When recommending a product backfires: The effects of justification and source on user responses to online personalized recommendations

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ABSTRACT

Providing users with personalized product or service recommendations has undergone considerable development with the advent of Web 2.0. Recommendations allow websites to convey tailored information to users, but they also contribute to reduce the users' efforts at searching online. Despite corporate enthusiasm for online personalized recommendations, some previous investigations have demonstrated that this practice requires precautions in order to avoid potential counterproductive effects. This research aims at better understanding the boundaries conditions under which the justification for product recommendations displayed on a website are needed. It compares the effects of justification when a recommendation is issued by the previously navigated website or by a partner website. According to the Construal Level Theory, the navigated website is a proximal source while the partner website is a distal source of recommendation. Through a full-factorial experimental design with 328 participants, this study assesses the interaction between justification (justified vs not-justified) and source (proximal vs distal) of a recommendation. Results reveal that on the one hand a recommendation delivered by a proximal source is more persuasive if the recommendation is justified than if it is not-justified. On the other hand, for a distal source, superior effects are achieved if no justification is provided. Perceived intrusiveness is the underlying mechanism of these effects.

Keywords: *Online personalized recommendation, Justification, Social distance, Construal level, Intrusiveness.*

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RÉSUMÉ

Les systèmes de recommandation de produits ou de services personnalisés ont connu un développement croissant avec l'avènement du Web 2.0. Les recommandations permettent aux sites web de transmettre des informations adaptées aux besoins des utilisateurs et contribuent ainsi à réduire leurs efforts de recherche d'informations. Malgré l'enthousiasme des entreprises à l'égard des recommandations en ligne personnalisées, des travaux antérieurs ont montré que cette pratique nécessitait de prendre des précautions afin d'en éviter les éventuels effets contre-productifs. Cette recherche vise à identifier les conditions dans lesquelles la justification des recommandations de produits présentées sur un site web est nécessaire. Ce travail compare les effets de la justification, d'une part, lorsque la recommandation est émise par un site Web sur lequel l'utilisateur a déjà navigué et, d'autre part, lorsqu'elle est émise par un site partenaire. Selon la théorie des niveaux de représentation, un site sur lequel l'utilisateur a déjà navigué constitue une source proximale de recommandation, tandis qu'un site partenaire représente une source distale. Au moyen d'un plan factoriel complet impliquant 328 participants, cette étude examine les effets de l'interaction entre la justification (justifiée vs non justifiée) et la source (proximale vs distale) d'une recommandation. Les résultats révèlent qu'une recommandation émise par une source proximale est plus persuasive lorsque la recommandation est justifiée que lorsqu'elle ne l'est pas. Des résultats inverses sont obtenus avec une source distale. L'intrusion perçue est le mécanisme sous-jacent à ces effets.

Mots-clés : *Recommandations en ligne personnalisées, Justification, Distance sociale, Niveau de représentation, Intrusion.*

INTRODUCTION

Have you ever wondered what e-business websites such as Amazon, Best Buy or Trip Advisor have in common? Beyond their excellent reputation, these websites have online recommender systems which offer you their particular "*Recommended based on your browsing history*" (Best Buy), "*Products frequently bought together*" (Amazon) or "*Hotels that you might like*" (TripAdvisor). These are just a few examples of the vast variety of recommendations offered by e-business websites which users are likely to be exposed to. The managerial practice of providing users with personalized product or service recommendations has undergone considerable development with the advent of Web 2.0. Lots of online retailers develop partnerships with publishers (e.g., Google) that collect consumer data to provide consumer personalized advertisements (Aguirre *et al*., 2015). Personalized recommendations are a powerful tool for both practitioners and users (Köhler *et al*., 2012; Levitt, 2006); more precisely, personalized recommendations not only allow websites to convey tailored information to users, but they also contribute to reduce the users' efforts at searching online (Holster *et al*., 2011; Simonson, 2005), signal greater relevance

and increase customer adoption (Tam & Ho, 2006). Despite the enthusiasm of many companies for this marketing practice (Punj & Moore, 2007), the use of personalized recommendations requires some precautions to avoid potential counterproductive effects (Wang & Benbasat, 2009), especially when users come to realize that the recommendations they receive are based on personal information that was collected without their consent (Tucker, 2014). Aguirre *et al*. (2015) named this double-edged sword the "personalization paradox": online personalization strategies can be both effective and ineffective depending on the context. One key component to the success (or failure) of recommendations is the format utilized to provide these recommendations to users (Edwards *et al*., 2002; Fitzsimons & Lehmann, 2004). Moreover, White *et al*. (2008) have shown that the effectiveness of a personalized recommendation communicated via email depends on whether or not this recommendation has been justified by explicitly indicating the data that was used to generate the recommendation in question. Precisely, they showed that a personalized recommendation sent by email arouses negative reactions if not-justified, that is to say, if it does not explicitly present data (demographic and/or behavioral) collected about the user during a previous navigation on the web.

This research aims at extending the results found by White *et al*. (2008) in the context of emails by examining the effects of justification for recommendations that are presented on a website (i.e., online personalized recommendations, OPRs). Ball and Sawyer (2013) qualify this type of research as "differentiated replication". It is related to identifying boundaries variables that allow previous findings to be refined and to deepen understanding of theories and/or causal links. The main singularity of this research is to go beyond previous studies by investigating a potential moderator that may change and alter the effects of the recommendation's source. Specifically, this study examines whether justification is necessary if the recommendation is not issued by a website that a user has previously navigated but by a partner website which corresponds to an affiliation (e.g., an existing situation in which a user books a hotel on booking.com and subsequently receives, on booking.com, a recommendation from hertz.com for a car rental at the hotel's location). This issue is of interest since many e-commerce companies, whether large or small, use affiliate techniques (Venugopal *et al*., 2013). To study users' reactions to OPRs, this research refers to the construal level theory (CLT) and more especially to the concept of social distance (Liviatan *et al*., 2008). Liu and Gal (2011) have demonstrated that a social relationship can exist between an individual and nonprofit or for-profit organizations (e.g., an e-commerce website). As a result, this research considers that the perceived social distance between the OPR source and the user may vary depending on whether the OPR comes from a website that has previously been navigated by a user (e.g., booking.com) or from an affiliate website (e.g., hertz.com). Based on the principles of CLT (Trope & Liberman, 2010) and social distance, this research expects that an OPR provided and delivered by a website that has previously been navigated by a user will be more effective if it is justified (a hypothesis consistent with the findings of White *et al*., 2008). However, this study assumes that an OPR displayed on a website that has previously been navigated by a user but issued by a partner website (affiliated) will be more effective if it is not-justified due to differences in perceived intrusiveness.

