Insights into the Experience of Brand Betrayal: From What People Say and What the Brain Reveals

MARTIN REIMANN, DEBORAH J. MACINNIS, VALERIE S. FOLKES, ARIANNA UHALDE, AND GRATIANA POL

ABSTRACT Brand betrayal is a state evoked when a brand with which one has previously established a strong self brand connection fractures a relationship by engaging in a moral violation. We know little about whether brand betrayal is merely an extreme form of brand dissatisfaction or is a distinct state experienced differently from dissatisfaction. Herein, two studies shed new light into the experience of brand betrayal. A large scale psychometric study shows that brand betrayal (vs. dissatisfaction) is associated with feelings of psychological loss, self castigation over one's prior relationship with the brand, indignation focused versus frustration focused anger, and rumination. A functional neuroimaging experiment further demonstrates that brand betrayal and brand dissatisfaction can be differentiated neurophysiologically, holding all else equal. These effects suggest that compared with brand dissatisfaction, brand betrayal is likely to be more harmful to both the brand and the brand relationship, and more difficult for marketers to deflect, with longer lasting consequences.

Whereas considerable research on brand relationships emphasizes positive brand relationships, recent work (e.g., Grégoire and Fisher 2008) points to a highly negative and aversive psychological state of brand betrayal. In a branding context, a betrayal occurs when a brand with which one has developed a prior relationship breaks a moral obligation (Finkel et al. 2002), violating the norms that a consumer perceives to be fundamental to the relationship (e.g., honesty and transparency; Grégoire and Fisher 2008; Wan, Hui, and Wyer 2011; Parmentier and Fischer 2015; Wiggin and Yalch 2015). These violations upset consumers and can cause them to seek revenge against firms and/or avoid future brand encounters (Grégoire and Fisher 2008).

While the brand betrayal construct has considerable potential to deepen our understanding of brand relationships, emotions, and the self, we know little about whether the experience of brand betrayal is phenomenologically distinct from the state of brand dissatisfaction. Is brand betrayal a more intensely charged negative state compared to brand dissatisfaction? If betrayal and dissatisfaction are experienced similarly, the voluminous marketing literature on dissatisfaction might generalize to the experience of brand betrayal, obviating the need for a separate brand betrayal construct. However, if they are experienced differently, such evidence would motivate the field to develop novel theory about other ways in which these states are distinct, how marketers can avoid them, and how marketers might recover lost customers.

We designed a psychometric study and a neuroimaging experiment to provide insight into these unanswered questions. Each study compares brand betrayal to brand dissatisfaction (defined as the underfulfillment of expectations for a consumption goal; Oliver 2015). Our work deepens our un

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derstanding of brand relationships, emotions, and the self by demonstrating the unique and self focused feelings that char acterize brand betrayal (vs. dissatisfaction). It also contributes to research investigating neurophysiological responses to neg ative consumption experiences (Craig et al. 2012), and it val idates important distinctions between the betrayal and dis satisfaction constructs.

CONCEPTUAL BACKGROUND AND HYPOTHESES

Brand Betrayal versus Brand Dissatisfaction

Brand betrayal and brand dissatisfaction are similar on sev eral critical dimensions. Both are negative affective states di rected at a brand (Giese and Cote 2000). Both have the poten tial to evoke anger (Westbrook and Oliver 1991; Bougie, Pieters, and Zeelenberg 2003; Grégoire and Fisher 2008) and erode brand trust (Rotte et al. 2006; Schweitzer, Hershey, and Bradlow 2006). Both also have implications for unde sirable behaviors, such as negative word of mouth, reduced brand loyalty, and demands for retribution (e.g., Bougie et al. 2003; Grégoire and Fisher 2008).

Yet, a fundamental distinction is in the moral connota tion of brand betrayal, which derives from the belief that the brand has misled the consumer. This connotation contrasts with the more impersonal, performance related connotations of brand dissatisfaction. We found evidence for this difference from an exploratory online survey. We asked 30 Amazon Me chanical Turk panelists each to list two one word reasons why they felt betrayed by a brand and two one word reasons why they were dissatisfied with a brand. Results revealed that 65% of participants listed only performance related reasons when asked about dissatisfaction, such as poor *service*, *taste*, *price*, *quality*, and *durability*. These attribute grounded reasons are consistent with the exchange based relationship common for brands and customers. However, 80% of participants listed only morality related reasons about violated norms in the relationship between consumer and firm when asked about betrayal, such as *ripped off*, *lied*, *misled*, and *cheated*. Responses also indicated that betrayed consumers had previously sup ported the betraying brand by purchasing it or supporting it publicly, suggesting a strong positive prior brand relation ship. Such distinctions suggest that betrayal might be distin guished from dissatisfaction in self relevant emotions. More over, the fact that betrayal seems to be predicated on a positive prior brand relationship suggests that consumers might en gage in more rumination about why the brand acted as it did and why they had previously supported it. These effects might make the impact of betrayal more enduring.

