An examination of the emotions that follow a failure of co-creation

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ABSTRACT

Service research has contributed to our understanding of the externally-directed emotions that customers experience, such as anger. However, there is limited knowledge about the self-directed emotions that customers experience, such as shame and guilt. This knowledge is specifically lacking within the context of failure of co-created products and services. Our mixed-method research delineates the self-directed emotions that arise when co-created products and services fail. We found that failure of co-created products differ from general situations of failure in that externally-directed emotions attain latency and customers experience self-directed emotions such as guilt, shame, and self-pity. We also found that the self-directed emotions are driven by (a), sadness, and (b), the nature of the causal attributions that the customers ascribe to the failure. This effect was moderated by the degree of co-creation. After analyzing our findings, we discuss the theoretical and practical relevance of the study.

1. Introduction

Technology has increased customers' ability to participate in product and service creation. Firms are tapping into this opportunity to utilize consumers' operant resources in order to involve them in the co-creation of value by generating ideas, assessing value, creating and designing propositions and communication, and delivering products and services (Gouillart & Billings, 2013; Ramaswamy & Gouillart, 2010). Although co-creation offers many strategic benefits to firms and customers (Cossío-Silva, Revilla-Camacho, Vega-Vázquez, & Palacios-Florencio, 2015; Navarro, Llinares, & Garzon, 2016; Tseng & Chiang, 2015; Vargo & Lusch, 2015), it also suffers from a probability of higher failure due to the increased number of customer–firm touch-points (Hart, Heskett, & Sasser, 1989; Heidenreich, Wittkowski, Handrich, & Falk, 2015; Zeithaml, Parasuraman, & Berry, 1985). The failure of co-created products and services is under-researched, and several questions of theoretical and managerial relevance merit more research (Gebauer, Füller, & Pezzei, 2013; Heidenreich et al., 2015). It is important to have a clear and detailed understanding of consumers' emotions in the case of failure because different types of emotions have different implications for the firm. For example, when anger (vs. sympathy) is evoked, people behave in a negative (vs. positive) manner (Coombs, 2007; Weiner, 2006). Our study advances a clearer understanding of the consumer emotions that surface after a failure of co-created products and services (henceforth simply termed as the failure of co-creation) and provides insight into the implications and management of these emotions.

Consumers search to identify the negative and positive causes of important events (Coombs, 2007; Weiner, 1986). Attribution is a reasoning process that can evoke emotional states and behavioral responses. Research on Attribution theory has categorized attribution-dependent emotions as self or externally directed, depending on whether the emotions are targeted inwardly towards the self or outwardly towards others (Tracy & Robins, 2006; Weiner, 2014). Emotions such as guilt, shame, and self-pity are self-directed, while emotions such as anger and gratitude are external-directed.

Marketing studies on product and service failure have examined externally-directed customer emotions such as anger and frustration and found that they lead to an increase in customer complaints, more negative word-of-mouth expressions, and retaliation (Bougie, Pieters, & Zeelenberg, 2003; Gebauer et al., 2013; Gelbrich, 2010; Grégoire & Fisher, 2008). Attribution theory explains that these external emotions are mechanisms that allow individuals to safeguard their ego and self-respect by externally attributing failure (i.e., to the firm) (Gelbrich, 2010; Grégoire & Fisher, 2008; Weiner, 1986). The management of failure then becomes an organization-centered reactive process that focuses on the containment of negative behavior, the use of downward social comparisons, and financial compensation (Bonifield & Cole, 2008). These solutions are problematic because they ignore the affected consumers' self-directed emotions and perceptions

(Choi & Lin, 2009), thereby failing to acknowledge the important bearing that such emotions have on consumers' attitudes and behaviors (Jin, 2009; Sayegh, Anthony, & Perrewé, 2004).

The failure of co-creation necessitates special attention because customer involvement in the creation of products or services (Vargo & Lusch, 2004) weakens external attribution to the firm and increases attribution to the self or relevant others (Heidenreich et al., 2015; Sugathan, Ranjan, & Mulky, 2017), which affects customer emotions differently from a normal situation of failure. Although research has found that successful co-creation is a source of positive emotions such as pride (Moreau & Herd, 2010), the type and valence of consumer emotions that result from the failure of co-creation are not clear. In this study, we use a mixed-methods approach to extend the current understanding of the emotions that follow the failure of co-creation by addressing three key questions: (a) how do customers evaluate the failure of their co-created products and services?, (b) How do customers appraise the failure and what emotions result from that appraisal?, and (c) what are the drivers of such emotions? The study thereby contributes to the literature on co-creation and failure in three ways. First, it suggests that in a situation of failed co-creation, attribution-based and self-directed emotions are more prominent than externally-directed emotions. Second, it illustrates that the emotions that arise in situations of failed co-creation are different from the emotions that arise in general situations of failure. Specifically, while extant studies on failure focus on externally-directed emotions such as anger, this study demonstrates that self-directed emotions such as guilt, shame, and self-pity are prevalent following the failure of co-creation. Third, the study demonstrates the antecedent relationship between self-directed emotions and customer attribution for failure and tests an emerging theory through primary and secondary attributions/appraisals. We further highlight that self-directed emotions such as guilt can result in certain behavioral consequences, which firms can leverage.

To supplement the limited theoretical insights into the emotions involved in the failure of co-creation and to develop clearer perspectives on it, the mixed method approach suggested by Creswell and Clark (2011) was considered appropriate. As modeled by Creswell and Clark's typology, we follow a sequential design to draw insights from the qualitative study and then combine them with available theories to conceptualize the phenomenon. Then, we test the relationships through quantitative studies.