From a managerial perspective, this investigation provides marketing practitioners with information regarding formats that can improve OPR effectiveness. This study also

addresses a type of recommendation that is becoming increasingly prevalent on the Web (Venugopal *et al*., 2013): recommendations delivered by partner websites. From a theoretical perspective, by examining the social distance of a recommendation source, which is a variable that has not been previously studied, this investigation contributes to extend literature on personalized recommendations (e.g., Häubl & Murray, 2003; Swaminathan, 2003) and enhances the understanding of the conditions that increase the effectiveness of these recommendations (and avoid backfire effects). It also enriches the existing construal level theory (e.g., Wright *et al*., 2012) and social distance literature (e.g., Kim *et al*., 2014).

THEORETICAL FRAMEWORK

Online personalized recommendations and justification

Personalization can be defined as a customer-oriented marketing strategy (Tam & Ho, 2006) that seeks to deliver "*the right content to the right person at the right time, to maximize immediate and future business opportunities*" (Aguirre *et al*., 2015, p. 35). It refers to "*the differentiation of product, service, and information to increase sales and to enhance customer loyalty by segmenting customers in a way that efficiently and knowledgeably address each user or group of users' needs and goals in a given context*." (Fan & Pole, 2006, p. 194). The rationale for personalization is that by learning individual customer preferences, the firm is able to provide each customer with an offer that is tailored to his/her expectations. This creates value for both the customer and the firm (Simonson, 2005).

Past research focused on personalized recommendations (Fitzimons & Lehmann, 2004), emails (Edwards *et al*., 2002; White *et al*., 2008), banners (Tam & Ho, 2006), or online advertising (Aguirre *et al*., 2015; Tucker, 2012, 2014). It emphasized that personalization provides customers with benefits such as a better match with their needs, reduced cognitive overload, increased convenience (Ansari & Mela, 2003) and lower customer search efforts, thus leading to higher perceived value, greater customer satisfaction and loyalty (Ansari & Mela, 2003; Simonson, 2005), and finally more profitability (Zhang & Wedel, 2009). Personalized online advertisements proved to be twice as effective as similar but impersonal versions (Aguirre *et al*., 2005) were better recalled, more favorably evaluated, and associated with more purchases (Tam & Ho, 2006). However, past research also revealed that personalization may generate counterproductive effects such as creating discomfort (Tucker 2012) and eliciting reactance (Fitzimons & Lehmann, 2004), irritation (Edwards *et al*., 2002) or a feeling of vulnerability (Aguirre *et al*., 2015).

Personalization strategies are not new but they have developed rapidly due to the many opportunities offered by new technologies. These have enlarged the scope of personalization, increased its efficiency and speed of implementation (Fan & Poole, 2006). Personalization is strongly technology driven: identifying customers preferences requires data collection and the use of consumers' information (Montgomery & Smith, 2009) together with sophisticated algorithms that can instantly offer products tailored to the customers' needs and interests (Swaminathan, 2003; Tucker, 2014). E-commerce websites use recommendation systems, which are also known as recommendation agents or electronic decision aids (Häubl & Murray, 2003; Iacobucci *et*

al., 2000), to offer users the product they want at the time they want it. Ideally, these offers are provided before the users even know what they want (Simonson, 2005).

Personalization is grounded in data collection. When data collection is explicit (or overt), it means that consumers voluntarily provide a firm with data (Fan & Poole, 2006). Asking consumers for their consent reinforces a firm's transparency and is beneficial to its image. However, most of the time the collected data is quite poor and might even be perceived as detrimental to the consumer experience (Aguirre *et al*., 2015). For this reason, many firms favor implicit (or covert) data collection, which means that it is gathered by firms without the consumer's awareness. This unobtrusive gathering process produces unbiased and richer information on consumer behavior, which is likely to generate highly valuable insights (Aguirre *et al*., 2015). The downside is that when consumers receive a personalized offer, they become aware that data has been collected without their permission. Their response may not be favorable. In one online advertising campaign, recipients felt particularly vulnerable: this negative effect on users' click-through intentions was balanced by the site's credibility and the presence of trust-building cues (Aguirre *et al*., 2015). In the context of personalized recommendations embedded in emails, White *et al*. (2008) demonstrated that recipients' responses differed depending on the presence or absence of justification for these recommendations. According to these researchers, justification consists of "*explicitly justifying the fit between the distinctive personal information and the focal offer in the message*" (White *et al*., 2008, p. 41). The researchers found that it was necessary to explain the covert information on which the recommendation was based.

In this paper, we focus on personalized recommendations, in other words, offers sent by a company to customers suggesting them to consider buying a product or service (Fitzsimons & Lehman, 2004). Our study considers the consequences of covert data collection in the light of the results obtained by White *et al*. (2008) indicating that e-mailed personalized messages need to be justified. This research examines the effects of a justified (or not-justified) personalized recommendation, issued by a website the user has previously navigated and to which the user has given information to (e.g., first and last name, address, telephone number). It goes beyond previous studies by investigating a potential variable that may interact with justification. Based on the principles of construal level theory (Trope & Liberman, 2010) and the concept of social distance (Liviatan *et al*., 2008), this research proposes that justification produces different effects depending on the source of the recommendation operationalized in this research as whether the OPR comes from a website that has previously been navigated by a user or from an affiliate website. The reasons for this proposal are discussed in the next section.

The interaction between justification and source of a recommendation

Different theories in psychology suggest that the same action can be interpreted in accordance with various levels of representation. For example, in the theory of action identification (Vallacher & Wegner, 1987), the reasons for an individual to perform an action (the "*Whys*") are regarded as high-level psychological entities. Conversely, the means by which an action is performed (the "*Hows*") are low-level entities. As specified by Liberman and Trope (1998), high-level construals are abstract and general, focusing on the primary and superordinate characteristics of an action. In contrast, low-level

construals are more concrete and specific, focusing on the secondary and subordinate features of an action. According to CLT, the psychological distance changes the level at which an action is mentally construed. In particular, individuals' representations of psychologically distant actions primarily consist of high-level construals. As psychological distance decreases, low-level construals are formed. CLT was initially utilized to address the temporal perspective such as in Liberman and Trope (1998). The authors gave participants the opportunity to choose between two software programs: the first being easy to use (high feasibility) but having few features (low desirability); conversely, the latter had many features (high desirability), but was difficult to use (low feasibility). The results revealed that when using the software is considered in the short term, the probability of choosing the first option is higher; the opposite occurs when use is considered in the long term.

