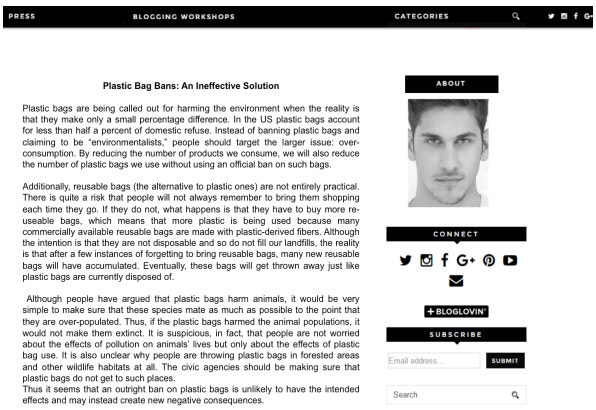
Thus, it seems that an outright ban on plastic bags is unlikely to have the intended effects and may instead create new negative consequences.

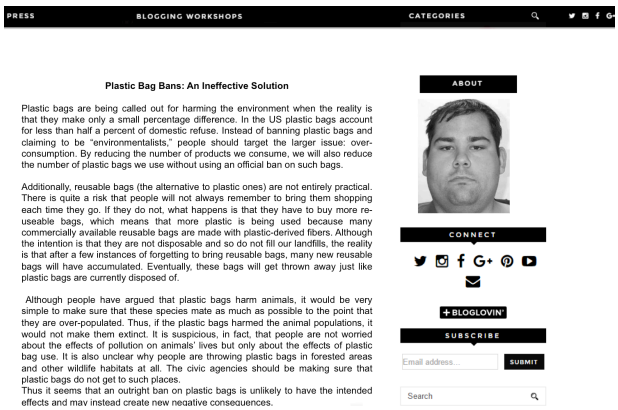
Presentation of Female Sources (Experiment 2)





Presentation of Male Sources (Experiment 2)





Appendix C: Materials of the Experiments in the Third set of studies

Instructions and Manipulations of Self-Evaluations

The Self-Evaluation Task (Experiment 1)

Please select, based on your final score, your percentile of how do you see your own level of physical attractiveness

	Score	Percentile
Scores higher than the mean	**Higher than 81**	100
	Between 71 and 80	75
Scores lower than the mean	**Between 40 and 70**	50
	Below 40	25

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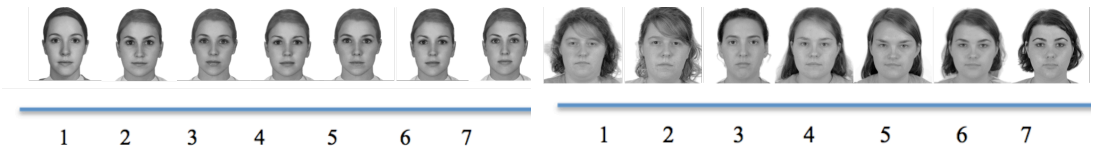
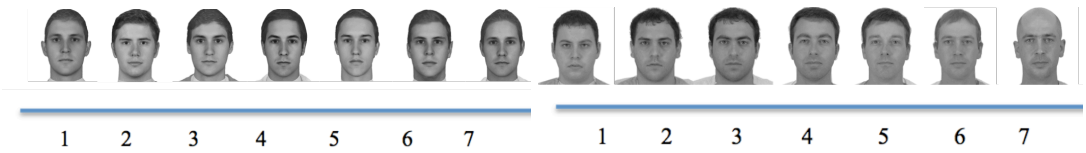
*Based on the scores on your previous task, previous research shows that you see yourself, regardless of your actual level of attractiveness, as someone with **low/high** self-evaluations of attractiveness, i.e. regardless of your actual level of beauty, you see yourself as a person with **low levels of attractiveness/high level of physical attractiveness.***

Self vs. Others Task (Experiment 2)

Examples of Female sets of faces

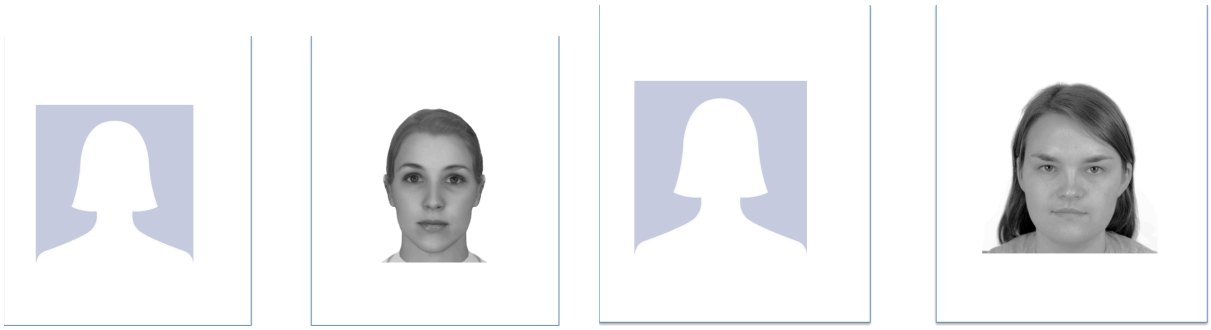


Examples of Male sets of faces



Direct Contrast Self vs. Others Task (Experiment 3)

