



Journal of Research in Interactive Marketing

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Article information:

To cite this document:

Larissa Carine Becker, Cristiane Pizzutti, (2017) "C2C value creation: social anxiety and retail environment", Journal of Research in Interactive Marketing, Vol. 11 Issue: 4, pp.398-415, <https://doi.org/10.1108/JRIM-10-2016-0106>

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C2C value creation: social anxiety and retail environment

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Received 17 October 2016
Revised 16 December 2016
13 March 2017
10 April 2017
12 April 2017
Accepted 12 April 2017

Abstract

Purpose – Most customers want to interact, whether on social networks or on company websites. This study aims to examine the relationship between customer-to-customer (C2C) interaction and value, considering the roles of social anxiety and the retail environment.

Design/methodology/approach – This paper presents three written-scenario experimental studies, where C2C interaction and the retail environment are manipulated, and social anxiety levels are measured. The settings and the measures are changed across the experiments to increase the results' validity.

Findings – A three-way interaction among C2C interaction, social anxiety and retail environment has impacts on experience value and other value-related variables (satisfaction and positive mood). In the offline retail environment, as social anxiety levels increase, the effects of C2C interaction on these variables become weaker. In the online retail environment, as social anxiety levels increase, these effects become stronger.

Research limitations/implications – This paper contributes to the literature in three ways. First, it investigates the downside of positive C2C interactions when considering social anxiety and the retail environment where they occur. Second, this paper amplifies the literature about value by extending it to other consumers who can affect the service experience. Finally, this study explores online C2C interaction in a retail environment, an aspect that has been neglected in the research about online interactions.

Practical implications – This paper suggests strategies to manage C2C interaction for customers of varying levels of social anxiety in offline and online retail environments to maximise value for them.

Originality/value – This paper challenges the widespread idea that a positive C2C interaction always leads to value. By considering social anxiety and the retail environment in C2C literature, this paper explains why and when it is a false notion.

Keywords Online shopping, Channels, Computer-mediated environments, C2C interaction, Value, Social anxiety

Paper type Research paper

1. Introduction

Online interaction among customers is a reality. Most customers want to interact, whether on social networks or on company websites. This paper explores customer-to-customer (C2C) interaction in offline and online retail environments and explains why some customers prefer to interact online instead of face-to-face in a brick-and-mortar retail store.

Previous research has shown that C2C interaction influences the shopping experience and is considered a common activity, not only in brick-and-mortar stores but also in online

The authors thank the reviewers for the suggestions to improve this paper. They also thank Cristiane Stocco, Cláudio Belé and Rafael Lionello for their participation in the photos for the experiments.



shopping environments (Gruen *et al.*, 2007; Harris and Baron, 2004; McGrath and Otnes, 1995). Nonetheless, C2C interaction was a neglected area until Martin and Pranter (1989) published their work (Raajpoot and Sharma, 2006) – which emphasised other customers' importance to satisfaction with service encounters – yet much of the online C2C interaction remains hardly explored (Nicholls, 2010).

Some authors suggest that a customer can co-create value with another customer through C2C interaction (Helkkula and Kelleher, 2010; Schau *et al.*, 2009; Vargo and Lusch, 2004). However, according to Rihova *et al.* (2014), researchers have not paid enough attention to the value that emerges among customers. Jaakkola *et al.* (2015) also suggest that scarce attention has been paid to the emerging and relevant topic of social interactions in the marketplace.

Furthermore, despite evidence that C2C interaction could result in value to customers, it might not be beneficial to all of them. In fact, some authors have already identified C2C behaviours that result in worse service experiences (Grove and Fisk, 1997; Martin, 1996). However, generally, the literature posits that when a positive C2C interaction occurs, such as conversations and handshaking, it results in value for customers (Harris and Baron, 2004). To the authors' best knowledge, only a few studies have focused on the possible negative effects of a positive C2C interaction on customers, and none of the research has addressed social anxiety as an individual trait that could influence the relationship between C2C interaction and value. In this regard, this paper proposes social anxiety as a moderator of the relationship between C2C interaction and value.

Despite social anxiety being the third most common psychological disorder in the USA (Richards, 2016) and severely affecting 6.8 per cent of its population (Anxiety and Depression Association of America, 2016), this variable has been neglected in the marketing literature. It is known that people with high levels of social anxiety prefer to interact on the internet (Caplan, 2007). C2C interaction could be a basis for value emerging among customers, but this would depend on each customer's social anxiety level and on the retail environment where it happens. Hence, this study examines the relationship between C2C interaction and value, considering the roles of social anxiety and the retail environment.

This article contributes to the literature in three ways. First, it investigates the downside of positive C2C interactions when considering social anxiety and the retail environment where they occur. To the authors' best knowledge, this paper is the first to propose and empirically test a three-way interaction among C2C interaction, social anxiety and the retail environment. Second, this paper amplifies the literature about value by extending it to other consumers who can affect the service experience. Finally, this study explores online C2C interaction in a retail environment, an aspect that has been neglected in the research about online interactions, which has focused mainly on social media or online brand communities.

This article is organised as follows. Section 2 draws on the literature about C2C interaction and value, as well as psychological theories about social anxiety to formulate the hypothesis. Sections 3 – 5 present three experimental studies with different scenarios that test the hypothesis. In Section 6, the final considerations are offered, including theoretical and managerial implications, along with limitations and suggestions for future studies.