CLT has recently been extended to other dimensions such as social distance and spatial distance. It has been demonstrated that the actions of a socially distant person are represented in abstract terms, whereas the same actions performed by a less socially distant individual are represented in more concrete terms (Liviatan *et al*., 2008). The influence of in-group versus out-group affiliation is the manipulation of social distance that has been mostly used in psychology and in marketing (e.g., Ein-Garn & Levontin, 2013). In particular, Zhao and Xie (2011) have demonstrated that the effectiveness of recommendations issued by others depends on the social distance (proximal vs distal) between the recipient and the sender of a recommendation. Like Zhao and Xie (2011), in order to better explain the effectiveness of online recommendations, we also mobilize the concept of social distance between the source (proximal vs distal) and the target of a recommendation. However, we do not focus on recommendations issued by other individuals, but on those issued by companies. Liu and Gal (2011) also refer to social distance, a concept originally used to describe interpersonal relationships, in order to study the relationship between an individual and nonprofit or for-profit organizations. For instance, in their third experiment, Liu and Gal (2011) asked participants to evaluate how close they felt to a company named Splash! (a new business developing a restaurant concept) using the "Incorporation of Other in the Self Scale" adapted from Aron *et al*. (1991).

In the present research, we focus on two types of OPRs: recommendations offered by a website that a user has previously navigated (a proximal source) and recommendations presented on a website that a user has previously navigated but issued by a partner website (a distal source). The latter form of OPR corresponds to a situation of affiliation in which a partner site, or "affiliate" (e.g., hertz.com), makes a recommendation on the site the user had previously navigated, i.e. the "affiliating site" (booking.com). Drawing from the aforementioned results, we propose that users will feel socially closer to the first type of recommendation (which is issued by a "proximal" source) than to the second (which comes from a "distal" source). Indeed, in an interpersonal relationship, a sense of closeness may arise when an individual communicates personal information to a third person. This phenomenon, which is similar to the psychological process of "self-disclosure", has been studied in different contexts, particularly in health (e.g., Chaudoir & Fisher, 2010) and social networks (Lee *et al*., 2013). Sharing personal information creates an atmosphere of intimacy and strengthens the feeling of closeness with other people (Chaudoir & Fisher, 2010). Similarly to Liu and Gal (2011), this research considers that a social relationship (and closeness)

can exist between an individual and an organization and, thus, with a commercial website. It is proposed that a recommendation delivered by a website that a user has previously navigated involves less social distance than a recommendation issued by a partner site. In other words, the user will feel closer to a site that he/she has already navigated and to which he/she has communicated personal information when creating an account for example, or making an online purchase.

It has been demonstrated that when actions are performed by a socially proximal entity, a concrete mindset is activated, which leads people to focus on the subordinate features (the "*Hows*") of incoming information (Liviatan *et al*., 2008). Thus, a recommendation issued by a website that the user has previously navigated (i.e., a proximal source) should focus on "*how*" the recommendation has been issued (i.e., based on data collected from previous navigations) so that it will be consistent with the activated mindset. White *et al*. (2011) show that the fit between an external stimulus and the mental representation induced by a psychological (e.g., temporal or social) distance results in users' positive reactions. Moreover, according to White *et al*. (2008), a recommendation issued by a website that a user has previously navigated can be perceived as manipulative if no justification is provided (i.e., if the site does not mention that the offer is based on data collected from previous navigations).

When a company delivers personalized recommendations to consumers after they have navigated its website, it expects them to purchase the recommended products. Purchase intention is commonly used in literature as a predictive measure of purchasing behavior (Fishbein & Ajzen, 1975). When researchers refer to purchase intention, they implicitly assume that it will lead to an actual purchase. However, a way for consumers to signal that they have been annoyed by a personalized recommendation from a website is to "deactivate the recommendation", or click on a button to ask the website to stop displaying them such offers in the future. White *et al*. (2008) and, more recently, Aguirre *et al*. (2015), addressed similar reactions from consumers in some studies involving personalized stimuli. Based on these results, this research proposes that justification is required for a recommendation issued by a proximal source. Hence, we hypothesize the following:

H1: When the recommendation is issued by a proximal source, **(H1a)** intention to deactivate the recommendation will be lower (vs higher) and **(H1b)** intention to purchase the recommended product will be higher (vs lower) when the recommendation is justified (vs not-justified).

When the recommendation is delivered by a partner website, which involves a larger social distance than for a proximal source, the users will be relatively sensitive to "*why*" the recommendation has been provided. Referring to Liviatan *et al*. (2008), individuals' representations of socially distal entities are abstract, focusing on superordinate characteristics of an action (the "*Whys*"). Thus, it is preferable in this situation to avoid any justification. Justification may induce users to think about "*how*" the recommendation has been designed (i.e., through the use of data collected from previous navigations) rather than "*why*" it has been designed. In other words, justification may make salient an aspect of the information which does not fit with the level of construal naturally used by individuals when they are exposed to actions performed by socially distal entities and may lead to counterproductive effects. Therefore, we propose that an OPR delivered by a distal recommendation source will be more effective if it is not-justified than if it is justified. The following hypotheses are proposed:

H2: When the recommendation is issued by a distal source, **(H2a)** intention to deactivate the recommendation will be lower (vs higher) and **(H2b)** intention to purchase the recommended product will be higher (vs lower) when the recommendation is not-justified (vs justified).

The mediating role of perceived intrusiveness

According to White *et al*. (2008), justification reduces the negative emotional reactions aroused by a personalized email. Previous studies have demonstrated that online advertisements, such as pop-ups (Edwards *et al*., 2002; Li *et al*., 2002; Mc Coy *et al*., 2008, 2016), banner ads (Doorn & Hoekstra, 2013; Mc Coy *et al*., 2008), or interstitial ads (Ying *et al*., 2010), may trigger various negative emotional reactions such as intrusiveness. Ad intrusiveness has been defined as *"the degree to which advertisements in a media vehicle interrupt the flow of an editorial unit"* (Ha, 1996, p. 77). Feelings of ad intrusiveness occur when an advertisement blocks or slows progress toward users' initial goals when navigating a website, or if it interrupts users to the extent that their train of thought is disrupted (Edwards *et al*., 2002). Whatever their goal (e.g. shopping, education or entertainment), an advertisement that obstructs the navigation is likely to cause strong feelings regarding ad intrusiveness and result in negative emotions such as irritation (Edwards *et al*., 2002; Mc Coy *et al*., 2008; Ying *et al*., 2010) leading to unfavorable attitudes and behavioral intentions (Doorn & Hoekstra, 2013; Edwards *et al*., 2002; Li *et al*., 2002; Mc Coy *et al*., 2008; 2016; Ying *et al*., 2010). These negative effects have been explained by theories of attention and the effort involved in processing the additional information, which yields subjective reactions (Edwards *et al*., 2002). These negative reactions have also been explained by the psychological reactance (Brehm, 1966) that arises when individuals feel that their freedom to engage in a chosen behavior is being restricted or threatened. Online advertisements interrupt users' navigation toward a goal, when they had expected to freely access website content or to perform a task without interruption (Edwards *et al*., 2002; Mc Coy *et al*., 2016). These theoretical frameworks explain the previously quoted studies, all of which showed that intrusiveness mediates the effects of online advertisements on attitudes and behavioral intentions.