Examples of Female Contrast Materials



Examples of Female Contrast Materials

Persuasive Materials

Advertisement (Experiment 2)

Message (Experiment 4)

I'm strongly opposed to imposing governmental controls to minimize the effects of acid rain on the United States. Recently completed studies have shown that most of the increase in the acidity of our lakes and atmosphere is due to increased urbanization. Geographic changes, such as widespread deforestation, have also contributed.

The deacidifying effect of large-scale forest burn-offs now no longer occurs, with the result that atmospheric acidity levels have steadily climbed. Solving these demographic and geographic problems would have a more beneficial effect than imposing controls on industry. As the installation of sulfur dioxide emissions control devices is extremely expensive such a move would be economically detrimental. American industry would be faced with a large financial burden at a time when it must focus all its financial energies on increased production to compete with ever-growing foreign competition. A study calculates that it would cost $100 billion to achieve a major reduction in sulfur dioxide emissions. This cost would not only be to industry, but also to the American taxpayer. As the evidence indicates that the contribution of industrial emissions to acid rain is minimal, there is no justification for engaging in a program of this expense.

Appendix D: Statistics of the Experiments in Empirical Article 1

Experiment 1

Effects of condition of Physical Attractiveness (Unattractive vs. no-face vs. Attractive) on Attitudes

Table 1

One-way Anova, Attitudes as dependent measure

	SS	df	MS	F	p	ηp2
Corrected Model	15.089[a]	2	7.544	1.864	.161	.041
Intercept	1504.711	1	1504.711	371.692	.000	.810
CONDIT	15.089	2	7.544	1.864	.161	.041
Error	352.200	87	4.048			
Total	1872.000	90				
Corrected Total	367.289	89				

a. R Squared = .041(Adjusted R Squared = .019)

Table 2

One-way Anova, Attitudes as dependent measure. Multiple Comparisons

(I) Condition of attractiveness	(J) Condition of attractiveness	MD	Std. Error	p	95% CI LB	95% CI UB
Unattractive	No face	.0667	.51950	.898	-.9659	1.0992
	Attractive	-.8333	.51950	.112	-1.8659	.1992
No Face	Unattractive	-.0667	.51950	.898	-1.0992	.9659
	Attractive	-.9000	.51950	.087	-1.9326	.1326
Attractive	Unattractive	.8333	.51950	.112	-.1992	1.8659
	No face	.9000	.51950	.087	-.1326	1.9326

Effects of condition of Physical attractiveness (Unattractive vs. no-face vs. Attractive) on Attitude Confidence

Table 3

One-way Anova, Attitudes as dependent measure

	SQ	df	MS	F	p	ηp2
Corrected Model	29.067[a]	2	14.533	7.031	.001	.139
Intercept	2528.100	1	2528.100	1223.047	.000	.934
COND	29.067	2	14.533	7.031	.001	.139
Error	179.833	87	2.067			
Total	2737.000	90				
Corrected Total	208.900	89				

a. R Squared = .139(Adjusted R Squared = .119)

Table 4

Least Significant Difference (LSD) test with Attitude Confidence as dependent measure.

(I) Condition of attractiveness	(J) Condition of attractiveness	MD	Std. Error	p	95% Confidence Interval LB	UB
Unattractive	No Face	-.13	.371	.720	-.87	.60
	Attractive	1.13*	.371	.003	.40	1.87
No Face	Unattractive	.13	.371	.720	-.60	.87
	Attractive	1.27*	.371	.001	.53	2.00
Attractive	Unattractive	-1.13*	.371	.003	-1.87	-.40
	No Face	-1.27*	.371	.001	-2.00	-.53

Experiment 2

Effects of condition of Physical attractiveness (Unattractive vs. Attractive), Message Type (Relevant vs. irrelevant to attractiveness) on Attitudes

Table 5

Two-way Anova (2 x 2), Attitudes as dependent measure

	SS	df	MS	F	p	ηp2
Corrected Model	15.280[a]	3	5.093	2.623	.054	.061
Intercept	3652.760	1	3652.760	1881.290	.000	.939
ATRACT	12.789	1	12.789	6.587	.011	.051
MESS	1.458	1	1.458	.751	.388	.006
ATRACT * MESS	.729	1	.729	.376	.541	.003
Error	236.878	122	1.942			
Total	3922.000	126				
Corrected Total	252.159	125				

a. R Squared = .061(Adjusted R Squared = .037)