Feelings of Psychological Loss

If consumers have previously developed a strong relationship between the brand and the self, an act of betrayal can sever this relationship, evoking feelings of psychological loss. Spe cifically, when consumers believe that a relationship partner has misled them by violating the foundational rules that govern the relationship (e.g., trust), they may decide not to continue the relationship (Rachman 2010). An experience of brand betrayal might not only decrease purchase intentions (Ferraro, Escalas, and Bettman 2011; Thomson, Whelan, and Johnson 2012), it may also evoke a sense of loss over one's prior relationship with the brand and the brand benefits one had previously enjoyed from brand use. Consumers may also feel a loss because believing in a brand that turned out to be a misleading relationship partner can result in a loss of self concept. Specifically, consumers may doubt their own judg ment for believing in the betraying brand and regret their prior relationship building efforts. If strong relationships magnify the perceived extent of betrayal (Grégoire and Fisher 2008), one would expect such feelings of loss as a result of betrayal would increase as relationship strength increases. Whereas strong ties to a brand can expand one's sense of self (Reimann and Aron 2009; Park et al. 2010; Reimann et al. 2012), violated relationship norms may threaten one's sense of self.

Dissatisfaction, on the other hand, is less likely to induce feelings of psychological loss. Whereas dissatisfied consum ers might lose some of their purchase investment (e.g., the cost of the purchase), their sense of self is less tied to the brand. As such, they are less likely to experience a diminished self concept or to be distressed after the brand relationship ends. Moreover, because relationship norms have not been violated, dissatisfaction should be less likely to threaten the brand relationship itself, thus obviating feelings of loss. We hypothesize that:

> **H1:** The more betrayed (vs. dissatisfied) consumers feel by a brand, the more they will experience feelings of psychological loss.

Self-Castigation

Research on interpersonal betrayal also suggests that the experience of betrayal involves *self directed* disappointment and blame a phenomenon we call self castigation. This oc curs because the betrayed consumer has invested psycholog ical, economic, temporal, and social resources into a brand that eventually misled them (Rachman 2010). Consumers may also feel embarrassed by their association with the brand (Rach

man 2010; Johnson, Matear, and Thomson 2011) and regret that they trusted a brand that was deceptive (Joskowicz Jabloner and Leiser 2013). Dissatisfaction, in contrast, is not expected to produce self castigation. Failure to fulfill a consumption goal is attributed to the brand, not to the self, which minimizes self castigation. Hence, we hypothesize that:

> **H2:** The more betrayed (vs. dissatisfied) consumers feel by a brand, the more they will experience self castigation, including disappointment in themselves and embarrassment over their association with a morally transgressing brand.

Anger: Indignation versus Frustration

Both betrayal and dissatisfaction have been shown to evoke consumer anger at the brand (Westbrook and Oliver 1991; Bougie et al. 2003; Grégoire and Fisher 2008). Different varieties of anger can be identified (Russell and Fehr 1994). Indignation is a variant of anger associated with moral violations; it occurs when individuals feel shocked, outraged, insulted, and perhaps disgusted by the outcome that caused their anger (Storm and Storm 1987). Indignation is based on assessing the righteousness of an action and appraising the action as worthy of one's disapproval (Beardsley 1970). Interpersonal betrayal has been linked to the feeling of indignation (also called righteous indignation; Finkel et al. 2002; Joskowicz Jabloner and Leiser 2013). As with interpersonal betrayal (Rachman 2010), consumers are likely to feel shocked, outraged, and disgusted by the fact that the brand violated a relationship norm by misleading them.