Doorn and Hoekstra (2013) showed that highly personalized ads (i.e., ads that mention personal identification or transaction information) increase feelings of intrusiveness and negatively affect purchase intentions. A personalized recommendation is likely to interrupt a user from his/her initial task and thus evoke feelings of intrusiveness. According to White *et al*. (2008), a justification reduces the sense of intrusiveness felt by an individual when he/she receives a personalized recommendation. Therefore, we propose that in the case of a proximal source, perceived intrusiveness is lower if the OPR is justified than if it is not; when the source is distal, perceived intrusiveness is expected to be lower if the OPR is not-justified than if it is. Prior research suggests that users can shape their attitudes and make decisions referring to what they are feeling when they process the information which they are exposed to (Lee & Aaker, 2004). In particular, it has been demonstrated that matching a marketing *stimulus* with the level of representation used by individuals to process information positively influences processing fluency (i.e., the subjective feeling of "well-being" associated with performing a processing task); however, evaluations are lower if the marketing *stimulus* does not match individuals' construal level compared to the match conditions (White *et al*., 2011). We expect

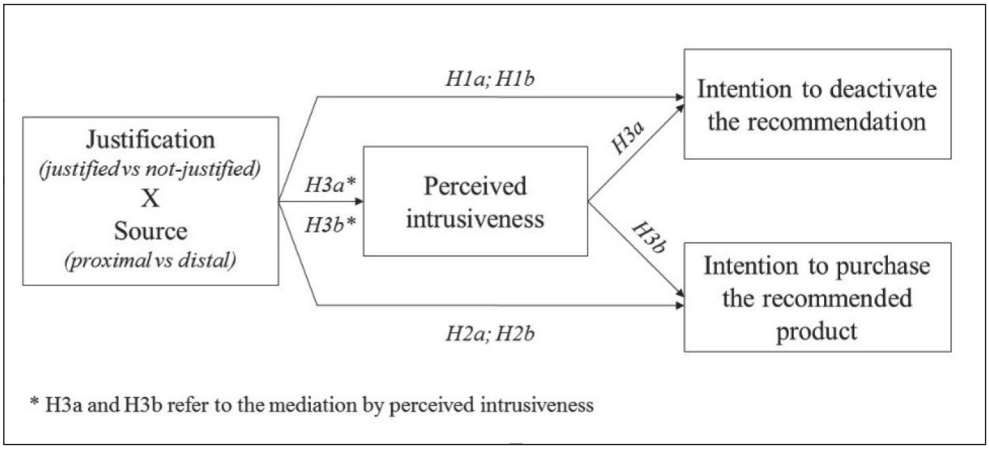

Figure 1: Research model

that similar results would be obtained with perceived intrusiveness. Referring to prior research, perceived intrusiveness appears to be a relevant affective variable to mediate the effects of the interaction between justification and source of a recommendation. The following hypothesis is therefore proposed (See Figure 1 for the research model):

H3: Perceived intrusiveness will mediate the effects of the interaction between justification (justified vs not-justified) and source of a recommendation (proximal vs distal) on **(H3a)** intention to deactivate the recommendation and **(H3b)** intention to purchase the recommended product.

EXPERIMENTAL STUDY

Procedure and participants

A total of 328 participants were enrolled in a 2 (justification: not-justified vs justified) × 2 (source: proximal vs distal) between-subjects factorial experiment (M_{age} = 36.04; SD_{age} = 13.59; 55.2% male). The examined situations included 24 scenarios (2 justifications × 2 sources × 2 respondents' genders × 3 respondent' age ranges) (See Appendix A). Each participant viewed one scenario depicting online navigation by a fictional character, "A" (who matched the participant in age and gender). The scenario began by mentioning that "A" was accustomed to visiting yourtravel.com, a travel agency website, and that he/she had created a personal account on this website. The scenario continued by explaining that on one occasion, "A" booked a weekend trip on this website. Several days later, "A" visited this website to print his/her reservation and encountered a product recommendation (suggesting the purchase of a travel guide). The recommendation source and the justification were varied. Justification was manipulated through the presence (justified condition) or absence (not-justified condition) of a message explaining that the provided recommendation was being offered based on the presented fictional character's previous navigation on yourtravel.com website. The recommendation source was manipulated by exposing a fictional character to a product recommendation issued by yourtravel.com (a proximal source) or by planeteguide.com (a distal source). This manipulation of the recommendation source was pretested with 95 students (M_{age} = 22.68; SD_{age} = 5.25, 32.6%

men) who completed the Inclusion of Others in Self (IOS) scale developed by Aron *et al*. (1992). This scale was used in previous studies to measure interpersonal closeness (e.g., Han *et al*., 2010). This IOS is a single-item pictorial measure designed to capture an individual's sense of identification with another entity (Fisher & Ma, 2014; Baskin *et al*., 2014). Participants selected the diagram that best represented the distance or proximity they perceived between the character depicted in the scenario ("A") and the source of the recommendation (yourtravel.com vs planeteguide.com) using circles that completely separate (measured as 1) to circles that completely overlap (measured as 7). The results of a factorial ANOVA revealed that the two different recommendation sources successfully manipulated social distance; in particular, the perceived distance was shorter if the source was yourtravel.com (proximal) rather than planeteguide.com (distal) ($F(1,91) = 64.772$; $p = .000$; $M_{Proximal\ source} = 3.50$; $M_{Distal\ source} = 1.50$). Neither the manipulation of justification ($F(1,91) = 0.006$; *NS*) nor the interaction between justification and the source of the recommendation ($F(1,91) = 0.023$; *NS*) had a significant effect on the perceived distance.

Purchase intention and intention to deactivate the recommendation were measured using single items: *"A"* would 1) *deactivate the recommendation* and 2) *buy a travel guide recommended by yourtravel.com/planetguide.com* (depending on the experimental condition); these ratings ranged from 1 = "strongly disagree" to 5 = "strongly agree". Perceived intrusiveness was measured by asking participants to evaluate five items (*distracting*, *disturbing*, *intrusive*, *invasive*, *and obtrusive*; $\alpha = .80$) on a five-point scale (1 = "not at all"; 5 = "very much") adapted from Edwards *et al*. (2002) and White *et al*. (2008). The five items are grouped into one underlying factor ($\alpha = 0.801$).