Effects of condition of Physical attractiveness (Unattractive vs. Attractive), Message Type (Relevant vs. irrelevant to attractiveness) on Attitude Confidence

Table 5

Two-way Anova (2 x 2), Attitude Confidence as dependent measure

	SS	df	MS	F	p	ηp2
Corrected Model	27.661[a]	3	9.220	5.385	.002	.117
Intercept	3661.442	1	3661.442	2138.547	.000	.946
ATRACT	1.458	1	1.458	.851	.358	.007
MESS	4.010	1	4.010	2.342	.129	.019
ATRACT * MESS	21.649	1	21.649	12.645	.001	.094
Error	208.878	122	1.712			
Total	3928.000	126				
Corrected Total	236.540	125				

a. R Squared = .117(Adjusted R Squared = .095)

Table 6

ANCOVA (2 x 2), Attitude Confidence as dependent measure, Attitudes as a control variable

Source	SS	df	MS	F	p	ηp2
Corrected Model	29.672[a]	4	7.418	4.339	.003	.125
Intercept	183.832	1	183.832	107.526	.000	.471
ATT_MES	2.011	1	2.011	1.176	.280	.010
ATRACT	.731	1	.731	.428	.514	.004
MESS	4.440	1	4.440	2.597	.110	.021
ATRACT * MESS	22.319	1	22.319	13.054	.000	.097
Error	206.868	121	1.710			
Total	3928.000	126				
Corrected Total	236.540	125				

a. R Squared = .125(Adjusted R Squared = .097)

Experiment 3

Effects of condition of Physical attractiveness (Unattractive vs. Attractive), Correction Manipulation (No Instructions vs. Correction Instruction) on Attitudes

Table 7

Two-way Anova (2 x 2), Attitudes as dependent measure

Source	SS	df	MS	F	p	ηp2
Corrected Model	8.669[a]	3	2.890	1.364	.257	.033
Intercept	1556.911	1	1556.911	735.174	.000	.860
ATRACT	.009	1	.009	.004	.949	.000
BIAS	.360	1	.360	.170	.681	.001
ATRACT * BIAS	8.255	1	8.255	3.898	.051	.031
Error	254.129	120	2.118			
Total	1817.000	124				
Corrected Total	262.798	123				

a. R Squared = .033(Adjusted R Squared = .009)

Effects of condition of Physical attractiveness (Unattractive vs. Attractive), Correction Manipulation (No Instructions vs. Correction Instruction) on Attitude Confidence

Table 8

Two-way Anova (2 x 2), Attitude Confidence as dependent measure

Source	SS	df	MS	F	p	ηp2
Corrected Model	8.961[a]	3	2.987	1.923	.129	.046
Intercept	2864.152	1	2864.152	1843.938	.000	.939
ATRACT	6.343	1	6.343	4.084	.046	.033
BIAS	.402	1	.402	.259	.612	.002
ATRACT * BIAS	2.438	1	2.438	1.570	.213	.013
Error	186.394	120	1.553			
Total	3060.000	124				
Corrected Total	195.355	123				

Experiment 4

Effects of condition of Physical Attractiveness (Unattractive vs. no-face vs. Attractive) on Attitude Confidence

Table 9

One-way Anova, Attitude Confidence as dependent measure

	SS	df	MS	F	p	ηp2
Corrected Model	6.676[a]	1	6.676	4.279	.041	.034
Intercept	3218.250	1	3218.250	2062.703	.000	.945
ATRACT	6.676	1	6.676	4.279	.041	.034
Error	187.225	120	1.560			
Total	3406.000	122				
Corrected Total	193.902	121				

a. R Squared = .034(Adjusted R Squared = .026)

Effects of condition of Physical Attractiveness (Unattractive vs. no-face vs. Attractive) on Attitudes at Time 1 and Time 2

Table 10

One-way Anova, Attitudes at Time 1 as dependent measure

	SS	df	MS	F	p	ηp2
Corrected Model	.004[a]	1	.004	.003	.958	.000
Intercept	1232.791	1	1232.791	812.702	.000	.871
ATRACT	.004	1	.004	.003	.958	.000
Error	182.029	120	1.517			
Total	1416.000	122				
Corrected Total	182.033	121				

a. R Squared = .000(Adjusted R Squared =- .008)

Table 11

One-way Anova, Attitudes at Time 2 as dependent measure

	SS	df	MS	F	p	ηp2
Corrected Model	.655[a]	1	.655	.516	.474	.004
Intercept	706.506	1	706.506	557.338	.000	.824
ATRACT	.655	1	.655	.516	.474	.004
Error	150.849	119	1.268			
Total	861.000	121				
Corrected Total	151.504	120				

a. R Squared = .004(Adjusted R Squared =- .004)

Relation between Attitudes at Time 2 and Attitudes at Time 1, Moderated by Physical Attractiveness