2. Theoretical background

2.1 C2C interaction and value

Interactions among customers in the retail environment are common and can influence the retail experience (Harris and Baron, 2004; Martin, 1996; McGrath and Otnes, 1995). However, C2C interaction occurs not only in physical environments but also in online retail environments, the so-called C2C virtual interaction (Nicholls, 2010). On the basis of an

extensive literature review, this article defines C2C interaction as the social interaction among customers who have not previously known one another, individually or in a group, in real-time and in offline or online retail environments (Libai *et al.*, 2010; Liu and Shrum, 2002; Martin and Clark, 1996; Nicholls, 2010). This definition explicitly excludes interactions between customers and their companions whom they may bring to a store. Because the interaction is also restricted to the real-time type, online reviews and ratings, for example, are excluded. Finally, because this interaction occurs in the retail environment (online or offline), interactions in social media and communities outside a retailer's website, for instance, are disregarded as well.

Several studies suggest a causal relationship between C2C interaction and value although none has tested it so far. For example, Vargo and Lusch (2004) propose that value is derived from the application of operant resources – those that produce effects and act on other resources. Because customers are considered operant resources, they are always regarded as value co-creators (Vargo and Lusch, 2008). Gruen *et al.* (2007) find that exchanges among customers have a positive impact on value creation. Jue (2007) also shows that C2C interaction increases instrumental and expressive value. In the online context, Schau *et al.* (2009) find value creation practices in brand communities, with some of these practices creating value for customers. On the basis of these findings, it is plausible to think that C2C interaction can increase value for customers.

This paper posits that the C2C interaction depends on the behaviour of two customers (i.e. interacting with each other) and that this interaction creates value for them. Most studies posit value in terms of benefits for customers (Helkkula and Kelleher, 2010; Jaakkola and Alexander, 2014). This article uses experience value, comprising social (related to social improvement), epistemic (related to the sense of well-being, e.g. authentic experience and satisfying curiosity) and functional (e.g. value for money and quality) value (Prebensen *et al.*, 2013) and other value-related variables, such as satisfaction and mood as proxies for value. However, this paper proposes that the increase in these variables due to C2C interaction does not occur for all customers.

2.2 Social anxiety and retail environment

Social anxiety can influence the relationship between C2C interaction and value. Watson and Friend (1969) define social anxiety as an experience of discomfort, affliction, fear and anxiety during social situations, as well as avoidance of these situations and fear of negative evaluation by other people. According to the latest edition of the Diagnostic and Statistical Manual of Mental Disorders, an individual is diagnosed with social anxiety if he or she feels extreme discomfort or fear in a variety of social situations (American Psychiatric Association, 2013).

Everyone has an estimation of other people's evaluation about his or her appearance, behaviour and other characteristics, but this perception emerges periodically when attention is directed to oneself (Trower and Gilbert, 1989). However, for people with higher levels of social anxiety, this perception is constantly present, meaning that they feel that other people are always evaluating them (Trower and Gilbert, 1989). Socially anxious people believe that they cannot achieve their self-presentation goals. In other words, they think that they create an undesirable impression on others (Schlenker and Leary, 1982). Consequently, these people cannot obtain the benefits of a social interaction (Leary and Kowalski, 1997; Trower and Gilbert, 1989).

However, this downside of social interaction seems to exist only in offline environments. In fact, evidence indicates that people with higher levels of social anxiety prefer to interact in

online environments (Caplan, 2007; Young and Lo, 2012). Young and Lo (2012, p. 79) present four reasons for this preference, as follows:

- (1) absence of physical cues;
- (2) temporal flexibility (e.g. more time to think about an answer in this environment),
- (3) anonymity; and
- (4) communication error attributed to external factors.

In an offline environment, such as in a physical store, socially anxious people would lack the means to control how they present themselves to other people in case an interaction is started. Conversely, an online environment allows customers to control how they present themselves to others in an interaction, making it easier for extremely socially anxious people to achieve their self-presentation goals (Caplan, 2007; Leary and Kowalski, 1997).

Researchers have found evidence of people controlling how they present themselves in an online environment. For example, Zhao *et al.* (2008) find that people tend to present “hoped-for possible selves” on Facebook, while Massara *et al.* (2012) note that people on Second Life tend to give more socially desirable answers in a survey than an offline sample does. Finally, Langhe *et al.* (2016) also observe that online user ratings do not actually reflect measures of objective quality. This literature is consistent with the social compensation hypothesis (McCord *et al.*, 2014), which posits that “individuals higher in social anxiety are motivated to seek social encounters that minimize fear of negative evaluation, which in turn would result in an increase in perceived self-presentational efficacy” (Fernandez *et al.*, 2012, p. 707).

On the basis of this rationale, this paper proposes an effect of a three-way interaction among C2C interaction, social anxiety and the retail environment on value. In an offline environment, customers with low social anxiety levels would feel comfortable interacting with other customers and would perceive the benefits of the social interaction. Conversely, people with high social anxiety levels would not perceive these benefits. On the other hand, in an online retail environment, people with high social anxiety levels would perceive the benefits of an interaction because they prefer to interact in this environment and can control how they present themselves to others, reducing the source of social anxiety (Schlenker and Leary, 1982). Therefore, it is hypothesised:

H1. A three-way interaction among C2C interaction, social anxiety and the retail environment impacts on consumer value.

H1a. In an offline retail environment, higher social anxiety levels weaken the effects of C2C interaction on consumer value.

H1b. In an online retail environment, higher social anxiety levels strengthen the effects of C2C interaction on consumer value.

3. Study 1

In Study 1, the hypothesis was tested in a music store scenario. Social value, a dimension of experience value which could be considered an obvious consequence of C2C interaction, was used as dependent variable. It made the test of the hypothesis more conservative, as it was expected that this would not hold true for all customers.