We conducted three studies for this research. Study 1 used interviews to identify and explain the different types of emotions that follow a failure of co-creation. Insights from this study and from Attribution theory were used to hypothesize the drivers and consequences of the pertinent emotions, which were then tested in studies 2a and 2b.

2. Study 1

2.1. Method

We designed two scenarios that described the failure of a co-creation for a group of executive MBA and doctoral students. We explained the concept of co-creation before presenting the scenarios. One scenario described designing a t-shirt, followed by manufacturing it using a printing company such as printavenue.com. The other scenario described designing a customized travel package. We asked the participants whether they had recently experienced failure when attempting such a co-creation. If they had, they were asked to briefly describe it. The ten individuals who had had such an experience were considered suitable for the study. They were invited to participate in an in-depth interview (sans incentive). The interviews were open-ended and non-intrusive, and lasted for an average of 20 min. The co-creations that the respondents were asked about in the interviews included the design and assembly of furniture; the design of a website, brochure, and t-shirt; a personalized photo-mug, and; customized services such as hair styling and travel planning. Participants were encouraged to detail the

co-creation situations and discuss their outcomes. Occasional probes were provided to help participants retain their focus. Participants were debriefed after the interviews.

2.2. Findings

Participants used a range of resources provided by the firm to create the product or service. However, the final outcomes were a failure and did not meet their expectations. The semi-structured interviews were analyzed using the approaches outlined by Creswell and Clark (2011). Detailing insights gleaned from the individual interviews and discerning patterns across the interviews was an iterative form of interpretation that helped us to foreground the distinct customer emotions that arise when a co-creation fails.

2.2.1. Beyond the emotion of anger when a co-creation fails

Following failure, three respondents expressed anger towards the firm or were frustrated with it. These respondents externally attributed the failure to the firm. One respondent who claimed that the firm had the wrong printing on a co-designed t-shirt stated:

"At first we were like…. 'Oh my god!' … you know, we were really panicking … most of us were so excited to receive and wear it. So, it was little disappointing at first…. We would have probably just marched into their office and made them…. First, I was thinking how could they do this? How could they go wrong ….we had clearly stated what we wanted? You feel very perturbed when you know that you are right and it's all their fault."

Extant research has highlighted that failure is associated with the key negative emotions of fear, anger, and anxiety among customers. However, most of the respondents in study 1 did not feel angry or frustrated. Instead, they focused on a primary appraisal of the outcome, which resulted in a general expression of sadness and unhappiness. For example, one respondent stated:

"To be precise, I was upset. I was upset with the whole thing. See, ….had they given me the t-shirt I would have been able to put it on my daughter and see how it fits".

According to Attribution theory, whether such a general primitive emotional response to failure occurs depends on the valence of the outcome (Johnson-laird & Oatley, 1989; Weiner, 1986). Even the previous respondent who was angry expressed a general emotion of disappointment:

"So, it was little disappointing at first….but that is expected when you are doing a joint kind of a production."

Similar general emotions of sadness were also observed in the following extracts detailed below.

2.2.2. Self-directed negative emotions

Respondents expressed the self-directed emotions (Weiner, 2014) of worry, self-pity, and shame. Guilt was also expressed frequently. One respondent who co-created a t-shirt with a self-made design stated:

"Because tomorrow, I want my daughter to wear that printed t-shirt…. I could not negotiate because I wanted it somehow. And there is no time…If there was enough time, we could have done all these things in a nice manner. And most of these situations took place because of the birthday…, people think of something and then they want it executed quickly. An idea will flash and you want it to be done. And the time constraint is when it has to happen on the same day."

Another respondent who co-created a table reflected:

"I felt bad about my inability to learn about my own needs…. I am comfortable with this. I know what I want… after the table was brought home. After I started using it, and learnt that I would not be able to use it for studying, I really felt bad. I am unable to select a simple study table. I am unable to think about all these things. About the height of the chair, or that this height may not be suitable…I should have handled it well. I should have thought about it. Thought about all of it. I should have listened to my wife. I should have listened to my mother…. I did

not think about various issues that may be connected with it. I thought that this is what I want and they would give it to me. … This table is not strong. It will shake even if you use it for ironing. It is something I have to live with. So, I really felt bad for not being able to make a simple decision. This is what I felt."

2.2.3. Causal drivers of self-directed emotions

Sadness is commonly accompanied by another self-directed emotion among customers who have experienced a failed co-creation. This was evident in the following respondent's statement:

"You are stuck with a piece of furniture which is not to your liking. Money lost is one part of it. But, more importantly, you know it is a bad piece of furniture in your house. I felt sad and also… I would also use the word 'stupid'!"

This respondent felt sad about the outcome of the co-creation, but after further appraisal and consideration about his own co-creation, he also felt stupid. Internally attributing the failure impacted the respondent's emotions as expressed below:

"I should blame myself for trying to act too smart…. It was perhaps a bad decision on may be my part too. So, maybe if I had I given him a free hand… and had he not succeeded, then I would have fired him. I would have blamed him. I would have deducted some amount from the money due to him. But, because I intervened and had joint responsibility, I didn't do anything. I kind of accepted it as you know, my learning cost."

We observed similar responses when a respondent co-created his hair style at a salon by asking the stylist to utilize his ideas. The respondent was initially sad and blamed the hairdresser. However, we observed that after he appraised the co-creation process, he shifted the attribution for failure to himself, which resulted in him experiencing the internal emotions of self-pity and guilt.

"I certainly felt bad. Immediately I was thinking; it happened because he suggested and I agreed to it. So, at first, I want to punish him for that… say, I wouldn't pay as much or try a variety of things. But, then I thought I had agreed to it anyway. So, at the end, the fault still lies with me. That's when I thought, I should just let it go and pay whatever it costs. At first, it felt like betrayal… then at the second moment I wondered why I had agreed to his suggestion. Then I felt, Ok I have been stupid. I wasn't smart enough for… I acted a bit idiotically."