Frustration is a different variant of anger that arises when a goal has been blocked (Kuppens and Van Mechelen 2007). It involves appraising an action as failing to produce a desired outcome that had seemed to be within reach. If frustration arises from a blocked goal, and dissatisfaction is characterized by underfulfillment of expectations for a consumption goal (Oliver 2015), one would expect that the greater the underfulfillment of the consumption goal (e.g., the more dissatisfied consumers feel), the more frustrated consumers will feel. Thus, we hypothesize that:

> **H3a:** The more betrayed (vs. dissatisfied) consumers feel by a brand, the more they will experience indignation centric (vs. frustration centric) anger.

> **H3b:** The more dissatisfied (vs. betrayed) consumers feel with a brand, the more they will experience frustration centric (vs. indignation centric) anger.

Rumination

Betrayal likely prompts consumers to make causal inferences regarding the transgression and its implications for their future relationship (Wiggin and Yalch 2015). That is, betrayed consumers are likely to ruminate about why they were betrayed and whether the brand intended to betray them. Rumination in this context is defined as the extent to which a consumer broods over a negative incident (McCullough, Bono, and Root 2007; Rachman 2010). To arrive at an internally consistent narrative about betrayal, consumers may think about how they came to be seduced by the brand in the first place, and then how they were misled by its actions. Such thoughts are autobiographical in nature. Rumination entails obsessive thoughts regarding the transgressing incident that may evoke a need to talk about it in an attempt to alleviate the negative internal state one is experiencing. Rumination over a negative brand incident has important implications for marketers, because it can motivate negative word of mouth and could obstruct relationship recovery.

Dissatisfaction, on the other hand, is not expected to induce rumination about the brand, the self, or the brand self relationship. When products fail to fulfill consumption goals, the outcome of the exchange tends to be salient to consumers (Oliver 2015). Consumers tend to blame the firm, not the self, as we think is true with self castigation. We hypothesize that:

> **H4:** The more betrayed (vs. dissatisfied) consumers feel by a brand, the more they will ruminate about the brand and the transgression incident.

Our studies test these hypotheses with a psychometric study using self report measures (study 1) and a neuroimaging study using a neurophysiological measure of blood oxygenation (study 2). The first study provides evidence specific to each hypothesis, identifying a different nexus of emotional and cognitive responses to the two states. The second study supports the premise that betrayal and dissatisfaction are distinct constructs: each activates different areas of the brain, including areas of the brain previously linked to outcomes hypothesized in H1 H4. Hence, our studies provide complementary yet converging evidence of the distinctiveness of the two constructs.

STUDY 1

The goal of Study 1 was to test H1 H4. Study 1 employed a between subjects experimental design with type of brand transgression (betrayal, dissatisfaction) as independent var

iable and measures of psychological loss, self castigation, anger, and rumination as dependent variables.

Method

Four hundred and fifty four Amazon Mechanical Turk panel ists (M_{age} = 36.6) were recruited to participate in an online study in exchange for monetary compensation. Participants were randomly assigned to report an incident in which they had experienced either brand betrayal or brand dissatisfac tion. Participants in both conditions first read the following prompt: "Please think about a brand that you felt attached and committed to. This brand might be a person brand (like a celebrity or athlete), a company (or a product made by a company), a service/retailer, or a nonprofit organization." Participants in the betrayal condition then read: "Although you felt attached and committed to the brand, the brand did something wrong that made you feel betrayed by it," whereas participants in the dissatisfaction condition read, "Although you felt attached and committed to the brand, the brand did something wrong that made you feel dissatisfied with it." Participants were then asked to provide the name of the brand and a written description of the incident. They also indicated the extent to which they felt betrayed or dissatis fied with the brand, and the extent to which the incident prompted emotions and thoughts pertinent to the constructs noted in H1 H4. Participants also completed a set of demo graphic questions (i.e., age, gender, primary language, and edu cation), though these measures had no impact on the results and are not discussed further.

The betrayal and dissatisfaction measures were adapted from past research and showed strong reliability and face validity. Table 1 details the items as well as scale and item level statistics. To measure brand betrayal, we used a 3 item scale developed by Grégoire, Tripp, and Legoux (2009). We