3.1 Participants and design

This study employed a 2 (C2C interaction vs no interaction) \times 2 (offline vs online retail environment) factorial design. Social anxiety levels were measured. Of the 311 participants

who were recruited through Mechanical Turk, 49 participants who incorrectly answered the instructional manipulation check were excluded. This check was assessed by an item that asked which type of music the participants usually listened to, followed by an instruction to check “others” and write “project”. [Oppenheimer et al. \(2009\)](#) created this tool to identify the participants who did not pay attention to the instructions. The authors claim that the experiment’s statistical power and the data’s reliability and validity increase by excluding these participants. Three outliers from the sample were also excluded, identified by the Z value. The final sample comprised 259 participants (55.8 per cent male, with a mean age of 35.43 years).

3.2 Stimulus and procedure

Before the experiment, a pretest was conducted through Mechanical Turk ($n = 74$). The manipulations were effective, the participants perceived the scenarios as real and no demand effects were identified.

The participants were instructed to imagine that they were looking for a birthday gift for a friend. Searching for gifts is a typical situation in which customers interact ([McGrath and Otnes, 1995](#)). In the conditions without C2C interaction, the information provided was that the participant was searching for a vinyl record in a specialised physical (vs virtual) store. A picture of the store (vs website) with a vinyl record was presented. In the conditions with C2C interaction, the participant saw other customers in the store (vs saw that he or she could communicate with other customers online) and was told that one of them approached him or her and started a nice conversation about bands and singers. A picture with a male customer approaching the participant was presented in both scenarios. It was decided that the pictures would be shown to activate social anxiety in those participants who were highly anxious. Additionally, in the scenarios, the other customer approached the participant; otherwise, it would be an unrealistic situation for a socially anxious participant.

The two realism items were averaged into an overall realism index ($r = 0.79, p < 0.001$). The realism index ($M = 5.79, SD = 1.16$) was significantly above the scale midpoint overall ($p < 0.001$) and within each of those of the four conditions (all $p < 0.001$).

3.3 Measures

To measure value, the social value scale from the study of [Prebensen et al. \(2013\)](#) was adapted. The four items ($M = 4.53, SD = 1.37$) presented factorial loadings from 0.89 to 0.94 ($\alpha = 0.93$). The social avoidance and distress (SAD) scale, proposed by [Watson and Friend \(1969\)](#), was used to measure social anxiety levels. The 28 items ($M = 3.72, SD = 1.35$, with approximately 6 per cent of the participants scoring 6 or higher) presented factorial loadings from 0.53 to 0.87 ($\alpha = 0.98$). As a control variable, control of self-presentation was measured with a scale adapted from the literature ([Leary and Kowalski, 1997](#); [Schlenker and Leary, 1982](#)). The five items ($M = 4.94, SD = 1.15$) presented factorial loadings from 0.68 to 0.86 ($\alpha = 0.85$). The manipulation check for the C2C interaction involved a multiple-choice item – “Did another customer talk to you in the situation described?” – with “yes”, “no” or “I do not remember” options. The manipulation check for the retail environment was a multiple-choice question with three options – offline, online or other. The realism was measured by two items:

- (1) “The situation presented seemed to be real”; and
- (2) “I can imagine myself in the situation presented”.

All interval scales comprised seven points each. This study measured variables in the following order: demographics, control of self-presentation, social value, manipulation checks and realism.

3.4 Results

The manipulation checks showed the manipulations as effective. Regarding C2C interaction, 94.2 per cent of the participants who read the scenario without the interaction and 92.6 per cent of those who read the scenario with the interaction correctly indicated its absence or presence, respectively ($\chi^2 = 213.558, p < 0.001$). Regarding the retail environment manipulation, 96.2 per cent of the participants assigned to the offline condition and 88.2 per cent of those designated to the online condition indicated the type of environment correctly ($\chi^2 = 186.166, p < 0.001$).

Model 3 of PROCESS for SPSS and bootstrapping procedures (re-sampling techniques to estimate paths, which do not have assumptions about the distribution of data) were used to test the hypothesis (Hayes, 2013). Model 3 consists of the path from an independent (e.g. C2C interaction) to a dependent variable (e.g. social value), moderated by a third variable (e.g. social anxiety), and with the path from the moderator to the main effect moderated by a fourth variable (e.g. the retail environment). It calculates the effect of the three-way interaction among C2C interaction, social anxiety and the retail environment on social value.

As predicted in H1, the findings showed an effect of the three-way interaction of C2C interaction, social anxiety and the retail environment on social value ($B = 0.60, se = 0.20, t = 2.92, p < 0.01$). In the offline environment, C2C interaction had a positive and significant effect on value only for customers with low social anxiety levels. As social anxiety levels increased, the effect became weaker (and insignificant), supporting H1a. Conversely, in the online retail environment, C2C interaction had a positive effect on social value only for people with high social anxiety levels, as predicted. As social anxiety levels increased, the effect of C2C interaction on value became stronger, supporting H1b. The significant effects are presented in italics font in Table I. The researchers controlled for the effect of self-presentation control on social value ($B = 0.71, se = 0.06, t = 10.99, p < 0.001$).