Table 12 and 13

Regression Model with Attitudes at Time 2 as dependent measure

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	p
1	.289[a]	.084	.076	1.08015	.084	10.854	1	119	.001

a. Predictors: (Constant), ATT Time 1 (reverted) – same direction as message

		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	B	t	p
1	(Constant)	1.579	.274		5.763	.000
	ATT Time 1	.266	.081	.289	3.295	.001

Table 14

Moderation of the relation between Attitudes at Time 1 and Time 2, Physical Attractiveness as Moderator

	Coef	se	t	p	LLCI	ULCI
cosntant	-.021	.0835	-.2411	.8099	-.1854	.1452
ATT_Time 1	.3441	.0898	3.8319	.0002	.1663	.5220
Attractiveness	.0572	.0835	.6849	.4947	-.1081	.2224
Interaction	-.1829	.0898	-2.0362	.0440	-.3607	-.0050

Table 15

Conditional Effects of the relation between Attitudes at Time 1 and Time 2, Physical Attractiveness as Moderator

	Effect	se	t	p	LLCI	ULCI
Unattractive	.5270	.1478	3.5643	.0005	.2342	.8192
Attractive	.1613	.10201	1.5814	.1165	-.0407	.3632

Table 16

Moderation of the relation between Attitudes at Time 1 and Time 2, Attitude Confidence as Moderator

	Coef	se	t	p	LLCI	ULCI
cosntant	5.6390	.8939	6.3085	.0000	3.8687	7.4092
ATT_Time 1	-.3601	.2116	-1.7022	.0914	-.7792	.0589
Att_Conf	-.7107	.1585	-4.4831	.0000	-1.0246	-.3967
Interaction	.1003	.0396	2.5325	.0126	.0219	.1787

Table 17

Conditional Effects of the relation between Attitudes at Time 1 and Time 2, Attitude Confidence as Moderator

	Effect	se	t	p	LLCI	ULCI
Low Conf	.0410	.0868	.4730	.6371	-.1308	.2129
High Conf	.2416	.0879	2.7476	.0070	.0675	.4158

Mediated moderation model predicting Attitudes at Time 2 as a function of Attitudes at Time 1, Physical attractiveness of the source, with Attitude confidence at Time 1 as the mediating variable

Table 18

Moderation of the relation between Attitudes at Time 1 and Time 2, Attitude Confidence as Moderator

	Coef	se	t	p	LLCI	ULCI
cosntant	5.6390	.8939	6.3085	.0000	3.8687	7.4092
ATT_Time 1	-.3601	.2116	-1.7022	.0914	-.7792	.0589
Att_Conf	-.7107	.1585	-4.4831	.0000	-1.0246	-.3967
Interaction	.1003	.0396	2.5325	.0126	.0219	.1787

Table 19

Conditional Effects of the relation between Attitudes at Time 1 and Time 2, Attitude Confidence as Moderator

	Effect	se	t	p	LLCI	ULCI
Low Conf	.0410	.0868	.4730	.6371	-.1308	.2129
High Conf	.2416	.0879	2.7476	.0070	.0675	.4158

Figure 1

Code for testing the Mediated Moderation Model on MPlus

```
DATA:
        FILE = Mplus2.data
VARIABLE:
        NAMES = ATRACT ATTCONF ATTIME1 ATTIME2 AT_ATT1 CO_ATT1;
        USEVARIABLES = ATRACT ATTCONF ATTIME1 ATTIME2 AT_ATT1
CO_ATT1;
ANALYSIS:
        TYPE = GENERAL;
        ESTIMATOR = ML;
        BOOTSTRAP = 10000;
MODEL:
        ATTIME2 ON ATTIME1 (a1);
        ATTIME2 ON ATRACT (a2);
        ATTIME2 ON AT_ATT1 (i1);
        ATTCONF ON ATRACT (aM);
        ATTIME2 ON ATTCONF (b2);
        ATTIME2 ON CO_ATT1 (i2);

MODEL CONSTRAINT:

        NEW(aMi1);
        aMi1 = aM*i1; ! Indirect effect of X on Y via M

OUTPUT:
        STAND CINT(bcbootstrap);
```

Table 18

Conditional Mediated moderation model predicting Attitudes at Time 2 as a function of Attitudes at Time 1, Physical attractiveness of the source, with Attitude confidence at Time 1 as the mediating variable

ATTIME2 ON	Estimate	S.E	Est/S.E.	p
ATTIME1	-0.278	0.427	-0.651	0.515
ATRACT	0.928	0.341	2.72	0.007
AT_ATT1	-0.298	0.112	-2.652	0.008
ATTCONF	-0.173	0.288	-2.473	0.013
CO_ATT1	0.11	0.076	1.437	0.151
ATTCONF ON				
ATRACT	-0.229	0.113	-2.032	0.042
Intercepts				
ATTCONF	5.133	0.111	46.078	0.000
ATTIME2	5.254	1.691	3.107	0.002
Residual Variances				
ATTCONF	1.544	0.218	7.095	0.000
ATTIME2	0.907	0.105	8.63	0.000
New/Additional Parameters				
AMI1	0.068	0.035	1.943	0.052