In the situation of travel planning, the following respondent's narration reflects previous inferences regarding the causal relationship between attribution and self-directed emotions.

"It was a pity… sort of. I felt bad that it could have been better planned. Rather than blaming others, I could have planned it better …. I failed because I did not plan it well. That is all. And because of me, others also got punished, which is my wife and daughter."

In the situation of co-creating a table, the respondent reflected:

"I didn't say that I am inadequate. I am adequate. But, at that point of time, I was not able to forecast or signal that this is what I want. I knew what I wanted, but somehow I felt like blaming myself. I shouldn't have done it this way…."

The respondent who co-created a failed website expressed guilt:

"If I had not spent so much time on it; they (the company) would have presented their own ideas…. My constant inputs and ideas left them totally confused… I personally regret that, I had ideas in thin air, which I couldn't communicate correctly."

In sum, study 1 explains the consumer emotions associated with a failure of co-creation (see Fig. 1), which include the subdued presence of external emotions, and the predominant presence of self-directed emotions such as guilt, self-pity, and shame. Fig. 1 summarizes our analytical discussion. There are two stages of emotions when failure occurs, which emerge in response to the primary and secondary appraisals (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986; Weiner, 2010). In the first stage, immediately after the occurrence of failure, the customer conducts a primary appraisal to evaluate the outcome. If the outcome is failure, the consumer experiences the primitive emotions of disappointment and sadness. The second stage of emotions occurs after a secondary appraisal has been made, as consumers deliberate in order to understand and explain the events of co-creation by assigning causes to them. Self-directed emotions emerge after the secondary appraisal, which involves applying causal reasoning to understanding the failure.

This insight problematizes extant research that focuses on an examination of the externally-directed emotions that arise during product and service failure. A more comprehensive understanding of the emotions associated with failure would optimize management's ability to deal with failure and improve the overall service quality. Based on the discussion so far, we propose four hypotheses about the different types of emotions that arise from the failure of co-creation and the attributions that are associated with them. In study 2a and 2b, we empirically test these hypotheses. Although the qualitative study reveals that respondents expressed a set of primitive emotions in the case of a failure of co-creation, we chose to focus on sadness for empirical as well as theoretical reasons. With regard to the former, examining too many adjacent emotions of similar valence leads to model complexity and discriminant validity problems (Bagozzi, Gopinath, & Nyer, 1999; Mauss & Robinson, 2009). With regard to the latter, prior research has considered sadness to be a predominant self-directed emotion in cases of failure (see Ortony & Turner, 1990).

Our hypothesis development in the next section relies on research on Attribution theory and insights from study 1. Research pertaining to Attribution theory can be categorized as: (1) achievement-motivation models, which are based on the works of Weiner and others (e.g., Weiner, 1986), and (2) Kelley's information cube, based on the work of Kelley and others (e.g., Kelley, 1973). Martinko and Thomson (1998) and Martinko, Harvey, and Douglas (2007) have synthesized both research views into a single framework, although initially it was thought that these researchers forwarded competing explanations. Kelley's work emphasizes how people use information to form attributions, while Weiner's work explains how the attributions which people make for success and failure influence their expectancies, emotions, and behaviors. Since we aim to examine the emotions that arise after a failure of co-creation, we rely primarily on Weiner's work and the analysis of the nuanced dimensions of attribution (locus, stability and control).

3. Hypothesis development

3.1. Effect of sadness on the emotions of guilt, self-pity, and shame

As has been observed, consumers may exhibit attribution-independent emotions due to their primary appraisal of the outcome of a co-
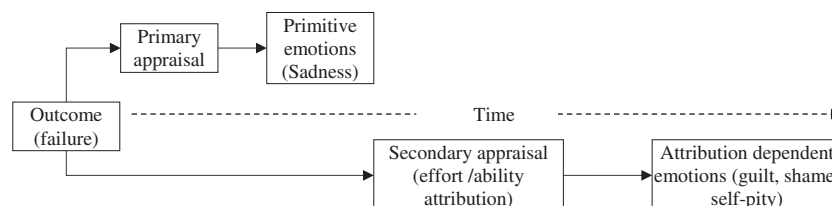

Fig. 1. Stage-wise occurrence of emotions.

creation. The emotional manifestations of primary appraisals are immediate because they are cognitively simple and require limited cognitive capacity (Izard, Ackerman, & Schultz, 1999; LeDoux, 1996). These emotions are usually described as primitive or basic because of their biological and evolutionary importance and universality (Izard, 1992; Smith & Lazarus, 1990), as well as because they are outcome-dependent and attribution-independent (Weiner, 1986, 2014). In the case of a failed co-creation, a negative reaction of sadness commonly emerges spontaneously. The immediate, negative emotional response of sadness has important implications for subsequent emotions, as it triggers coping processes that try to identify the cause of the outcome (Bagozzi et al., 1999). This causal reasoning process is known as secondary appraisal, and results in attribution-dependent emotions that depend on individual evaluations of the cause of the failure event (Weiner, 1986, p. 125). For example, the customer who co-created furniture initially expressed the negative, attribution-independent emotion of sadness, which positively affects the search for the cause of the failure. Because of the co-creator's internal attribution of failure (Sugathan et al., 2017), the resulting emotions are self-directed emotions such as guilt, self-pity, and shame (the attribution dependence of these emotions are explained in hypotheses 2 and 3). Therefore, we hypothesize:

Hypothesis 1. Following the failure of a co-creation, sadness positively influences attribution-dependent negative emotions such as guilt, self-pity, and shame.