The Johnson-Neyman technique was used to show at what level of social anxiety the effect of C2C interaction on value would become (in)significant. Model 1 of PROCESS was tested separately for the online and the offline environments. In this model, floodlight analysis (i.e. a technique that identifies simple effects on all possible values of the moderator variable – social anxiety) was used, recommended for interval moderator variables and

Retail environment	Social anxiety	Effect	Standard error	<i>t</i>	<i>p</i>	LLCI ^a	SLCI ^b
<i>Offline</i>	<i>1.89</i>	<i>0.84</i>	<i>0.34</i>	<i>2.47</i>	<i>0.01</i>	<i>0.17</i>	<i>1.50</i>
	<i>2.64</i>	<i>0.62</i>	<i>0.26</i>	<i>2.42</i>	<i>0.02</i>	<i>0.11</i>	<i>1.13</i>
	3.82	0.28	0.20	1.41	0.16	-0.11	0.68
	4.61	0.06	0.24	0.23	0.82	-0.41	0.52
	5.50	-0.20	0.33	-0.61	0.54	-0.85	0.45
<i>Online</i>	<i>1.89</i>	<i>-0.34</i>	<i>0.32</i>	<i>-1.05</i>	<i>0.30</i>	<i>-0.98</i>	<i>0.30</i>
	<i>2.64</i>	<i>-0.11</i>	<i>0.25</i>	<i>-0.44</i>	<i>0.66</i>	<i>-0.60</i>	<i>0.38</i>
	3.82	0.26	0.20	1.30	0.19	-0.13	0.64
	<i>4.61</i>	<i>0.50</i>	<i>0.23</i>	<i>2.16</i>	<i>0.03</i>	<i>0.04</i>	<i>0.96</i>
	<i>5.50</i>	<i>0.78</i>	<i>0.32</i>	<i>2.45</i>	<i>0.02</i>	<i>0.15</i>	<i>1.40</i>

Table I.
Simple effects of C2C interaction on social value

Notes: ^aLower limit of confidence interval; ^bSuperior limit of confidence interval

individual difference scales (Spiller *et al.*, 2013). Figure 1 presents the simple effects of C2C interaction on value and the confidence interval limits (y-axis) at many levels of social anxiety (x-axis) on the offline and the online retail environments. The red line indicates the social anxiety level at which the effect becomes (in)significant. In the offline retail environment, the effect of C2C interaction on value was positive and significant for customers who presented social anxiety levels up to 3.65. In the online retail environment, the effect of C2C interaction on value was positive and significant only for customers with social anxiety levels above 4.40.

3.5 Discussion

This study tested and confirmed the hypothesis concerning the effects of the three-way interaction among C2C interaction, social anxiety and the retail environment on social value. Additionally, these effects were explained – whereas in the offline retail environment, higher social anxiety levels weakened the effect of C2C interaction on social value, in the online retail environment, the opposite occurred as expected.

However, it could be argued that the results would not be generalisable to other contexts. Moreover, in this study, the measure of social value as a dependent variable of C2C interaction was somewhat obvious and could have biased the results. However, if that was the case, the positive effect of C2C interaction on social value would have appeared regardless of the social anxiety level and the retail environment. The researchers conducted a second study to overcome these limitations.

4. Study 2

This experiment focused on three main points. First, a bookstore scenario was chosen. In McGrath and Otnes’(1995) study, the bookstore was the context with the least C2C interaction. Second, the dependent variable was changed to satisfaction, a value-related variable. In this manner, the same hypothesis as in Study 1 was tested, but in this case, the relationship between C2C interaction and value was much less obvious due to the conservative setting and the different measure (satisfaction), thus reducing the limitations of Study 1. According to Calder *et al.* (1982), the two mentioned points also increase external validity, considering that the causal relationship could prevail among different settings and

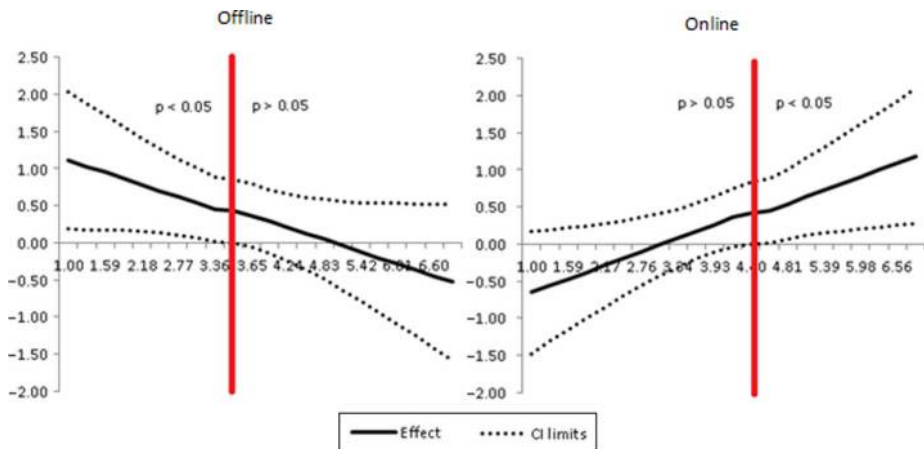


Figure 1. Effects of C2C interaction on social value at different levels of social anxiety

measures. Third, in Study 1, in the C2C interaction conditions, all participants interacted with a male consumer. In this study, the researchers controlled for this variable, as explained in Section 4.2.

4.1 Participants and design

Similar to Study 1, a 2 (C2C interaction vs no interaction) \times 2 (offline vs online retail environment) factorial design was employed and social anxiety levels were measured. The sample was composed of 335 participants who were recruited through Mechanical Turk. The researchers excluded 57 participants who incorrectly answered the instructional manipulation check, as well as 14 outliers, using the same criteria as in Study 1. The final sample comprised 264 participants (59.5 per cent male, with a mean age of 33.32 years).

4.2 Stimulus and procedure

Before the experiment, a pretest was conducted through Mechanical Turk ($n = 82$). The manipulations were effective, the scenarios were perceived as real and no demand effects were identified.

The participants were instructed to imagine that they were looking to buy a book as a birthday gift for a friend. In the conditions without C2C interaction, the participant searched for the book alone in the physical (vs virtual) store and found it. A picture of the store (vs virtual store) with the book was presented. In the conditions with C2C interaction, the participant saw other customers in the store (vs saw that he or she could communicate with other customers who were online), one of whom approached him or her and started a conversation about books and the store (vs website). A picture in which the other customer was approaching the participant was presented. In this study, to control for gender and to activate social anxiety, the participants who were assigned to C2C interaction scenarios saw pictures of opposite gender customers.