Table 1. Study 1: Items and Scale and Item Level Statistics

Constructs and their items	*M* (SD) (1 = not at all; 7 = very much)	Cronbach's α
Brand betrayal:	4.49 (1.76)	.79
I felt betrayed by the brand.	4.99 (2.01)	
I felt that the brand broke a fundamental promise to me.	4.43 (2.12)	
I felt that the brand let me down in a moment of need.	4.09 (2.18)	
Brand dissatisfaction:	5.79 (1.50)	.95
I felt dissatisfied with the brand.	5.76 (1.57)	
I felt discontent with the brand.	5.73 (1.63)	
I felt displeased with the brand.	5.89 (1.54)	
Feelings of psychological loss:	2.91 (1.70)	.81
I felt I lost a part of myself.	2.30 (1.79)	
I feared life would be different without the brand.	2.74 (1.98)	
I worried about finding another brand as a replacement.	3.69 (2.20)	
Self castigation:	3.16 (1.84)	.89
I felt disappointed in myself for investing in the brand.	3.43 (2.12)	
I felt angry at myself for having supported the brand.	3.13 (2.04)	
I felt embarrassed by the brand's actions.	3.14 (2.11)	
Indignation centered anger:	4.57 (2.02)	.92
I felt shocked by the brand's actions.	4.71 (2.13)	
I felt outraged by the brand's actions.	4.51 (2.17)	
I felt disgusted by the brand's actions.	4.50 (2.22)	
Frustration centered anger:	5.74 (1.45)	.91
I felt frustrated with the brand.	5.62 (1.60)	
I felt irritated with the brand.	5.62 (1.59)	
I felt disappointed in the brand.	5.98 (1.52)	
Rumination:	3.82 (1.65)	.89
I felt I had to talk about the incident.	4.00 (2.07)	
I was often reminded of the incident.	3.43 (2.02)	
I felt I had to get my feelings about the brand and the incident off my chest.	3.63 (2.10)	

measured brand dissatisfaction using a 3 item scale devel oped by Smith and Bolton (2002). We developed measures of psychological loss, self castigation, indignation, frustra tion, and rumination using the items shown in table 1.

Results

We assessed H1 H4 using a structural equation model. The model specified brand betrayal and brand dissatisfaction as measured independent variables, and assessed feelings of loss, self castigation, indignation, frustration, and rumina tion as dependent variables.

Results from the Rating Scales. We used LISREL 9.3 to test H1 H4. The structural model showed satisfactory fit ($\chi 2 = 564.21$; df = 178; $\chi 2/\text{df} = 3.16$; $p = .00$; RMSEA = .07; SRMR = .06; GFI = .88; AGFI = .85; CFI = .95). Fig ure 1 illustrates the model. As predicted by H1 and H2, the more consumers felt betrayed by the brand, the more likely they were to feel a sense of psychological loss ($\beta = .61$, $p < .001$) and engage in self castigation ($\beta = .66$, $p < .001$). In contrast, the more consumers felt dissatisfied with the brand, the less likely they were to feel psychological loss ($\beta = .27$, $p < .001$) or engage in self castigation ($\beta = .09$, $p > .10$). Consistent with H4, the greater the betrayal, the more likely consumers were to engage in rumination ($\beta = .65$, $p < .001$). Dissatisfaction was unrelated to rumination ($\beta = .02$, $p > .10$).

Supporting H3, the more betrayed consumers felt by the brand, the more indignation centered anger ($\beta = .69$, $p < .001$) they experienced. Brand dissatisfaction was also sig nificantly associated with indignation centered anger ($\beta = .14$, $p < .01$), albeit less strongly than with brand betrayal.

Figure 1. Results of study 1: Brand betrayal leads to feelings of psychological loss, self castigation, and rumination, but brand dissatisfac tion does not. *Note*: ***$p < .001$, **$p < .01$; solid paths denote significant effects; dashed paths denote nonsignificant effects.

The more dissatisfied consumers felt with the brand, the more frustration centered anger ($\beta = .58$, $p < .001$) they felt. Brand betrayal was also significantly associated with frustration centered anger ($\beta = .37$, $p < .001$), albeit less strongly than with brand dissatisfaction.

Follow up tests compared the original model with two models in which the focal paths were constrained to be equal. The results showed that brand betrayal was more strongly associated with indignation centered anger than with frustration centered anger ($\Delta\chi^2 = 11.33$, $p < .001$), supporting H3a, while brand dissatisfaction was more strongly associated with frustration centered anger than with indignation centered anger ($\Delta\chi^2 = 41.18$, $p < .001$), supporting H3b. The relationship between brand betrayal and indignation centered anger ($\beta = .64$) was equal in strength to the relationship between brand dissatisfaction and frustration centered anger ($\beta = .56$; $\Delta\chi^2 = .17$, $p > .10$). Combined, these findings support the notion that brand betrayal and brand dissatisfaction are associated with different types of anger.