3.2. Effect that attributions to ability and effort have on guilt, self-pity, and shame

When people experience primitive emotions, they seek an explanation for the outcome that triggered those emotions. These secondary appraisals are cognitive in nature and are of three different types: locus, stability, and controllability (Izard et al., 1999; Weiner, 2014). Each type of appraisal results in different emotional responses (Weiner, 1986). Locus attribution - internal versus external attribution - ascribes the causal reasoning process to either the individual or another person (e.g. success due to one's own ability is internal, while success due to a competitor's incapability is external). Stability attribution refers to the stability of the cause. While artistic aptitude is stable, insufficient effort and luck are amenable to change and are deemed unstable. Control refers to how amenable the causal factor is to volitional alteration (e.g. altering how one dresses in the office because it is considered to be a determinant of performance).

These cognitive attributions are in turn driven by an individual's awareness and representation of the self in a given situation (Phillips & Silvia, 2005; Tracy & Robins, 2007). Self and identity goals are salient to consumers' involvement in the co-creation process and contribute to secondary appraisals such as internal attribution after the failure of a co-creation (Tangney & Dearing, 2002; Tracy & Robins, 2007; Weiner, 2014). As indicated, secondary appraisals can lead to different emotional responses (Abelson, 1983). For example, "success perceived as due to good luck (unstable-uncontrollable) produces surprise; whereas success following long-term period of effort (unstable-controllable) results in feelings of calmness or serenity" (Weiner, 1985, p. 560).

Our qualitative study suggests that the self-directed emotions of guilt and shame followed secondary appraisals. These emotions have been found to have divergent functional outcomes (Tracy & Robins, 2006). Guilt has been linked to prosocial and adaptive behavior, while shame has been linked to withdrawal behavior (Tangney & Dearing, 2002). Moreover, guilt and shame have distinct antecedents - they are caused by the disparate factors of controllability and stability attributions. Guilt, which is associated with blaming oneself, occurs when one feels personally responsible for a situation (Hoffman, 1973; Izard, 2013) and is therefore a self-directed emotion. When the customer

experiences the self-blame that is associated with guilt, the blame is based on attributions to internal, controllable and unstable causes. Shame arises when customers perceive the reasons for failure to be internal, uncontrollable, and stable (Tangney & Dearing, 2002; Tracy & Robins, 2006; Weiner, 1986).

Co-creation is driven by the application of operant resources such as effort and ability. Co-creators have been found to attribute the failure of co-creation internally to their lack of effort and inadequate ability (Heidenreich et al., 2015; Sugathan et al., 2017). Effort (e.g., I didn't study for the exam) is an internal controllable-unstable attribution that results in guilt, whereas ability (e.g., I am dumb) is an internal uncontrollable-stable attribution that leads to shame (Weiner, 2014). Several empirical studies affirm that guilt and shame result from attributions to effort and ability (Brown & Weiner, 1984; Covington & Omelich, 1981; Jagacinski & Nicholls, 1984; Russell & McAuley, 1986; Smith, Matthew, Gerrod, & Eyre, 2002; Weiner, Graham, & Chandler, 1982). Given the antecedent relationship between effort and ability and its effect on type of emotions, we predict that the attribution of a co-creation failure to resource input as a lack of effort will lead to guilt and that the attribution to resource input as lack of ability will lead to shame. Therefore:

Hypothesis 2. Guilt following the failure of co-creation is higher when customers attribute the failure to their lack of effort, rather than to their lack of ability.

Hypothesis 3. Shame following the failure of co-creation is higher when customers attribute the failure to their lack of ability, rather than to their lack of effort.

Self-pity may be defined as sympathetic, heart-felt sorrow for oneself that is prompted by physical or mental suffering, distress, or unhappiness (Stöber, 2003). It is different from pity towards others, which can have both internal and external causes. Although self-pity is a self-directed emotion, its antecedents are external, uncontrollable attributions. When individuals perceive the cause of failure to be external to them (external others and external luck) and uncontrollable, they experience self-pity (Stöber, 2003; Weiner, 2014). Therefore, internal attributions to effort and ability would have no influence on self-pity.

3.3. Moderating influence of the degree of co-creation

Study 1 as well as recent research on the failure of co-creation provide evidence that co-creation shifts the attribution of the failure from the firm to the customer, resulting in the internal attribution of failure (Heidenreich et al., 2015; Sugathan et al., 2017). Therefore, internal attributions to one's effort or ability are stronger when the degree of one's involvement in co-creation is significantly high, and weaker when the degree of involvement is low. Since emotions are influenced by attribution (Weiner, 1986), we expect that degree of co-creation influences the relationship between the nature of attribution and the internal negative emotions that occur following failure. Therefore, we expect the predicted relationships between attributions to effort and ability and emotions (H2 and H3) to be higher for high degrees of co-creation than for low degrees of co-creation.

Hypothesis 4. The effect of the hypothesized relationships between attributions to effort and ability on guilt and shame is positively moderated by degree of co-creation.

There is an ongoing debate in the literature with respect to the differences between co-creation and co-production, which has emphasized the need to differentiate between them (Galvagno & Dalli, 2014). However, most of the related work does not differentiate between them (e.g. Humphreys & Grayson, 2008; Payne, Storbacka, & Frow, 2008). Co-production has conceptually been nested within co-creation (Vargo & Lusch, 2008). However, with the exception of one measure-

Table 1
Measures and manipulations.