The realism ratings were averaged into an overall realism index ($r = 0.82, p < 0.001$). The realism index ($M = 5.60, SD = 1.34$) was significantly above the scale midpoint overall ($p < 0.001$) and within each of those of the four conditions (all $p < 0.001$).

4.3 Measures

To measure satisfaction levels, the researchers asked the participants, "How satisfying was this shopping experience to you?" (Sirdeshmukh *et al.*, 2002) ($M = 5.39, SD = 1.23$). The scale of social anxiety was the same as that used in Study 1. Its 28 items ($M = 3.74, SD = 1.39$, with approximately 6 per cent of the participants scoring 6 or higher) presented factorial loadings from 0.54 to 0.91 ($\alpha = 0.98$). The manipulation check for the C2C interaction was measured by the multiple-choice item "Another customer has interacted with me". The manipulation check for the retail environment and the realism questions were the same as those used in Study 1. The researchers also measured a control variable, which asked for the participants' preference for shopping in an online or a physical store, but this variable was not correlated with the dependent variable and was thus not included in the models (Hair *et al.*, 2009). All interval scales comprised seven points each. Study 2 measured variables in the following order: satisfaction, manipulation checks and realism, social anxiety and control variable.

4.4 Results

The manipulations were effective. Concerning C2C interaction, 90.5 per cent of the participants who read the scenario without the interaction and 96.1 per cent of those who

read the scenario with the interaction correctly indicated its absence or presence, respectively ($\chi^2 = 229.358, p < 0.001$). Regarding the retail environment manipulation, 95.5 per cent of the participants assigned to the offline condition and 98.5 per cent of those designated to the online condition answered the check correctly ($\chi^2 = 236.869, p < 0.001$).

The researchers used the same statistical procedures as those in Study 1. The findings showed a significant effect of the three-way interaction among C2C interaction, social anxiety and the retail environment on satisfaction ($B = 0.53, se = 0.21, t = 2.46, p < 0.05$). The same pattern of results as those of Study 1 was found (Table II). In the offline retail environment, C2C interaction had a positive and significant effect on satisfaction for customers with low social anxiety levels. As social anxiety levels increased, the effect became weaker. On the other hand, in the online retail environment, higher social anxiety levels strengthened the positive effect of C2C interaction on satisfaction.

Figure 2 presents at what level of social anxiety the effect of C2C interaction on satisfaction becomes (in)significant in both retail environments. In the offline retail environment, the effect of C2C interaction on satisfaction was positive and significant for customers who presented social anxiety levels up to 4.10. In the online retail environment, the effect of C2C interaction on satisfaction was positive and significant only for customers with social anxiety levels above 2.86[1].

Table II.
Simple effects of C2C interaction on satisfaction

Retail environment	Social anxiety	Effect	Standard error	<i>t</i>	<i>p</i>	LLCI	SLCI
Offline	1.79	1.34	0.36	3.67	0.00	0.62	2.06
	2.68	0.96	0.26	3.65	0.00	0.44	1.48
	3.82	0.48	0.20	2.34	0.02	0.08	0.88
	4.64	0.13	0.25	0.55	0.58	-0.35	0.62
Online	5.50	-0.23	0.34	-0.68	0.50	-0.89	0.43
	1.79	0.44	0.37	1.20	0.23	-0.28	1.16
	2.68	0.54	0.27	2.02	0.04	0.01	1.06
	3.82	0.66	0.20	3.21	0.00	0.25	1.06
	4.64	0.75	0.24	3.09	0.00	0.27	1.22
	5.50	0.84	0.33	2.55	0.01	0.19	1.49

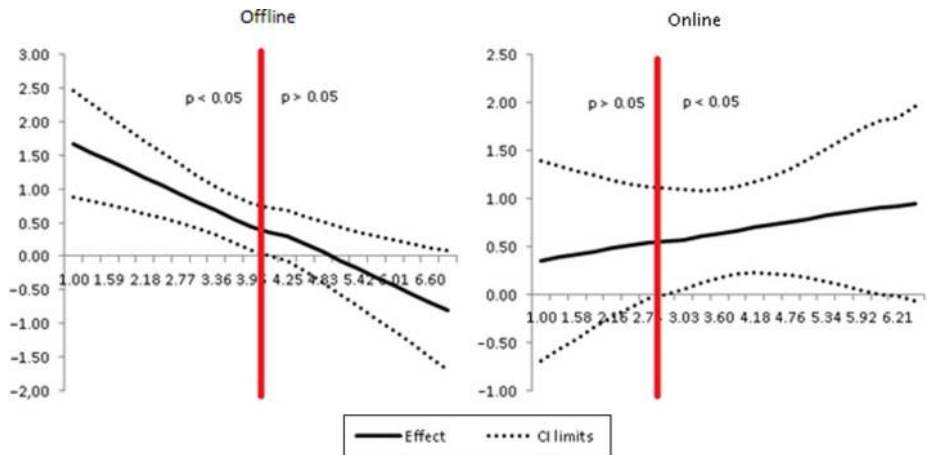


Figure 2.
Effects of C2C interaction on satisfaction at different levels of social anxiety

4.5 Discussion

The results supported the hypothesis, showing exactly the same patterns as those found in Study 1. Furthermore, this study was conducted with a different and more conservative scenario (bookstore), with a dependent variable that could not be considered as obvious as social value being dependent on C2C interaction. Therefore, the researchers strongly believe that C2C interaction can increase value, depending on the customer's social anxiety level and his or her retail environment.