Results and discussion

Effects of the interaction between the two manipulated factors (H1a and H1b)

An ANOVA revealed that neither the justification nor the recommendation source produced a significant main effect. However, the experimental results indicated a significant interaction between justification and the recommendation source with respect to the intention to deactivate the recommendation ($F(1,324) = 10.04$; $p < .05$) and the purchase intention ($F(1,324) = 9.89$; $p < .05$). Follow-up analyses revealed that when the recommendation source was proximal, the intention to deactivate the recommendation was lower (H1a: $M_{Justified} = 2.82$; $M_{Not\text{-}justified} = 3.33$; $F(1,324) = 6.37$; $p < .05$) whereas the purchase intention was higher when the OPR was justified than when it was not-justified (H1b: $M_{Justified} = 2.41$; $M_{Not\text{-}justified} = 1.95$; $F(1,324) = 5.80$; $p < .05$). Analyses also indicated that when the recommendation source was distal (i.e., the recommendation was issued by a partner website), intention to deactivate the recommendation was lower (H2a: $M_{Not\text{-}justified} = 2.92$; $M_{Justified} = 3.30$; $F(1,324) = 3.79$; $p = .053$) and purchase intention was higher (H2b: $M_{Not\text{-}justified} = 2.40$; $M_{Justified} = 2.03$; $F(1,324) = 4.14$; $p < .05$) when the OPR was not-justified than when the OPR was justified (Figures 2 and 3). Taken together, these results confirmed H1a, H1b, H2a and H2b.

Mediation of perceived intrusiveness (H2)

The results indicated a significant effect of the interaction between justification and the recommendation source on perceived intrusiveness ($F(1,324) = 22.27$; $p = .000$). When the recommendation source was proximal, perceived intrusiveness was lower when the OPR was justified than

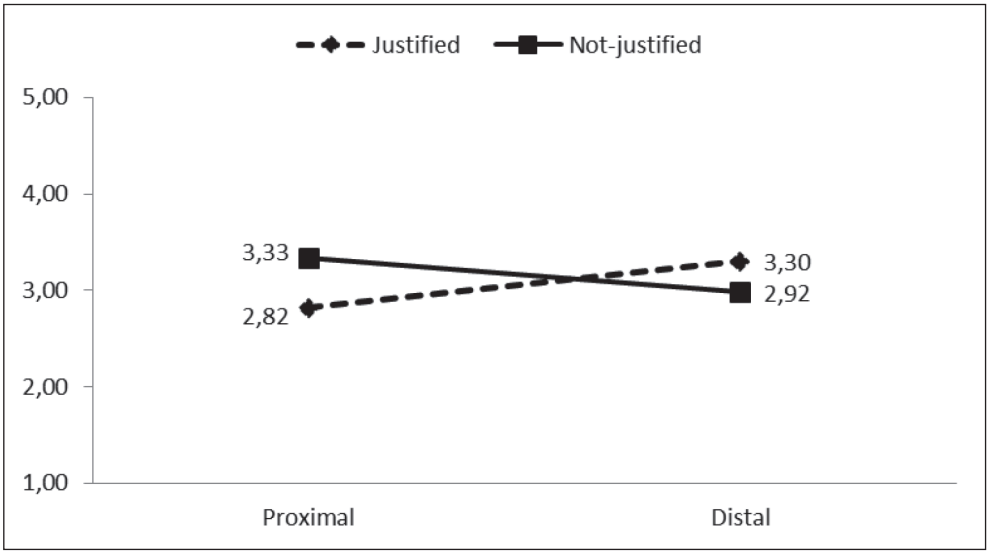

Figure 2: Means of intention to deactivate the recommendation (source by justification)

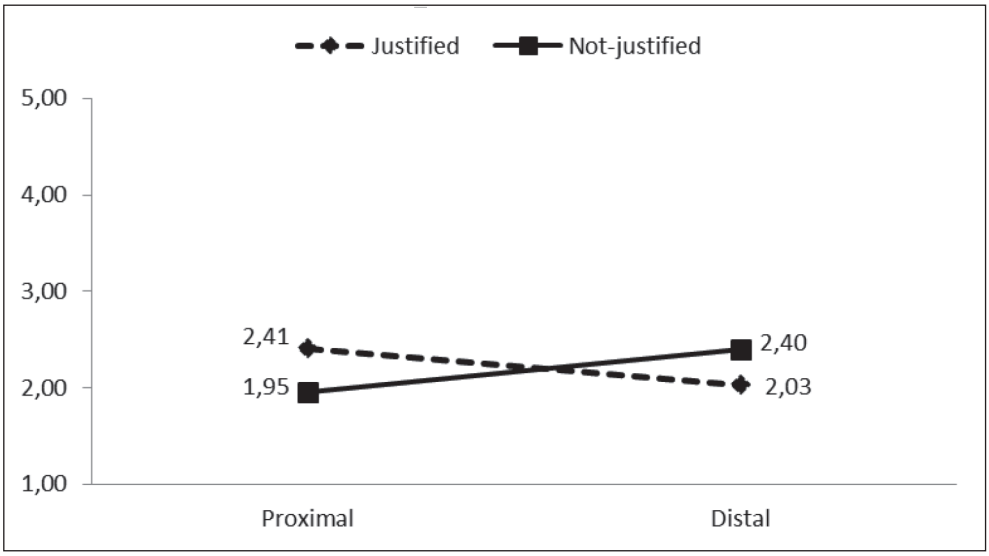

Figure 3: Means of purchase intention (source by justification)

when it was not-justified ($M_{Justified}$ = 2.55; $M_{Not\text{-}justified}$ = 3.19; $F(1,324) = 17.75$; p = .000). However, when the recommendation source was distal, perceived intrusiveness was lower when the OPR was not-justified than when the OPR was justified ($M_{Not\text{-}justified}$ = 2.74; $M_{Justified}$ = 3.10; $F(1,324) = 5.87$; p < .05) (Figure 4).

Given these results, we used the recommended indirect bootstrapping technique to test the mediating role of perceived intrusiveness (Preacher & Hayes, 2004).