Construct	Measure
Co-creation manipulation	I had to spend a lot of time and energy in designing the bicycle.
	The service provider offered me several options to customize the bicycle to my taste.
Effort manipulation	I didn't put out enough effort on this.
Ability manipulation	I do not possess the ability to do this.
Guilt	I feel guilty.
Shame	I feel ashamed of myself.
Self-pity	I pity myself.
Sadness	I am sad about the final outcome.

ment study that elicits this nested state (Ranjan & Read, 2016), most current empirical work uses the two constructs rather interchangeably. While our co-creation situation is one of co-production, the focal constructs of attribution and emotion as aspects of value-in-use have also been considered to be nested within co-creation (Ranjan & Read, 2016). Therefore, we label the firm-consumer engagement in this study as co-creation conceptually as well as from the viewpoint of empirical consistency.

4. Study 2a

4.1. Method

4.1.1. Process, sample and data

One hundred and seventy three participants (98 females and 75 males, M_{age} = 37.49 years, SD_{age} = 12.09 years) were recruited from the Amazon Mechanical Turk platform to participate in an online survey for a small monetary incentive of $0.25. Respondents read a vignette describing a consumer co-creation that culminated in failure. Vignette-based stimulus has been used in exemplar research in the past (Bitner, 1990; Smith & Bolton, 1998; Smith, Bolton, & Wagner, 1999). Studies designed in this way avoid ethical considerations, enhance researchers' control, are inexpensive, and offer a non-destructive method of manipulating failure scenarios. They are also an improvement over purely recall-based surveys, which can entail the limitations of memory lapse and rationalization (McCollough, Berry, & Yadav, 2000; Strizhakova & Tsarenko, 2010).

We used a 2 (low vs. high co-creation) × 2 (effort vs. ability attribution) between-subject experimental design combined with a correlation design by measuring sadness in order to test our hypotheses. After respondents' demographic details were recorded, they were exposed to a scenario in which they co-created a bicycle and found it to be a failure (Appendix A). In the high degree co-creation scenario, there were more bicycle parts to choose from and the customer had to physically try fitting them together. In the low degree co-creation scenario, there were fewer choices of parts and the customer applied less effort into putting them together. The scenarios were designed to elaborate on the application of the operant resources of effort and time that customers expend in co-creation (Prahalad & Ramaswamy, 2004; Vargo & Lusch, 2004).

Subsequently, consumer attribution was manipulated using the standard protocol followed in prior studies (Choi & Mattila, 2008; Grewal, Roggeveen, & Tsiros, 2008; Mattila & Patterson, 2004). Respondents were randomly assigned to attribute failure either to their effort or to their ability to co-create. After presenting the scenario, the respondents were encouraged to briefly describe a similar scenario in which they had co-created and faced a similar outcome of failure. This helped the respondents to understand the situation described in the vignette, thereby strengthening the manipulation. Finally, respondents rated their emotions, which were captured through a single item measure - first to avoid the emotional bias and variance that can occur

when multiple questions are asked, and second to avoid respondent fatigue. Following the recommendations of Diamantopoulos, Sarstedt, Fuchs, Wilczynski, and Kaiser (2012) and Bergkvist and Rossiter (2007, 2009), the use of single item measures is warranted by the unidimensionality of emotion constructs and the high level of homogeneity among the items used to measure them.

4.1.2. Constructs, measure, and manipulation test

A seven-point scale was used for all measures. The aspects of co-creation that were measured included its multiple facets of customization as well as its contributions to design (Dong, Evans, & Zou, 2008; Heidenreich et al., 2015) and the effort and time expended (Heidenreich et al., 2015). The manipulation of attributions to effort vs. ability was assessed using measures such as "I didn't put out enough effort on this; I do not possess the ability to do this" (Dixon, Spiro, & Jamil, 2001). Measures of shame, guilt, and self-pity were adapted from Richins (1997). The complete instrument is shown in Table 1.

Co-creation measures were averaged to obtain the degree of co-creation. The manipulation of co-creation was strong and significant as a high degree of co-creation (mean = 5.09) was statistically higher than a low degree of co-creation (mean = 3.98, $F(1, 171)$ = 5.62, $p < 0.01$). Similarly, respondents who attributed the failure of co-creation to effort (mean = 4.46) scored higher on the effort measure than respondents who attributed the failure to ability (mean = 3.10, $F(1, 171)$ = 27.19, $p < 0.001$), while the latter (mean = 5.25) scored higher on the ability measure than the former (mean = 3.87, $F(1, 171)$ = 28.29, $p < 0.001$). Therefore, all the manipulations were successful, and the scenarios were perceived as realistic. As consumers co-create using effort and ability, the manipulation of co-creation is expected to influence consumer failure attributions. Therefore, we tested for a possible interaction between co-creation and attribution in order to avoid any possible confounding. The interaction effects on the effort and ability measures were not significant, which implies that the results are stable.

4.2. Results

Following Dawson (2014), we performed a multiple regression analysis with manipulations as categorical variables and sadness as a covariate in order to examine the effect of co-creation and attribution on guilt, shame, and self-pity. The direct effect of the immediate emotion of sadness on guilt (b = 0.33, $p < 0.01$), shame (b = 0.34, $p < 0.001$), and self-pity (b = 0.25, $p < 0.01$) supported H1. Prior research on the influence of sadness on attribution-dependent emotions makes us speculate that there is a causal relationship between sadness and those emotions. However, strictly speaking, the results may not imply causality since sadness was measured rather than manipulated. This represents an area of research that merits further examination.

We found the three-way interaction term with guilt to be significant (b = − 0.84, $p < 0.05$). Consequently, we performed a split sample analysis to explore the hypothesized relationship between type of attribution and guilt in high degree and low degree co-creation situations. In the former, we found that the hypothesized relationship was moderated by the immediate feeling of sadness that arose after failure (− 0.63, $p < 0.05$). We also found that - as hypothesized in H2 - attributing failure to ability had less of an effect on guilt than attributing failure to effort (b = − 0.83, $p < 0.05$).