5. Study 3

The researchers conducted Study 3 to test the hypothesis, with three main goals:

- (1) to control variables that were not controlled in previous studies;
- (2) measure other dependent variables; and
- (3) use a different scale of social anxiety.

5.1 Participants and design

The researchers used the same factorial design as that in the previous studies. The sample comprised 299 participants, recruited through Mechanical Turk. The researchers excluded 47 participants who incorrectly answered the instructional manipulation check. On the basis of the same reasoning, 50 participants who incorrectly answered the manipulation checks[2] were excluded (Nicolao *et al.*, 2009). The researchers did not identify any outliers in this study. The final sample consisted of 202 participants (47 per cent male, with a mean age of 36 years).

5.2 Stimulus and procedure

Similar to the previous studies, before the experiment, a pretest was conducted through Mechanical Turk ($n = 101$). The manipulations were effective, the scenarios were perceived as real and no demand effects were identified.

The researchers told the participants that they decided to buy a book for themselves, not for a friend (as they were informed in the previous studies), as a book for a friend could increase the perceived risk of the shopping. Next, the participants were told that they decided to search for the book in a physical (vs online) store. In the offline scenario, the participants were informed that they could see other customers in the aisle. In the online scenario, the participants were told about an option to interact with other customers. Therefore, the researchers controlled for the attractiveness and similarity of other customers in this experiment by not using pictures as in the previous studies. In the scenarios without the C2C interaction, the participants were told that they did not interact with each other. In the C2C interaction scenarios, the information given was that the participant and another customer began to talk and had a nice conversation about literature in general. As opposed to previous studies, it was not made clear who initiated the conversation. Finally, the participants were told that they chose two books and bought them (the scenarios are available in the [Appendix](#)).

The realism ratings were averaged into an overall realism index ($r = 0.74, p < 0.001$). The realism index ($M = 5.98, SD = 1.20$) was significantly above the scale midpoint overall ($p < 0.001$) and within each of those of the four conditions (all $p < 0.001$).

5.3 Measures

In this experiment, the researchers measured social anxiety levels with the brief fear of negative evaluation scale (Leary, 1983). The scale has 12 items ($M = 3.86, SD = 1.59$, with approximately

10 per cent of the participants scoring 6 or higher), having factorial loadings ranging from 0.63 to 0.90 ($\alpha = 0.96$). The following were measured as dependent variables: satisfaction ($M = 5.85$, $SD = 1.00$), with three items having factorial loadings ranging from 0.90 to 0.94 ($\alpha = 0.92$) (Sirdeshmukh *et al.*, 2002); social value ($M = 4.52$, $SD = 1.53$), with four items having factorial loadings ranging from 0.90 to 0.93 ($\alpha = 0.94$); functional value ($M = 5.51$, $SD = 0.95$), with five items having factorial loadings ranging from 0.79 to 0.91 ($\alpha = 0.92$); epistemic value ($M = 5.45$, $SD = 0.97$), with five items having factorial loadings ranging from 0.80 to 0.83 ($\alpha = 0.88$) (Prebensen *et al.*, 2013); mood ($M = 5.86$, $SD = 1.00$), with five items having factorial loadings ranging from 0.88 to 0.94 ($\alpha = 0.95$) (Allen and Janiszewski, 1989); and loyalty ($M = 5.55$, $SD = 1.10$), with five items having factorial loadings ranging from 0.87 to 0.92 ($\alpha = 0.94$) (Parasuraman *et al.*, 2005). As for the control variables, the researchers measured (similar to Study 1) the control of self-presentation ($M = 5.25$, $SD = 1.07$), with five items having factorial loadings ranging from 0.73 to 0.82 ($\alpha = 0.81$); involvement with books and literature ($M = 6.07$, $SD = 1.18$), with five items having factorial loadings ranging from 0.89 to 0.95 ($\alpha = 0.95$) (adapted from Zaichkowsky, 1985); and preference for offline or online shopping, but this variable was not correlated with any dependent measure and was, therefore, excluded from further analysis. The researchers also asked the participants who were assigned to the C2C interaction scenarios whether the other customer recommended a book. The mean ($M = 3.09$, $SD = 2.06$) was significantly below the median point of the scale ($p < 0.001$), indicating that the conversation was not perceived as word-of-mouth. We also asked these participants whether the other customer invaded their privacy ($M = 2.05$, $SD = 1.58$), which presented a mean significantly below the median point of the scale as well ($p < 0.001$). The realism and manipulation checks were the same as those used in Study 1. All interval scales comprised seven points each. Study 3 measured variables in the following order: control of self-presentation, satisfaction, mood, functional value, social value, epistemic value, loyalty, control variables regarding the C2C interaction (only to those who were assigned in C2C scenarios), realism and manipulation checks, social anxiety, general control variables and demographics.

5.4 Results

The researchers used the same statistical procedures as those in the previous studies. The control of self-presentation and involvement were used as co-variables of all the dependent measures (except for social value, with which involvement was not correlated). The findings indicated significant effects of the three-way interaction among C2C interaction, social anxiety and the retail environment on satisfaction ($B = 0.41$, $se = 0.16$, $t = 2.57$, $p < 0.05$), functional value ($B = 0.43$, $se = 0.16$, $t = 2.68$, $p < 0.01$) and mood ($B = 0.39$, $se = 0.15$, $t = 2.51$, $p < 0.05$). All interactions followed the hypothesised direction. In other words, in the offline retail environment, higher social anxiety levels weakened the effects of C2C interaction on satisfaction, functional value and mood. In the online environment, higher social anxiety levels strengthened the effects of C2C interaction on satisfaction, functional value and mood. For social value ($B = 0.41$, $se = 0.25$, $t = 1.65$, $p = 0.10$) and loyalty ($B = 0.32$, $se = 0.19$, $t = 1.67$, $p = 0.10$), the three-way interaction was significant at the 0.10 level. For epistemic value ($B = 0.14$, $se = 0.16$, $t = 0.88$, $p > 0.05$), the three-way interaction had an insignificant effect. However, the results for all dependent variables followed the hypothesised direction.