Results from the Content Analysis of Open Ended Responses. Additional insight into the distinctions between brand betrayal and brand dissatisfaction was obtained by analyzing respondents' descriptions of the betrayal/dissatisfaction evoking incidents and their reactions to them. We used the Linguistic Inquiry and Word Count (LIWC) analysis software (Pennebaker et al. 2015) to compare participants' open ended descriptions regarding the brand, the transgressing incident, and why they felt betrayed/dissatisfied. The results are shown in table 2.

Respondents who reported an incident involving betrayal used a more emotional tone in their descriptions, while dissatisfaction tended to display an analytical thinking tone. These results are consistent with the exploratory study described earlier, where the reasons for betrayal seemed more emotionally infused (e.g., "cheated") than the performance related reasons associated with dissatisfaction (e.g., "quality"). Betrayed respondents also used more language reflecting cognitive processing, including more causal thoughts, and more thoughts related to tentativeness, discrepancy, and differentiation. This pattern is consistent with what one might expect from greater rumination (H4). Though the comments rarely evinced time orientation, betrayal was associated with more present oriented thinking and less past oriented thinking, perhaps because rumination about the brand transgression makes the consumer relive the experience.

Whereas betrayal and dissatisfaction were both negative events, betrayed participants' language expressed more emotionality, and also more positive emotions than was true for dissatisfied participants. Brand betrayal was also associated with greater reward drives. These results might be expected, as betrayal is presumed to rest on consumers having had a strong prior relationship with the brand.

Table 2. Results of Study 1: LIWC Content Analysis of Open Ended Descriptions

LIWC categories	Brand betrayal ($N = 231$) mean (SD)	Brand dissatisfaction ($N = 223$) mean (SD)	t	p	Examples (see Pennebaker et al. 2015)
Analytical thinking	47.98 (27.47)	55.09 (26.98)	−2.78	.006	Summary language variable
Emotional tone	64.96 (34.46)	47.84 (36.40)	5.14	.001	Summary language variable
Cognitive processing:	15.45 (6.13)	12.07 (5.01)	6.44	.001	cause, know, ought
Causal thoughts	4.75 (4.49)	3.24 (2.92)	4.25	.001	because, hence
Discrepancy thoughts	2.41 (2.34)	1.29 (1.63)	5.94	.001	should, would, could
Tentativeness	2.55 (2.46)	1.61 (1.68)	4.77	.001	maybe, perhaps, guess
Differentiation	3.42 (2.92)	2.71 (2.22)	2.89	.04	hasn't, but, else
Affect (emotionality):	7.63 (4.37)	5.61 (3.93)	5.18	.001	happy, cried, abandoned
Positive emotions	5.22 (3.27)	3.34 (3.11)	6.23	.001	love, nice, sweet
Reward drive	2.05 (2.51)	1.48 (1.82)	2.76	.006	benefit, prize
Time orientation:	3.87 (3.37)	5.10 (4.26)	−3.40	.001	overall time orientation
Present tense	9.83 (4.90)	7.54 (5.02)	4.93	.001	today, is, now
Past tense	5.26 (4.18)	8.12 (4.78)	−6.77	.001	ago, did, talked

Note. LIWC = Linguistic Inquiry and Word Count.

Discussion

Study 1 supports the differences between brand betrayal and brand dissatisfaction in terms of feelings of loss, self castigation, indignation centered (vs. frustration centered) anger, and rumination. Notably, the correlational nature of the study makes it difficult to make strong claims about the causal ordering among the constructs. It is also acknowledged that while brand betrayal and brand dissatisfaction have different association patterns with the investigated variables, this difference does not clearly establish that the two constructs can be empirically distinguished. Although results from the questionnaire support our claim that the experience of brand betrayal is different from dissatisfaction, one might argue that the difference is primarily one of degree. We use a different methodology to buttress our claim, specifically assessing consumers' brain activation patterns in response to betrayal versus dissatisfaction.

STUDY 2

The goal of study 2 was to support study 1's conclusions by showing that differences between brand betrayal and brand dissatisfaction are detectable even at a neurophysiological level. Study 2 employed a within subjects, repeated measures design with type of brand transgressing incident (betrayal, dissatisfaction) as a within subjects independent variable and brain activation corresponding to these incidents as dependent variables. Our expectation was that if brand betrayal and brand dissatisfaction are phenomenologically distinct constructs, each state would show a distinctively different pattern of neurophysiological activation.