Appendix E: Statistics of the Experiments in the Second Set of Studies

Experiment 1

Differences on Attitudes and Attitude Confidence between Message Direction Groups (Pro vs. Conterattitudinal)

Table 1

T-test, Attitudes as dependent measure

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% CI	
		F	p	t	df	p (2-tailed)	MD	Std. E Diff	L	U
ATT_ME	Equal variances assumed	.527	.470	5.509	69	.000	2.35952	.42831	1.50507	3.21398
	Equal variances not assumed			5.498	67.206	.000	2.35952	.42914	1.50301	3.21604

Table 2

T-test, Attitude Confidence as dependent measure

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% CI	
		F	p	t	df	p (2-tailed)	MD	Std. E Diff	L	U
CONF	Equal variances assumed	1.844	.179	-.418	69	.678	-.149	.357	-.862	.564
	Equal variances not assumed			-.419	66.625	.677	-.149	.356	-.860	.562

Moderation of the Relation of Attitudes and Attitude Confidence by Message Direction Groups (Pro vs. Conterattitudinal)

Table 3

Moderation of the relation between Attitudes and Attitude Confidence, Message Direction as Moderator

	Coef	se	t	p	LLCI	ULCI
cosntant	-.2665	.1331	-2.0020	.0493	-.5321	-.0008
Attitude	.1032	.1348	.7660	.4463	-.1658	.3723
Mess Direc	.1037	.1331	.7719	.4429	-.1629	.3684
Interaction	-.4882	.1348	-3.6224	.0006	-.7573	-.2192

Relation of Attitudes and Attitude Confidence by Message Direction Groups (Pro vs. Conterattitudinal)

Table 4

Regression Model with Attitude Confidence as dependent measure for the Pro attitudinal Group

Model		Unstand. Coefficients		Stand. Coefficients		
		B	Std. Error	Beta	t	p
1	(Constant)	-.369	.208		-1.775	.085
	Zscore(ATT_ME)	.591	.221	.417	2.677	.011

Table 5

Regression Model with Attitude Confidence as dependent measure for the Counter attitudinal Group

Model		Unstand. Coefficients		Stand. Coefficients		
		B	Std. Error	Beta	t	p
1	(Constant)	-.164	.166		-.985	.332
	Zscore(ATT_ME)	-.385	.159	-.388	-2.416	.021

Experiment 2

Differences on Attitudes and Attitude Confidence between conditions of Physical Attractiveness (Unattractive vs. Attractive)

Table 6

One-way Anova, Attitudes as dependent measure

	SS	df	MS	F	p	ηp2
Corrected Model	2.564[a]	1	2.564	.897	.346	.010
Intercept	867.619	1	867.619	303.606	.000	.773
COND	2.564	1	2.564	.897	.346	.010
Error	254.337	89	2.858			
Total	1137.000	91				
Corrected Total	256.901	90				

a. R Squared = .010(Adjusted R Squared =- .001)

Table 7

One-way Anova, Attitude Confidence as dependent measure

	SS	df	MS	F	p	ηp2
Corrected Model	2.830[a]	1	2.830	1.375	.244	.015
Intercept	2249.248	1	2249.248	1092.881	.000	.925
COND	2.830	1	2.830	1.375	.244	.015
Error	183.170	89	2.058			
Total	2461.000	91				
Corrected Total	186.000	90				

a. R Squared = .015 (Adjusted R Squared =.004)

Relation of Attitudes and Attitude Confidence by condition of Physical Attractiveness (Unattractive vs. Attractive)

Table 8

Regression Model with Attitude Confidence as dependent measure

		Unstand Coefficients		Stand Coefficients		
		B	Std. Error	Beta	t	p
1	(Constant)	6.186	.285		21.708	.000
	Attitudes	-.381	.081	-.448	-4.732	.000

Table 9

Moderation of the relation between Attitudes and Attitude Confidence, Physical Attractiveness as Moderator

	Coef	se	t	p	LLCI	ULCI
cosntant	-.0342	.0920	-.3718	.7110	-.2171	.1487
Attitude	-.5280	.0967	-5.4611	.0000	-.7201	-.3358
Attractiveness	-.1772	.0920	-1.9264	.0573	-.3601	.0056
Interaction	-.2076	.0967	-2.1477	.0345	-.3998	-.0155

Table 10

Conditional Effects of the relation between Attitudes and Attitude Confidence, Physical Attractiveness as Moderator

	Effect	se	t	p	LLCI	ULCI
Unattractives	-.3203	.1142	-2.8040	.0062	-.5474	-.0933
Attractive	-.7356	.1560	-4.7155	.0000	-1.0456	-.4255

Table 11

Regression Model with Attitudes as dependent measure, controlling for the effect of condition of Physical Attractiveness, Attitude Confidence and the Physical Attractiveness x Attitude Confidence interaction