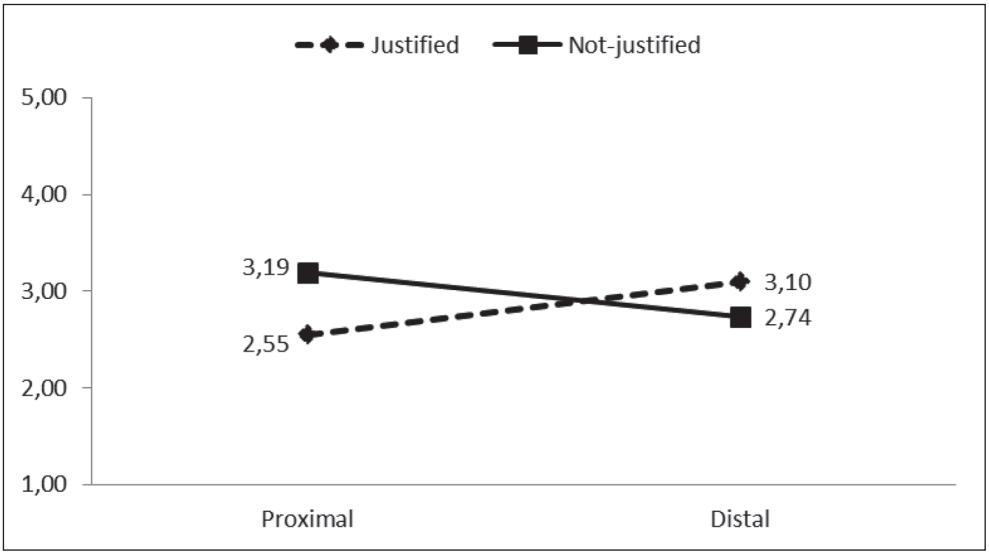

Figure 4: Means of perceived intrusiveness (source by justification)

Analyses revealed that the interaction between the recommendation source and justification had a significant positive indirect effect through perceived intrusiveness on the intention to deactivate the recommendation (H3a: β = -0.261 with a 95 % confidence interval from -0.411 to -0.144) and a significant negative indirect effect through perceived intrusiveness on the purchase intention (H3b: β = 0.245 with a 95 % confidence interval from 0.140 to 0.383). Taken together, these results confirmed H3a and H3b. Preacher and Hayes' "PROCESS" procedure results are presented in Appendices B and C.

These findings extend previous research on OPR by showing that the recommendation source moderates the effect of justification. In line with our predictions, when the recommendation was justified, intention to deactivate the recommendation was lower, purchase intention was higher, and perceived intrusiveness was lower for a proximal source of OPR. However, when the recommendation was not-justified, intention to deactivate the recommendation was lower, purchase intention was higher, and perceived intrusiveness was lower for a distal source of OPR. In addition, this experiment demonstrated that perceived intrusiveness mediated the effects of the interaction between justification and the recommendation source. Table 1 summarizes hypothesis testing results.

DISCUSSION

In accordance with our predictions, the results of our experiment demonstrated that when the recommendation source is proximal, superior effects are achieved if the recommendation is justified than if it is not-justified. Precisely, intention to deactivate the recommendation is lower and purchase intention is higher. In contrast, for a distal recommendation source, better results are achieved if no justification is provided than if the justification for the

Hypotheses	Results
H1a: When the recommendation is issued by a **proximal source**, intention to deactivate the recommendation will be lower (vs higher) when the recommendation is **justified** (vs not-justified).	$M_{Justified} = 2,82$ $M_{Not\text{-}justified} = 3,33$ (supported)
H1b: When the recommendation is issued by a **proximal source**, intention to purchase the recommended product will be higher (vs lower) when the recommendation is **justified** (vs not-justified).	$M_{Justified} = 2,41$ $M_{Not\text{-}justified} = 1,95$ (supported)
H2a: When the recommendation is issued by a **distal source**, intention to deactivate the recommendation will be lower (vs higher) when the recommendation is **not-justified** (vs justified)	$M_{Justified} = 3,30$ $M_{Not\text{-}justified} = 2,92$ (supported)
H2b: When the recommendation is issued by a **distal source**, intention to purchase the recommended product will be higher (vs lower) when the recommendation is **not-justified** (vs justified).	$M_{Justified} = 2,03$ $M_{Not\text{-}justified} = 2,40$ (supported)
H3a: Perceived intrusiveness will mediate the effects of the interaction between justification (justified vs not-justified) and source of a recommendation (proximal vs distal) on intention to deactivate the recommendation.	$\beta = -0,261$ IC = [-0,411 – -0,144] (supported)
H3b: Perceived intrusiveness will mediate the effects of the interaction between justification (justified vs not-justified) and source of a recommendation (proximal vs distal) on intention to purchase the recommended product.	$\beta = 0,245$ IC = [0,140 – 0,383] (supported)

Table 1. Summary of hypothesis testing results

recommendation is explained to the user. The effects observed in this experiment were mediated by perceived intrusiveness, which increased when justification (present vs absent) did not match the recommendation source (proximal vs distal).

Despite all the precautions taken, this research is not exempt of limitations. Indeed, the proposed research model focuses on intention to purchase the recommended product but does not take into account the impact of the OPR on intention to reuse the website (Choi *et al*., 2011), user perceptions of the website recommendation system (Ochi *et al*., 2010) and on trust toward the website and/or the recommendation system (Dabholkar & Sheng, 2011; Wang & Benbasat, 2016; Wang *et al*., 2016).

Theoretical contributions

There is an increasing interest among researchers to deepen understanding of the relationships between web stimuli – in particular online recommendations – and a user's behavior and decision making (Tam & Ho, 2006). The present study contributes to extant research in three main ways. First, it enriches literature on the "personalization paradox", which refers to the divergent outcomes that may result from exposing a consumer to a personalized stimulus (Aguirre *et al.,* 2015). Some past results have shown that the use of recommendation agents has a positive impact on consumers' satisfaction and unplanned purchases (Tam & Ho, 2006; Holster *et al.,* 2011). Other studies demonstrated that websites should take precautions when

using recommendations, such as explaining how the use of consumer's personal information is relevant to the personalized offer (Doorn & Hoekstra, 2013; White *et al*., 2008) and, more recently, introducing a perception of control among consumers (Tucker, 2014) to avoid potential negative effects of OPRs. This study reconciles this debate by identifying the conditions under which online product recommendations may produce positive effects.

Second, this investigation contributes to enrich the construal level theory and social distance literatures (Liviatan *et al*., 2008). Despite its interest, this theoretical framework has rarely been mobilized in Information Systems research (Kankanhalli, Ye & Teo, 2015). The CLT and, more specifically, the concept of social distance, have already given rise to some studies in marketing contexts such as peer recommendations (Zhao & Xie, 2011), humanitarian causes (Ein-Garn & Levontin, 2013) or gift giving (Baskin *et al*., 2014). These studies have shown that users react differently to a marketing stimulus depending on the level of representation induced by the social distance they perceived between themselves and the individuals presented in the stimulus. Our research extends the scope of these findings to online recommendation of products. To the best of our knowledge, this study is the first investigation to address and provide evidence for the concept that the source of an OPR may be regarded as an operationalization of social distance.