Prior neuroimaging research has mapped some of the constructs of interest in H1 H4. While no location has been found for "self castigation," some regions of the brain are associated with painful experiences, with which self castigation might be associated. Prior neuroimaging research has found unique neurophysiological signatures of the "angry brain" (Denson et al. 2009); however, it has not yet advanced to the stage of differentiating indignation versus frustration centric anger. Previous research has found certain areas of the brain associated with ruminative recollection (Denson et al. 2009).

Method

Thirty one students from a large public university (M_{age} = 23.3) were recruited to participate in a functional magnetic resonance imaging (fMRI) experiment in exchange for course credit. The sample size is consistent with, if not higher than, that typically used in traditional fMRI studies (e.g., Reimann et al. 2011; Craig et al. 2012). The repeated measures design yielded 496 data points (31 subjects × 8 brands × 2 types of brand transgressing incidents). The study was described as involving "consumers' experiences with brands." Participants provided written informed consent, were screened for medical eligibility, and were asked to spend several minutes thinking and writing about a past personal incident in which they had experienced brand betrayal and a past incident in which they had experienced brand dissatisfaction. For each incident, respondents were asked, "What happened to make you feel betrayed by/dissatisfied with the brand? How did you react? How did you feel? What happened next?" This orienting procedure was designed to facilitate the salience of the brand betrayal and brand dissatisfaction constructs, so that respondents could more readily experience these states in response to the specific brand incidents they read once they were inside the scanner.

Next, we explained the procedures respondents would follow once they were inside the scanner. Participants were positioned inside a Siemens Skyra 3 Tesla fMRI scanner, so that we could obtain both a functional and a high resolution anatomical scan of their brains. Participants were shown 16 transgressing brand incidents, two for each of eight brands (ADT, Chevy, Corinthian Colleges, the Dr. Oz Show, Netflix, Ralph Lauren, Samsung, and Walmart). Each brand was associated with two incidents, one involving a situation in which the brand could be deemed as having misled consumers (consistent with previous research conceptualizing betrayal as having been misled; Deighton and Grayson 1995; Parmentier and Fischer 2015), while the other involved a situation in which the same brand could be judged as having failed to fulfill a consumption goal (consistent with previous research conceptualizing dissatisfaction as the underfulfillment of expectations for a consumption goal; Oliver 2015). The incidents were previously pretested to confirm that one was appraised as having misled (and thus betrayed) the consumer and the other was appraised as having underfulfilled a consumption goal (and thus dissatisfied the consumer).

We conducted two separate pretests to confirm that participants regarded the misleading incidents as involving betrayal, and regarded the incidents involving underfulfillment of a consumption goal as involving dissatisfaction (see appendix, available online). In study 2, we gave participants abbreviated versions of these incidents so as to minimize brain activation associated with the act of reading while participants were in the fMRI scanner. For example, one incident showed the brand Walmart and read "Claims to fairly pay employees

but actually lies about it," while the other read "Sold you an extremely low quality bathing suit" (the appendix table shows the nonabbreviated incidents used in the pretests).

Each of the 16 pseudo randomized trials (8 brands × 2 types of brand transgression) followed the procedure shown in figure 2. For each trial, participants first saw a cross to fixate them on the screen. They were then prompted to get ready to evaluate a brand. Participants were first shown the logo of the brand they were going to evaluate, followed by the incident involving that brand. Next, participants were asked to choose whether the incident was likely to evoke betrayal or dissatisfaction. Participants used a response box, which they held in their hands, to indicate their response. After their appraisal, participants received a brief confirmation of their response. The appendix provides a detailed description of the neuroimaging experiment.