However, the manipulation of attribution did not significantly influence feelings of guilt in low degree co-creation situations. This supports studies by Sugathan et al. (2017), and Heidenreich et al. (2015) in which consumers internally attribute failure to their own efforts or abilities only in high degree co-creation situations. The absence of these attributions in low degree co-creation scenarios means that they will not have an influence on the negative emotion of guilt. This supports hypothesis H4. However, the hypothesized relationship

Table 2
Hypothesis and their study-wise test results.

Hypothesis	Relation	Study 2a	Study 2b
H1	Sadness → guilt, shame, and self-pity	Supported	Supported
H2	Guilt$_{effort\_attr}$ > guilt $_{ability\_attr}$	Supported	Supported
H3	Shame$_{effort\_attr}$ < shame $_{ability\_attr}$	Not supported	Not supported
H4	Effect of H2 and H3 is higher for high co-creation than for low co-creation	Partially supported (only for guilt)	Not applicable

between type of attribution and shame was not found to be significant. Although the relationship gave some support to H3, it was not statistically significant and does not provide a basis for a strong claim.

We correctly suggested that self-pity was prompted by external attributions, and not by internal attributions, as none of the relationships of the latter type of attribution with self-pity was significant. However, as predicted in H1, sadness was found to influence self-pity ($b = 0.25$, $p < 0.01$). A summary of the major results is provided in Table 2.

4.3. Discussion

The influence of the primitive emotion of sadness on attribution-dependent emotions suggests that emotions might be sequentially ordered in situations of failed co-creation. Sadness was found to influence the emotions of guilt and shame that resulted from internal attributions and the self-pity that depends on external attributions.

The exploratory evidence obtained in study 1 was further supported in study 2a. In scenarios of failed co-creation, self-directed emotions are more distinct than externally-directed emotions, although they are contingent on the nature of associated attributions and the degree of co-creation. Our results regarding the emotion of guilt indicated that the effect of the stability-controllability dimensions of attribution on emotions is stronger for high degree co-creations than low degree co-creations. Guilt was felt more strongly when a co-creation failure was attributed to effort rather than ability because effort is a controllable-unstable attribution, while ability is an uncontrollable-stable attribution. However, attribution type had a limited effect on the emotion of shame. Given that attribution to ability has an uncontrollable and stable nature, we expected respondents to feel inadequate and ashamed about the failure outcome, as was evidenced in study 1. This expectation is not significantly supported in our study. Lastly, the results regarding shame across high and low degree co-creations were inconclusive, and point to a focus for further research.

5. Study 2b

5.1. Method

One hundred and five participants (59 females and 46 males, $M_{age} = 39.45$ years, $SD_{age} = 12.74$ years) were recruited online at Amazon Mechanical Turk and given a small monetary compensation ($0.25) to participate in the study. This study was similar to study 2a, but in order to replicate the central hypothesis, we only stimulated high degree co-creation, in a different scenario for co-creating a computer table. Type of attribution was again manipulated at two levels in a between-subject design and its influence on emotions following the failure of co-creation was tested.

The progression of stimulus and response in study 2a was used again. In the initial stage, consumers were informed that they would design and assemble a suitable computer table for themselves. They were also informed that they could choose a firm that makes customized modules according to their design sketches and dimensions. Then, the consumers would assemble the modules to build the table. A

high degree co-creation situation was thus stimulated through the effort, skill, and time consumers expended in order to build the table (Appendix B).

Next, the respondents were given the stimulus outcome of failure, which involved informing them that their co-created table did not look good and was uncomfortable to use. After that, respondents were randomly allocated to one of the attribution manipulations. Respondents in the effort attribution group (mean = 4.33) scored higher on the effort measure than those in the ability attribution group (mean = 3.20, $F(1, 103) = 11.97$, $p < 0.001$) and respondents in the latter group (mean = 5.40) scored higher on the ability attribution measure than those in the former group (mean = 4.08, $F(1, 103) = 15.14$, $p < 0.001$). Therefore, all the manipulations were found to be successful and the scenarios were perceived to be realistic.

5.2. Results

The primitive emotion of sadness as a response had a positive and significant influence on guilt ($b = 0.50$, $p < 0.01$), although a causal relationship is not implied given that sadness was measured and not manipulated. As evident in study 1, sadness positively affected the emotions of shame ($b = 0.42$, $p < 0.01$) and self-pity ($b = 0.27$, $p < 0.05$), supporting H1. The interaction between sadness and type of attribution was not significant. The manipulation of attributions to effort and ability indicated that these attributions influenced guilt as expected ($b = -0.85$, $p < 0.05$), supporting H2. However, in contrast to our prediction, the statistical test indicated lower confidence on the hypothesized relationship between attributions to effort and ability on shame - although the direction of the effect was as expected ($b = -0.46$, $p < 0.17$). In addition, type of attribution did not have a significant influence on self-pity. In summary, study 2b was able to replicate and externally validate the results of study 2a.

6. General discussion

The insights gained from study 1 are further supported by the findings from studies 2a and 2b, and combining them with previous empirical findings on types of attribution explains the emotions that follow a failed co-creation. We find correlational evidences for the claim that a general primitive emotion of sadness precedes the attribution-dependent emotions of guilt, shame, and self-pity. Study 1 suggests that consumers experienced the general emotions of sadness or unhappiness immediately when a co-creation failed, which led them to determine causal explanations for the failure. The causal attributions are mostly internally directed. This is because the operant resources that consumers expend in co-creation make them salient to the process and they become the anchor for the attribution. After a co-creation has failed, consumers' attribution to their own effort will lead to feelings of guilt, and attribution to their ability will lead to feelings of shame (although our experiments provide limited support for the latter).