Third, our results validate an underlying mechanism involving mediation by perceived intrusiveness, a mediator that has been proven to make sense in the context of online advertising (Doorn & Hoekstra, 2013; Edwards *et al*., 2002; Mc Coy *et al*., 2008, 2016; White *et al*., 2008;). Some works (e.g., Awad & Krishnan, 2006) that investigated the mechanisms underlying negative reactions to personalized stimuli focused on cognitive phenomena such that users evaluate the benefits and disadvantages of allowing firms to use their personal data. In contrast, other studies, such as Aguirre *et al*. (2015), demonstrate that reactions to online personalized strategies rely on more instantaneous mechanisms for the formation of attitudes and opinions with respect to personalized stimuli by highlighting the prominent role of affective variables. Our results complement this line of research by demonstrating that perceived intrusiveness mediates the impact of the interaction between justification and the source of a recommendation on users' reactions.

Managerial implications

From a managerial perspective, these findings are useful for practitioners involved in online transactions with users. Due to the rapid growth of e-commerce, purchasing decisions are increasingly made in online environments. As forecasted by Forrester Research, US online retail sales will rise up to $480 billion by 2019. Personalization is a strategy that has been extensively used by merchant websites, as well as by mobile applications providers, to differentiate in an increasingly competitive environment (Sutanto *et al*., 2013). Although e-companies, such as Amazon.com, are heavily using OPRs for their customers, little is known regarding how these recommendations should be presented on a website (Wang & Benbasat, 2007). This is important because a number of companies, such as Urban Outfitters, have already incurred the consequences of not taking enough precautions when launching personalized actions toward users (Aguirre *et al*., 2015).

Our results provide evidence that justifying personalized recommendations

is necessary if recommendations are presented and issued by a website with which a user has previously interacted (by navigating and/or purchasing from the website in question). Nevertheless, these results indicate that the use of justification may also backfire and result in negative responses from users. Consequently, if a company proposes additional products to users through a partnership, the company will achieve superior results if these recommendations are not-justified, despite the fact that this approach is not consistent with commonly held intuitions regarding recommendations.

CONCLUSION

The objectives of this research were to understand how an OPR should be presented to users. The first objective was to extend the results of White *et al*. (2008) by examining the effects of justification in the context of recommendations communicated via a website through online personalized recommendations (OPRs) and to understand whether justification is required for an OPR. More precisely, referring to construal level theory (CLT) and social distance (Liviatan *et al*., 2008), the effects of justification depending on the recommendation source (proximal vs distal) were examined. This research suggested and showed that the effects of the interaction between justification and the recommendation source were mediated through perceived intrusiveness, lower in the proximal/justified and distal/not-justified conditions than in the proximal/not-justified and distal/justified conditions.

Ultimately, these findings raise several questions for further research. First, this study focused on a specific dimension of psychological distance, namely, social distance. Temporal distance, which has been extensively studied in the context of marketing (e.g., Goodman & Malkoc, 2012), could be examined in future research. In particular, Köhler *et al*. (2011) have demonstrated that temporal distance moderates the effects of interactive decision aids (IDAs). In the future, it could be relevant to extend the scope of these results to the form of recommendation studied in our research, namely online personalized recommendation.

Second, despite the careful creation of the scenarios in this study, the simulations used in the experiments of this investigation do not reproduce actual Internet browsing situations. To enhance the external validity of the findings of this study, it may be useful to replicate these results in a real-world context. The use of an actual website would also allow us to measure actual purchasing behaviors, since self-reported measurement of purchase intention may be poorly representative of real behavior. Third, it would be desirable to investigate the extent to which the findings of this study can be generalized to other forms of recommendations. Personalized recommendations formulated on social networking sites, such as on Facebook, designed as a social network for friendship, would be a particularly interesting type of recommendation to examine.

Finally, some individual variables could be considered in future investigations, since they could moderate the effects observed in this research, including individuals' self-view. In particular, individuals with an independent (vs interdependent) self-view are characterized by a greater need for differentiation (Ma *et al*., 2014) and are more likely to use a higher construal level when processing information (Spassova & Lee, 2013). It is therefore highly likely that these two profiles react differently to the forms of personalized recommendation studied in our research.

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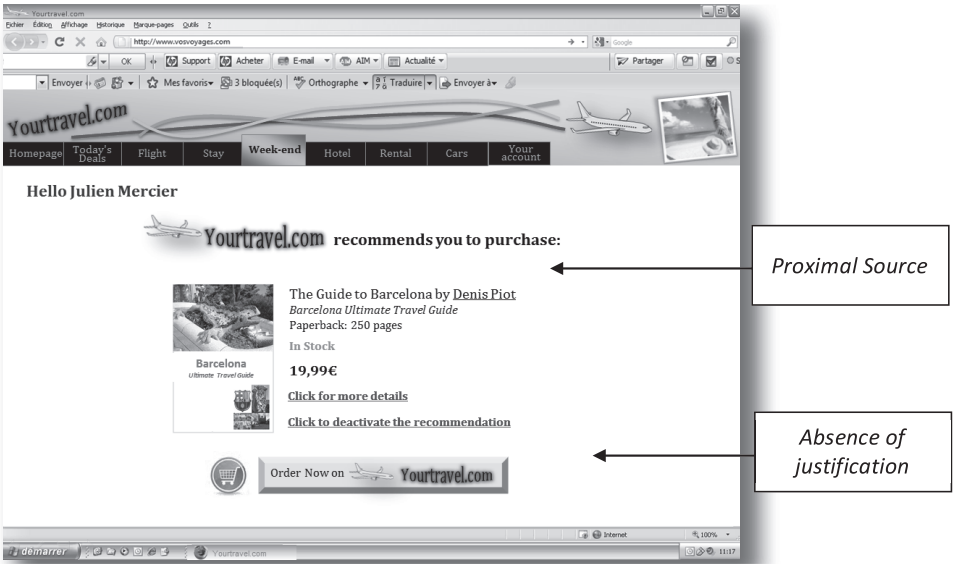
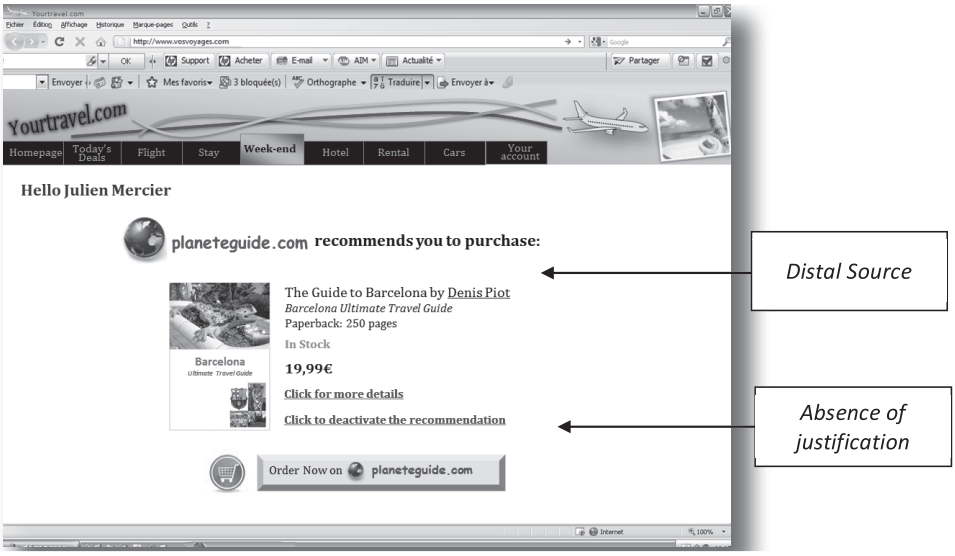
APPENDIX A. STIMULI USED IN THE EXPERIMENT (TWO FACTORS WERE MANIPULATED: 2 JUSTIFICATIONS X 2 SOURCES OF THE RECOMMENDATION)