		Unstand Coefficients		Stand Coefficients		
		B	Std. Error	Beta	t	p
1	(Constant)	-.005	.096		-.053	.958
	Attractiveness	-.144	.096	-.148	-1.502	.137
	Confidence	-.465	.099	-.465	-4.703	.000
	Attract_Conf	.009	.096	.009	.089	.929

Table 12

Regression Model with Attitude Confidence as dependent measure, controlling for the effect of condition of Physical Attractiveness, Attitudes and the Physical Attractiveness x Attitudes Interaction

		Unstand Coefficients		Stand Coefficients		
		B	Std. Error	Beta	t	p
1	(Constant)	-.002	.090		-.026	.979
	Attractiveness	-.206	.090	-.212	-2.281	.025
	Attitude	-.514	.097	-.514	-5.311	.000
	Attract_Att	-.217	.095	-.222	-2.300	.024

Appendix F: Statistics of the Experiments in the Third Set of Studies

Correlational Study

Relation of Self-Evaluations of Physical Attractiveness with Attitudes

Table 1

Regression Model with Attitude as dependent measure

		Unstand Coefficients		Stand Coefficients		
		B	Std. Error	Beta	t	p
1	(Constant)	2.902	.851		3.409	.001
	Self_Attract	.099	.192	.075	.516	.608

Relation of Self-Evaluations of Physical Attractiveness with Attitude Confidence

Table 2

Regression Model with Attitude Confidence as dependent measure

		Unstand Coefficients		Stand Coefficients		
		B	Std. Error	Beta	t	p
1	(Constant)	3.373	.680		4.962	.000
	Self_Attract	.465	.153	.405	3.039	.004

Table 3

Regression Model with Attitude Confidence as dependent measure, controlling for the effect of Attitudes

		Unstand Coefficients		Stand Coefficients		
		B	Std. Error	Beta	t	p
1	(Constant)	4.013	.738		5.440	.000
	Self_Attract	.487	.149	.424	3.265	.002
	Attitudes	-.220	.113	-.253	-1.947	.058

Relation of Self-Evaluations of Physical Attractiveness with Thought Confidence

Table 4

Regression Model with Attitude Confidence as dependent measure, controlling for the effect of Attitudes

		Unstand Coefficients		Standard Coefficients		
Model		B	Std. Error	Beta	t	p
1	(Constant)	3.845	.619		6.207	.000
	Self_Attract	.421	.140	.403	3.017	.004

Experiment 1

Effects of Thought direction (positive vs. negative) and Induced ratings of Attractiveness (High vs. Low) on Ratings of Self-Evaluations of Physical Attractiveness

Table 5

Two-way Anova (2 x 2), Self-Evaluation of Physical Attractiveness as dependent measure

Source	SS	df	Mean Square	F	p	ηp2
Corrected Model	9.379[a]	3	3.126	2.357	.076	.060
Intercept	2321.136	1	2321.136	1749.940	.000	.940
Self_Attract	3.990	1	3.990	3.008	.086	.026
Thought_Direct	5.058	1	5.058	3.814	.053	.033
Self_Attract * Thought_Direct	.522	1	.522	.393	.532	.004
Error	147.231	111	1.326			
Total	2521.500	115				
Corrected Total	156.611	114				

a. R Squared = .060 (Adjusted R Squared =.034)

Effects of Thought direction (positive vs. negative) and Induced ratings of Attractiveness (High vs. Low) on Attitudes

Table 6

Two-way Anova (2 x 2), Attitudes as dependent measure

Source	SS	df	MS	F	p	ηp2
Corrected Model	8.910[a]	3	2.970	5.004	.003	.118
Intercept	4250.949	1	4250.949	7162.564	.000	.985
Self_Attract	.535	1	.535	.901	.345	.008
Thought_Direction	7.414	1	7.414	12.492	.001	.100
Self_Attract * Thought_Direction	.762	1	.762	1.283	.260	.011
Error	66.471	112	.593			
Total	4392.047	116				
Corrected Total	75.382	115				

a. R Squared = .118 (Adjusted R Squared =.095)

Effects of Thought direction (positive vs. negative) and Induced ratings of Attractiveness (High vs. Low) on Attitude Confidence

Table 7

Two-way Anova (2 x 2), Attitude Confidence measure

Source	SS	df	MS	F	p	ηp2
Corrected Model	3.198[a]	3	1.066	1.440	.235	.037
Intercept	4232.650	1	4232.650	5719.664	.000	.981
Self_Attract	.001	1	.001	.001	.973	.000
Thought_Direction	2.851	1	2.851	3.852	.052	.033
Self_Attract* Thought_Direction	.313	1	.313	.423	.517	.004
Error	82.882	112	.740			
Total	4370.778	116				
Corrected Total	86.080	115				