We suspect that the lack of statistical support for the effect of attribution to ability on shame might be due to customers' beliefs regarding the nature of the ability required for co-creation. Customers might perceive the ability needed to co-create the bicycle and table to be learnable and improvable (i.e. they hold an incremental belief about ability (Dweck, Chiu, & Hong, 1995; Dweck & Leggett, 1988)). In such cases, the influence of the attribution to ability on shame may not be as strong as expected because that attribution tends to become unstable.

6.1. Contributions

The creation and customization of products and services currently entails unprecedented levels of customer participation as companies utilize customers' knowledge, ideas, and requirements. Concurrently, customers are putting more effort and ability into co-creation than they ever have before, across a broad range of products and services. For

example, Local Motors is using 3D printing based on its customers' designs and requirements. However, there is limited research on customers' co-creation of products and services, and an understanding of how co-creation failures impact customers is particularly lacking. Our research on consumer emotions subsequent to co-creation failures is an important area because these emotions will have a direct effect on customers' tendency to co-create in future.

Our results indicate that customers' emotional response to a failed co-creation is in contrast to the insights from extant research on service failure. Customer emotions following failure were normally studied by focusing only on externally-directed emotions such as anger. We show that self-directed emotions are prevalent in the case of failed co-creations. Future studies that consider customers' increasing involvement in firm processes would benefit from focusing on self-directed emotions such as guilt, shame and self-pity. This would provide firms with insights that inform post-failure customer care and counseling.

Lastly, we highlight the specific implications of understanding customers' behavioral intentions and willingness to co-create in future subsequent to a failed co-creation. Externally directed emotions such as anger will cause customers to avoid products or services in future, reduce their loyalty to companies, and prompt retaliatory behavior (Bougie et al., 2003; Gelbrich, 2010; Grégoire & Fisher, 2008). The direct implication is the erosion of long-term customer value. In contrast, self-directed emotions do not cause such adverse behavior. For example guilt has been found to be associated positively with the application of effort to future co-creations. We therefore indicate that much value would be gained from studying the link between emotions and behavioral intentions that occurs within the context of co-creation. We believe that such studies will further explicate the benefits of co-creation and help firms to better manage co-creation failures.

6.2. Practical implications

Our findings have several practical implications. It is important for firms to know and proactively acknowledge the different types of emotions that customers experience after a co-creation has failed, and to identify how those emotions influence customer behavior. Our results suggest that firms should be aware that there are two stages of consumer emotions and be ready to manage them. These stages are: (1) those emotions which are more immediate and spontaneous, such as the outcome-dependent/attribution-independent feelings of pleasure, happiness and satisfaction with success, as well as feelings of sadness, displeasure and disappointment with failure (McFarland & Ross, 1982; Weiner, Russell, & Lerman, 1979), and (2) those emotions which are attribution contingent. Managing each of the two stages requires different resources, commitments, and strategies. Our results lead us to suggest the following four specific applications for managers:

1) Customers experience guilt after co-created products or services fail, which may have some positive implications. Guilt has its antecedents in self-agency and personal responsibility, and has been found to be associated with approach behaviors, retribution, and motivation activation (Hoffman, 1973; Weiner, 1986). Therefore, feelings of guilt might suggest that customers are able or willing to put more effort into co-creating in future. Further, guilt may arise when customers attribute a failed co-creation to their own effort, which suggests that firms can influence such emotions and subsequent behaviors by manipulating customer attributions. Customer attributions can be manipulated by using attribution retraining mechanisms, which are popular in education research (Hall, Hladkyj, Perry, & Ruthig, 2004; Hall et al., 2007; Haynes, Daniels, Stupnisky, Perry, & Hladkyj, 2008; Haynes, Perry, Stupnisky, & Daniels, 2009; Stewart et al., 2010; Ziegler & Heller, 2000; Ziegler & Stoeger, 2004). Customer attributions can also be influenced by using Kelley's (1973) informational dimensions of consensus, consistency and distinctiveness, which in combination

can lead to effort or ability attributions (Martinko & Thomson, 1998). Companies can conveniently use virtual spaces to do this because of the ease with which information can be dispersed in these spaces.

2) Shame leads customers to become protective in that they show an impulse to withdraw or disconnect from the event or environment that is the source of their shame (Weiner, 1986). This effect can also be observed when customers experience shame as the result of a failed co-creation. They may withdraw from the environment in which the co-creation occurred and may be unwilling to co-create in the future. It is therefore in firms' interest to help customers avoid experiencing shame after a co-creation has failed. Our qualitative study proposes that shame occurs because customers attribute failure to their abilities. Consequently, helping customers to avoid attributing failure to their abilities and using a guided video or demonstration to train customers in co-creation tasks are effective strategies for managing customers' emotions. In addition, providing customers with feedback such as "it usually takes *n* attempts to get it perfect" can help them to avoid unnecessary shame.

3) Our results also suggest that immediate primitive emotions such as unhappiness and sadness can influence the emotions of guilt and shame. It might therefore be useful for firms to manipulate the emotions that arise immediately after a co-creation has failed. If managers intervene in the early stages with their recovery efforts, it will effectively minimize the likelihood that customers' will experience these emotions and subsequently experience additional attribution-dependent emotions such as guilt and shame (which would likely require more expensive interventions).