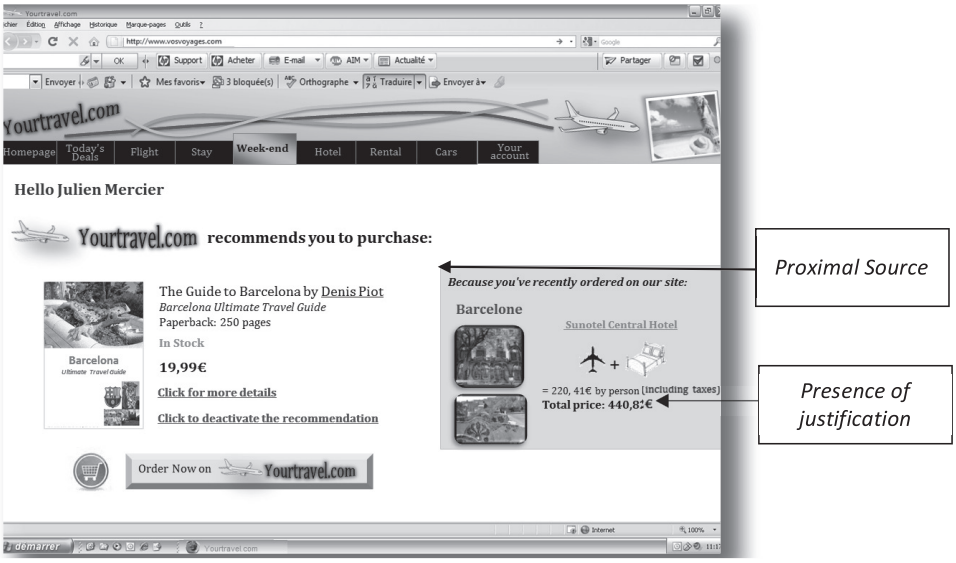
Proximal / Not-justified



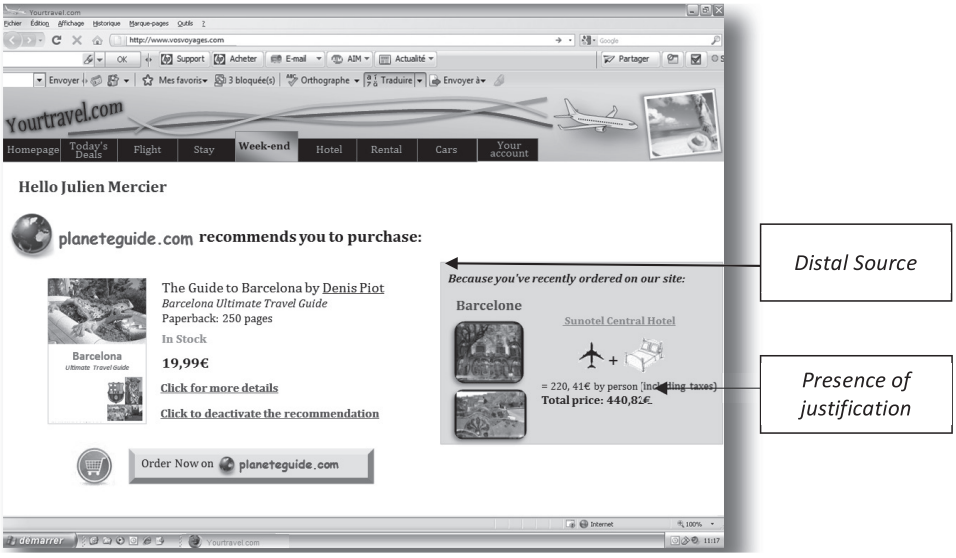
Distal / Not-justified



Proximal / Justified



Distal / Justified



APPENDIX B. PREACHER AND HAYES' "PROCESS" PROCEDURE RESULTS

Y = Purchase intention or Intention to deactivate; X = Interaction between justification and source of a recommendation; M = perceived intrusiveness. Number of bootstrap samples for bias corrected bootstrap confidence intervals: 5000

		Perceived intrusiveness (M)				**Intention to purchase of the recommended product (Y)**				**Intention to deactivate the recommendation (Y)**		
Antecedent		**Coefficient**	**Standard error**	*p*		**Coefficient**	**Standard error**	*p*		**Coefficient**	**Standard error**	*p*
Interaction (X = Justification * Source)	*a*	-0.497	0.107	0.000	*c'1*	0.167	0.124	0.180	*c'2*	-0.186	0.134	0.167
Perceived intrusiveness (M)		--	--	--	*b1*	-0.494	0.062	0.000	*b2*	0.525	0.068	0.000
Constant	*i*	3.145	0.074	0.000	*i1*	3.541	0.214	0.000	*i2*	1.665	0.231	0.000
		$R^2 = 0.063$				$R^2 = 0.186$				$R^2 = 0.181$		
		$F(1,326) = 21.734$; $p = 0.000$				$F(2,325) = 37.149$; $p = 0.000$				$F(2,325) = 36.005$; $p = 0.000$		

Indirect effect of X (Justification * Source) on Intention to purchase the recommended product = 0.245 (with a 95% confidence interval from 0.140 to 0.383)

Indirect effect of X (Justification * Source) on Intention to deactivated the recommendation = -0.261 (with a 95% confidence interval from -0.411 to -0.144).

APPENDIX C. DIRECT AND INDIRECT EFFECTS OF THE INTERACTION BETWEEN JUSTIFICATION AND SOURCE OF A RECOMMENDATION