Relation of Self-Evaluations of Physical Attractiveness with Attitude Confidence

Table 8

Regression Model with Attitude Confidence as dependent measure

Model		Unstand Coefficients		Stand Coefficients	t	p
		B	Std. Error	Beta		
1	(Constant)	5.040	.311		16.227	.000
	Self_Attract	.229	.066	.309	3.451	.001

Table 9

Regression Model with Attitude Confidence as dependent measure, controlling for the effect of Thought Direction

Model		Unstand Coefficients		Standard Coefficients	t	p
		B	Std. Error	Beta		
1	(Constant)	5.109	.313		16.339	.000
	Self_Attract	.211	.067	.285	3.149	.002
	Thought_Direction	.114	.079	.132	1.455	.148

Experiment 2

Effects of Faces (Attractive vs. Unattractive) on the response index in the Comparison task

Table 10

One-way Anova, Response index in the Comparison task as Dependent measure

Source	SS	df	MS	F	p	ηp2
Corrected Model	3.046[a]	1	3.046	2.383	.131	.056
Intercept	946.201	1	946.201	740.203	.000	.949
Attract	3.046	1	3.046	2.383	.131	.056
Error	51.132	40	1.278			
Total	1000.378	42				
Corrected Total	54.178	41				

a. R Squared = .056 (Adjusted R Squared =.033)

Effects of Faces (Attractive vs. No face vs. Unattractive) on Self-Evaluations of Physical Attractiveness

Table 11

One-way Anova, Self-Evaluations of Physical Attractiveness as dependent measure.

Source	SS	df	Mean Square	F	p	ηp2
Corrected Model	4.118[a]	2	2.059	1.163	.320	.037
Intercept	1327.559	1	1327.559	749.618	.000	.925
Attract	4.118	2	2.059	1.163	.320	.037
Error	108.030	61	1.771			
Total	1437.563	64				
Corrected Total	112.147	63				

a. R Squared = .037 (Adjusted R Squared =.005)

Effects of Faces (Attractive vs. No face vs. Unattractive) on Attitudes

Table 12

One-way Anova, Attitudes as dependent measure

Source	SS	df	MS	F	p	ηp2
Corrected Model	20.398[a]	2	10.199	2.686	.076	.081
Intercept	782.009	1	782.009	205.968	.000	.772
Attract	20.398	2	10.199	2.686	.076	.081
Error	231.602	61	3.797			
Total	1036.000	64				
Corrected Total	252.000	63				

a. R Squared = .081 (Adjusted R Squared =.051)

Effects of Faces (Attractive vs. No face vs. Unattractive) on Attitude Confidence

Table 13

One-way Anova, Attitude Confidence as dependent measure

Source	SS	df	MS	F	p	ηp2
Corrected Model	4.984[a]	2	2.492	1.200	.308	.038
Intercept	1994.410	1	1994.410	960.778	.000	.940
Attract	4.984	2	2.492	1.200	.308	.038
Error	126.626	61	2.076			
Total	2123.000	64				
Corrected Total	131.609	63				

a. R Squared = .038 (Adjusted R Squared =.006)

Relation of Self-Evaluations of Physical Attractiveness with Attitude Confidence by Condition of Physical Attractiveness

Table 14

Regression Model with Attitude Confidence as dependent measure

Model		Unstand Coefficients		Stand Coefficients	t	p
		B	Std. Error	Beta		
1	(Constant)	3.463	.589		5.880	.000
	Self_Attract	.465	.124	.429	3.740	.000

Table 15

Moderation of the relation between Self-Evaluations of Physical Attractiveness and Attitude Confidence, Physical Attractiveness as Moderator

	Coef	se	t	p	LLCI	ULCI
cosntant	.0168	.1069	.1574	.8755	-.1971	.2307
Self-Attract	.3823	.1108	3.4489	.0011	.1604	.6041
Multic_Attractiveness	.0111	.1502	.0740	.9412	-.2895	.6649
Interaction	-.5416	.1550	-3.4945	.0009	-.8518	-.2314

Table 16

Conditional Effects of the relation between Self-Evaluations of Physical Attractiveness and Attitude Confidence, Physical Attractiveness as Moderator

	Effect	se	t	p	LLCI	ULCI
Unattractive	.5500	.2209	2.4896	.0157	.1078	.0921
No Face	.7562	.1630	4.6402	.0000	.4300	1.0824
Attractive	-.1593	.1876	-.8491	.3993	-.5349	.2163

Experiment 3

Effects of Faces (Attractive vs. Unattractive) on the response index in the Comparison task

Table 17

One-way Anova, Response index in the Comparison task as Dependent measure

Source	SS	df	MS	F	p	ηp2
Corrected Model	15.538[a]	1	15.538	12.790	.001	.207
Intercept	1099.517	1	1099.517	905.059	.000	.949
Attract	15.538	1	15.538	12.790	.001	.207
Error	59.528	49	1.215			
Total	1180.140	51				
Corrected Total	75.066	50				

a. R Squared = .207 (Adjusted R Squared =.191)