4) Our results inform the proactive strategies that managers can use for failure recovery. Roggeveen, Tsiros, and Grewal (2012) found that involving customers in the process of recovering from a failed co-creation is a more effective strategy than traditional strategies like compensation and apologizing. Our results complement these findings by indicating that involving customers in the development of products or services is an effective strategy for preventing the negative effects of failure. In an ordinary situation of failure, externally-directed emotions such as anger towards the service provider have a negative influence on consumer attitude, satisfaction and loyalty. However, we observed that during co-creation, self-directed emotions are more prevalent due to the internal nature of attribution, and that these emotions dampen adverse post-failure effects. Particularly, emotions such as guilt are associated with positive behaviors such as future increase in effort.
While firms are increasingly creating avenues and platform for successful co-creation, it is important to create mechanisms to manage, debrief, counsel and care for co-creators who exit the co-creation process. Co-production venues such as P & G Connect + Develop will result in better performance if they are equipped with people and physical infrastructures able to manage the emotions of co-creators. Co-creation at the use stage would require nonintrusive and easy mechanisms for handling post co-creation emotions. For example, technology-enabled platforms would make it easy to respond to participants' emotions as they use the product or service.

6.3. Limitations and conclusion

Although it is difficult to unravel human emotions, our qualitative study enabled us to obtain a general picture of several emotions that arise as a result of failed co-creations. The use of scenarios in our experiments may not elicit strong emotions, but they served our theory-testing aim by giving us enough flexibility to manipulate the conditions. Future studies are needed to confirm our results in real-life settings or field experiments. We hope that further support will be found for our hypothesis (H3) that shame will be stronger when failure is attributed to ability than when failure is attributed to effort. Future studies should

also examine the consequences of the self-directed attributions and associated emotions that occur within the context of failure. Other attributions such as task difficulty (Weiner, 1986) also are important within the context of co-creation, and need to be examined in future studies.

Our quantitative study measured rather than manipulated sadness. Therefore, our correlational evidence does not definitively indicate that there is causality between sadness and self-directed emotions when co-created products fail. However, prior evidence of the causal relationship between primitive emotions and attribution-dependent emotions provides us with a precedent for asserting causality between sadness and self-directed emotions such as guilt and shame. Future studies need to confirm this causal relationship by manipulating sadness after the failure of a co-creation.

Our study suggests that there are two stages of emotion subsequent to co-creation. The first follows the primary appraisal, and the second follows the secondary appraisal. The identified effect of the first-stage emotions on the subsequent emotions may pertain specifically only to situations which are non-routine and personally relevant to customers (Douglas et al., 2008; Lord, 1995; Weiner, 2010). According to Weiner (1986), attributions are absent or irregular in routine events. This means that secondary appraisals and the corresponding emotions may not occur in such scenarios. As a result, the study might have a limited application when outcomes are routine or unimportant and entail a less detailed causal attribution process (Bagozzi et al., 1999; Harvey, Madison, Martinko, Crook, & Crook, 2014). However, sadness is dependent on the appraisal that a situation is one of failure or constitutes the non-achievement of a goal. Hence, sadness can emerge even when outcomes are routine or unimportant. In addition, children do not experience attribution-dependent emotions (Izard et al., 1999). Therefore, the two-stage model of emotions and the prevalence of self-directed emotions may not apply to children who co-create products (i.e. co-create to make custom Lego block designs using a web-interface).

Appendix A. Stimulus

You are planning to buy a new bicycle. Please put yourself in the situation described below and answer the questions that follow. Imagine yourself as *an active participant* in the situation and answer the questions to express *your true feelings* about your participation.

You see an online advertisement from a reputed bicycle brand inviting you to a nearby store to design your own bicycle. Necessary assistance is available from the store-employee. The bicycle is delivered to you the next day.

You visit the bicycle shop the next day. You are led to an employee X, who would be assisting you in designing the bicycle.

High co-creation

X takes you to a facility which displays various parts. The facility also stocked a range of models for each part. You initially choose a frame you like. Subsequently, you chose other parts, one-by-one assessing the configurations, after carefully reading through descriptions of each part and reassuring with the employee on the overall fit. Then, you try to fit the parts into the frame after getting the required tools from the employee. You had to put a lot of effort because of the large number of parts available and because of lack of prior experience. You assembled for the bicycle *after trying them out. The employee asks you to collect the bicycle the next day*.

Low co-creation

X shows you a catalog with bicycle pictures in it. He then prompts you to select the one closest to your imagination. You indicate to him a bicycle model (that you would prefer). The employee says that they have this model in stock. The employee shows you various alternative parts that can be fitted to the model. You select some of those parts for your bicycle. The employee asks you to collect the bicycle the next day.

Failure

Next day, when you visit the store, the bicycle is ready. But, on test ride, you find that the bicycle has balancing issues. The bicycle looks very bad. Some of the fittings will not fit properly and may be dangerous while riding.

Effort attribution

You realize after some thinking: "The reason for the failure of the bicycle was due to my lack of effort. I did not put enough effort into the task."

Ability attribution

You realize after some thinking: "The reason for the failure of bicycle was due to my lack of ability to do such things. I do not possess the ability/skills for doing this."

Appendix B. Stimulus

You are planning to buy a new table. Please put yourself in the situation described below and answer the questions that follow. Imagine yourself as *an active participant* in the situation and answer the questions to express *your true feelings* about your participation.

You are in a program/job that requires a lot of working on a laptop. You have already developed uneasiness while working on a laptop for long hours. You decide to buy a new table to improve your sitting comfort.

High co-creation

You decide on a company that makes customized furniture. For this, you have to upload photos or sketches of the table. You also need to input the dimensions, sizing information, measurement, and the material to be used for construction. The company will send the different modules by courier. You will have to assemble them to make the table.

Failure

When the different modules arrived by courier, you assembled them. But, the table was not looking good. You tried to work on the table. But, you started feeling uncomfortable right from the beginning. The posture was not correct.

Effort attribution

You realize after a while that: "The reason for the failure of the table was due to my lack of effort. I did not put enough effort into the task."

Ability attribution

You realize after a while that: "The reason for the failure of table was due to my lack of ability to do such a task. I do not possess the ability/skills for doing this."

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