For experience value (the means of epistemic, social and functional value), the results showed a significant effect of the three-way interaction ($B = 0.33$, $se = 0.14$, $t = 2.28$, $p < 0.05$), offering further support for the hypothesis. To present the simple effects of C2C interaction on all value-related variables, the researchers developed a global measure (means of satisfaction, social value, functional value, epistemic value, mood and loyalty), called

value variable[3], which was significantly affected by the three-way interaction ($B = 0.35$, $se = 0.12$, $t = 2.88$, $p < 0.01$) (Table III).

In the offline retail environment, C2C interaction had an effect on the dependent measures until the social anxiety level reached 3.66. Conversely, in the online retail environment, C2C interaction started to influence the dependent measures when the social anxiety level reached 4.97 (Figure 3).

5.5 Discussion

With this experiment, the researchers increased internal validity by controlling for the potential confounding variables presented in the previous experiments, such as the other customer's attractiveness and similarity (by not presenting a picture), perception of recommendation by the other customer, control of self-presentation and involvement with the product. External validity was also strengthened by measuring other dependent variables, such as functional value, and by using different measures of social anxiety and satisfaction. Additionally, the results showed that this effect would hold true for less risky situations (i.e. buying a book for oneself instead of for a friend). More importantly, it was demonstrated that the effects of the three-way interaction among C2C interaction, social

Retail environment	Social anxiety	Effect	Standard error	<i>t</i>	<i>p</i>	LLCI	SLCI
Offline	1.75	0.47	0.20	2.29	0.02	0.07	0.87
	2.50	0.38	0.16	2.34	0.02	0.06	0.70
	3.83	0.22	0.13	1.72	0.09	-0.03	0.47
	5.08	0.07	0.17	0.43	0.67	-0.26	0.4
	6.00	-0.04	0.22	-0.17	0.86	-0.47	0.4
Online	1.75	-0.41	0.24	-1.68	0.09	-0.88	0.07
	2.50	-0.23	0.19	-1.22	0.22	-0.61	0.14
	3.83	0.08	0.14	0.56	0.58	-0.2	0.35
	5.08	0.37	0.17	2.14	0.03	0.03	0.70
	6.00	0.58	0.23	2.52	0.01	0.12	1.03

Table III.
Simple effects of C2C interaction on value variable

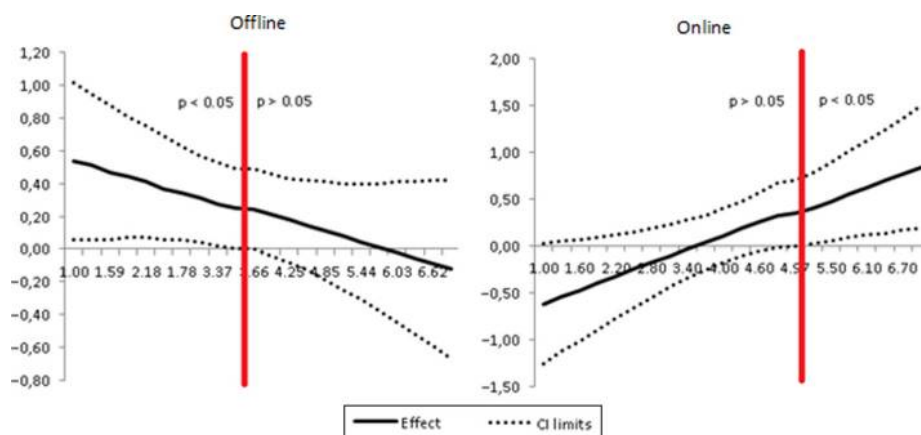


Figure 3.
Effects of C2C interaction on value variable at different levels of social anxiety

anxiety and the retail environment were consistent with other value-related measures (e.g. experience value and mood) across contexts and measures.

6. Conclusions

Little is known about factors that can affect the relationship between C2C interaction and value. Raajpoot and Sharma (2006) argue that the same interaction can generate different customer responses. This paper has explored this relationship in both offline and online retail environments, considering the role of social anxiety. Three experimental studies reveal that C2C interaction generates value in the offline environment only for customers with low social anxiety levels. This happens because people with high social anxiety levels cannot enjoy the benefits of interactions, as they believe that other people are constantly evaluating them (Leary and Kowalski, 1997; Trower and Gilbert, 1989).

Conversely, in the online environment, people with high social anxiety levels can enjoy the benefits of C2C interaction. Consistent with Schlenker and Leary's (1982) findings, the discrepancy between a person's self-image and his or her desired image generates social anxiety. Thus, it is reasonable to infer that this discrepancy can be reduced in an online interaction because of the characteristics of this environment, such as the absence of physical cues and the anonymity, allowing people to gain better control of their self-presentation (Young and Lo, 2012). Concerning people with lower social anxiety levels, the researchers expected weaker effects of C2C interaction on value in the online environment in comparison to people with high social anxiety levels, but the insignificant effect was not anticipated. Perhaps, people with low social anxiety do not perceive more value while interacting online (vs offline) when compared to people with high social anxiety levels who are interacting online. For the first group, maybe an online C2C interaction is pleasant but not strong enough to increase their value perceptions.