Effects of Faces (Attractive vs. No face vs. Unattractive) on Attitudes

Table 18

One-way Anova, Attitudes as dependent measure

Source	SS	df	MS	F	p	ηp2
Corrected Model	.742[a]	2	.371	.104	.901	.003
Intercept	1110.778	1	1110.778	311.805	.000	.821
COND	.742	2	.371	.104	.901	.003
Error	242.244	68	3.562			
Total	1371.000	71				
Corrected Total	242.986	70				

a. R Squared = .003 (Adjusted R Squared =-.026)

Effects of Faces (Attractive vs. No face vs. Unattractive) on Attitude Confidence

Table 19

One-way Anova, Attitude Confidence as dependent measure

Source	SS	df	MS	F	p	ηp2
Corrected Model	3.765[a]	2	1.883	1.235	.297	.035
Intercept	2316.768	1	2316.768	1519.609	.000	.957
Attract	3.765	2	1.883	1.235	.297	.035
Error	103.672	68	1.525			
Total	2452.000	71				
Corrected Total	107.437	70				

a. R Squared = .035 (Adjusted R Squared =.007)

Relation of Self-Evaluations of Physical Attractiveness with Attitude Confidence

Table 20

Regression Model with Attitude Confidence as dependent measure

Model		Unstand Coefficients		Stand Coefficients		
		B	Std. Error	Beta	t	p
1	(Constant)	5.086	.536		9.487	.000
	Self-perception	.157	.122	.152	1.281	.205

Relation of response index in the Comparison task with Attitude Confidence

Table 21

Regression Model with Attitude Confidence as dependent measure

Model		Unstand Coefficients		Stand Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.850	.657		5.858	.000
	rating self vs. cara	.399	.137	.385	2.918	.005

Experiment 4

Effects of Faces (Attractive vs. Unattractive) on Self-Evaluations pf Physical Attractiveness

Table 22

T-test, Self-Evaluation of Physical Attractiveness as dependent measure

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% CI	
		F	p	t	df	p (2-tailed)	MD	Std. E Diff	Lower	Upper
Self-Attrct	Equal variances assumed	2.129	.146	1.724	162	.087	.31310	.18157	-.04545	.67164
	Equal variances not assumed			1.731	159.784	.085	.31310	.18083	-.04403	.67022

Effects of Faces (Attractive vs. No face vs. Unattractive) on Attitudes

Table 23

T-test, Attitudes as dependent measure

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% CI	
		F	p	t	df	p. (2-tailed)	MD	Std. E Diff	Lower	Upper
Towards the message	Equal variances assumed	.332	.565	-1.206	165	.229	-.28661	.23761	-.75576	.18254
	Equal variances not assumed			-1.207	164.678	.229	-.28661	.23750	-.75554	.18232

Effects of Faces (Attractive vs. No face vs. Unattractive) on Attitude Confidence

Table 24

One-way Anova, Attitude Confidence as dependent measure

		Levene's Test for Equality of Variances		t-test for Equality of Means						
								Std. E	95% CI	
		F	p	t	df	p (2-tailed)	MD	Difference	Lower	Upper
CONF	Equal variances assumed	.272	.603	1.957	165	.052	.4058	.2074	-.0037	.8154
	Equal variances not assumed			1.962	164.812	.051	.4058	.2068	-.0026	.8142

Relation of Self-Evaluations of Physical Attractiveness with Attitude Confidence

Table 25

Regression Model with Attitude Confidence as dependent measure

		Unstand Coefficients		Stand Coefficients		
Model		B	Std. Error	Beta	t	p
1	(Constant)	3.694	.361		10.227	.000
	SP	.406	.085	.352	4.793	.000

Mediation Analysis of the Relation between Physical Attractiveness with Attitude Confidence, Self-Evaluation of Physical Attractiveness as mediator

Table 26

Direct Effect of Attractiveness on Self-Evaluation of Physical Attractiveness, within the Mediation Model

	Coef	se	t	p	LLCI	ULCI
cosntant	4.1060	.0908	45.2278	.0000	3.9267	4.2852
Attract	-.1565	.0908	-1.7244	.0865	-.3358	.0227

Table 27

Direct Effect of Attractiveness and Self-Evaluation of Physical Attractiveness on Attitude confidence, within the Mediation Model

	Coef	se	t	p	LLCI	ULCI
cosntant	3.7623	.3636	10.3471	.0000	3.0443	4.4804
Attract	-.1368	.0994	-1.3765	.1706	-.3331	.0595
Self-Attract	.3902	.0852	4.5777	.0000	.2219	.5586

Table 28

Indirect Effect of Attractiveness on Attitude confidence, within the Mediation Model

	Effect	BootSE	BootLLCI	BootULCI
Self-Attract	-.0611	.0371	-.1402	.0063