Theoretically, this study contributes to the service marketing literature about C2C interaction by showing that even a positive C2C interaction can sometimes have null effects regarding value. By considering social anxiety in this context, it becomes clear that C2C interaction does not always create value for customers. Furthermore, most research on value remains restricted to the company–customer dyad (Rihova *et al.*, 2014). Recently, some authors have proposed that value co-creation should be studied from a systemic perspective, in other words, by considering the multiple actors who create value beyond the company – customer dyad (Jaakkola *et al.*, 2015). To the authors' best knowledge, this is the first study that has tested the causal relationship between C2C interaction and value although many scholars have suggested this relationship in theoretical and empirical studies (Jue, 2007; Rihova *et al.*, 2014; Schau *et al.*, 2009; Vargo and Lusch, 2008).

This study extends the knowledge about C2C interaction in online environments as well, which has received scarce attention in the literature (Nicholls, 2010). Most studies have approached online C2C interaction in social media or brand communities. This study has shown that C2C interaction on online platforms provided by companies, such as in e-commerce, can be a means for customers to achieve their goals.

In this sense, marketing practitioners can benefit from this study's findings by offering alternative retail channels (where customers can interact with one another regardless of their social anxiety levels), considering the difficulties of measuring and detecting this disorder. Thus, customers can choose the retail environment that best serves them. On the basis of this study's findings, not every customer finds interaction valuable. Therefore, the offline and the online retail environments should be designed to serve all customers.

In the offline retail environment, companies can use the servicescape to build places that encourage or discourage customers to interact. For example, some restaurants, such as

McDonalds, have collective and individual tables, and customers can choose where to sit. Product retailers, such as bookstores, could follow this example and provide an encouraging servicescape to customers, with chairs turned to each other in a way that it facilitates interaction. Another way of handling C2C interaction offline is through compatibility management (Martin and Pranter, 1989), where companies attract similar customers who are more likely to interact with each other.

However, websites lack adequate guidelines for managing C2C interaction. Companies could provide the option for customers to interact with and contact only those fellow customers who want to do the same. By being offered such a choice (e.g. a company building a platform where a customer can choose to be online and visible to other customers), the customer could opt not to interact in an online setting to preserve his or her privacy if desired. For example, Threadless is a T-shirt online retailer that offers in its virtual store a forum where customers can talk about art and designs, exchange tips, participate in Photoshop challenges and even debate about life questions (www.threadless.com/forum). Subjects range from presidential debates to football. From a customer's perspective, this is interesting because it offers the option of interacting with customers who are similar to them. From a managerial perspective, it is a way of knowing the customers and making them return to the website.

Some recommendations about the management of these online interactions come from the literature about communities. According to Dholakia and Vianello (2011, p. 8), there are two types of communities, which are as follows:

- (1) those managed by the brand and with limited interaction, where customers have a functional motivation to participate (e.g. solve a problem); and
- (2) communities with free expression and interaction, where customers participate because they have emotional bonds and hedonic motivations.

Considering this distinction, the authors of this present paper suggest that online retailers (1) offer a chat room or a platform for customers to interact on the website and (2) give them the option to interact.

Finally, this paper presents some limitations. First, only three experimental studies with written scenarios and pictures were conducted, with more focus on internal validity. Future studies could use videos to increase the realism of C2C interaction scenarios. Although this study's hypothesis was tested in two different settings, a survey or a field experiment could also be used to increase external validity. Third, the researchers just speculated about the reasons why people with lower social anxiety levels did not perceive the benefits of C2C interaction in the online retail environment. Future studies could explore why customers would not want to interact in this environment (e.g. privacy concerns). In short, the authors believe that C2C interaction in online environments is a fruitful avenue for further research because, with the advancement of the internet and new technologies, C2C interaction, even with strangers, becomes more common each day.

Notes

1. The effect of C2C interaction on satisfaction for customers with social anxiety above 6.21 in the online environment was not significant because the confidence intervals included zero. However, the effect size for these participants is stronger than the effect size presented by customers with lower social anxiety levels. This probably occurred due to the low number of participants with extremely high social anxiety levels.

2. In this experiment, in contrast to the previous ones, the type of channel was present in some of the dependent measures (e.g. "This online store makes me feel socially acceptable"). Therefore, the researchers concluded that the participants who incorrectly answered the manipulation checks were not paying enough attention and would compromise the results' reliability (Oppenheimer *et al.*, 2009).
3. To evaluate experience value and value scales, the researchers built second-order variables on SmartPLS 2.0. The path coefficients were significant ($p < 0.01$), and the composite reliabilities and the Cronbach alphas were above the recommended levels (> 0.90).

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	Offline	Online
No interaction	Imagine that you decide to buy some books for yourself. You decide to go out and search for them in a physical bookstore. As you are looking through the options in a bookshelf, you see that there are other customers, similar to you, in the same aisle, but you do not interact with each other. Finally, you choose two books and buy them	Imagine that you decide to buy some books for yourself. You decide to search for them in an online bookstore. As you are looking through the options in the website, you see that there is an option to interact with other customers, similar to you, and they are online, but you do not interact with each other. Finally, you choose two books and buy them
C2C interaction	Imagine that you decide to buy some books for yourself. You decide to go out and search for them in a physical bookstore. As you are looking through the options in a bookshelf, you see that there are other customers, similar to you, in the same aisle. You and one of these customers begin to talk and have a nice conversation about literature in general. Finally, you choose two books and buy them	Imagine that you decide to buy some books for yourself. You decide to search for them in an online bookstore. As you are looking through the options in the website, you see that there is an option to interact with other customers, similar to you, and they are online. You and one of these customers begin to talk and have a nice conversation about literature in general. Finally, you choose two books and buy them

Table AI.
Scenarios – Study 3

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