Results

Results from the Categorization of Transgressing Incidents. Data were entered into a random intercept logistic regression model with appraisal (betrayal = 1; dissatisfaction = 0) as the dependent variable, type of brand transgressing incident (betrayal = 1; dissatisfaction = 0) as the independent variable, and subject as clustering variable. In support of our account, results confirmed that type of brand transgressing incident predicted appraisal of such, $b = 2.70$, SE = .23, $z = 11.66$, $p < .001$, 95% CI [2.24, 3.15]. Indeed, averaged across all 16 brand incidents, 69.4% of participants ap

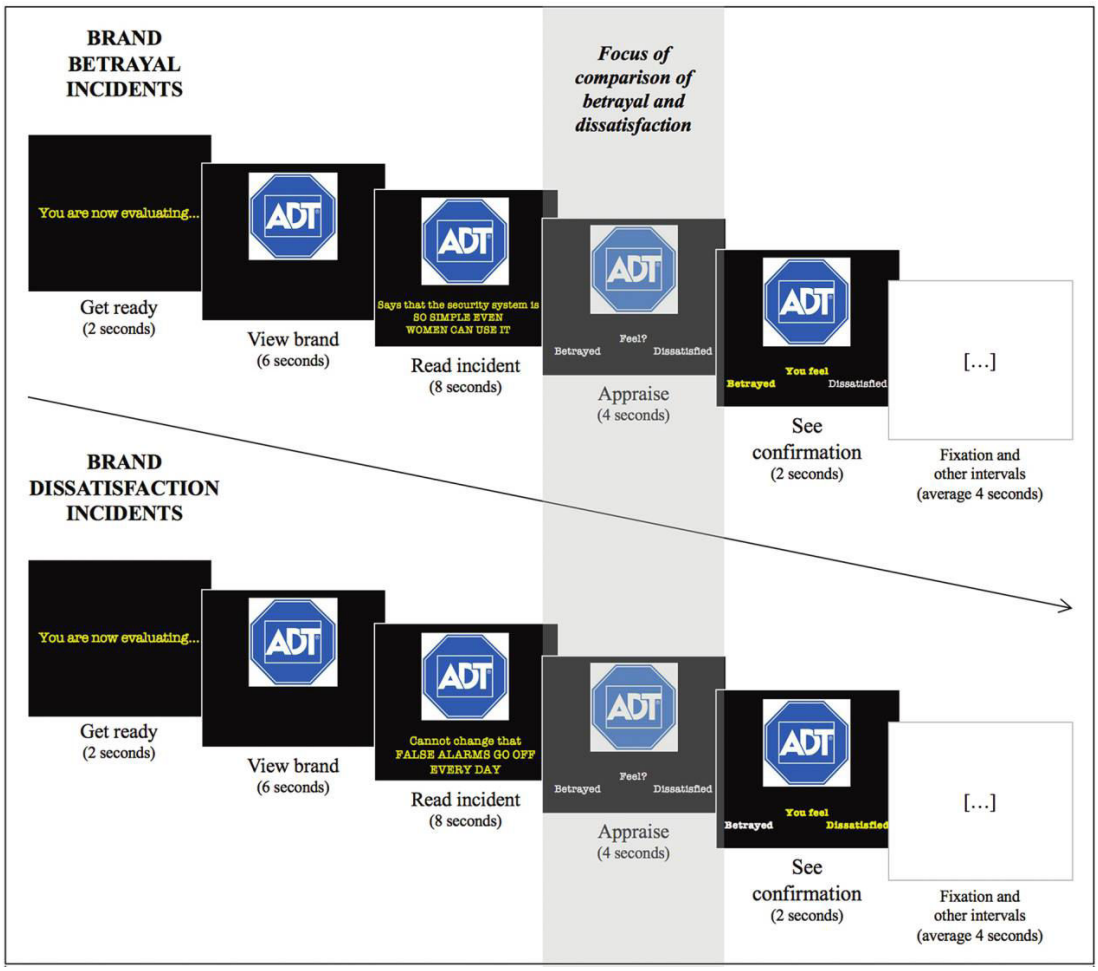

Figure 2. Study 2: Trial sequence employed while participants underwent fMRI.

praised incidents that misled consumers as evoking betrayal (vs. dissatisfaction), while 85.1% of participants appraised unfulfilled consumption goals as evoking dissatisfaction (vs. betrayal). These results also replicate the results from our two pretests (cf. appendix).

Results from Functional Neuroimaging. Results revealed that incidents evoking brand betrayal (relative to brand dissatisfaction) led to greater BOLD activation in several areas including the *dorsolateral prefrontal cortex*, $t(30) = 7.46$, $p < .001$; *insula*, $t(30) = 5.66$, $p < .001$; *caudate body*, $t(30) = 4.52$, $p < .001$; *angular gyrus*, $t(30) = 4.19$, $p < .001$; and *caudate tail*, $t(30) = 4.16$, $p < .001$. In contrast, incidents that evoked brand dissatisfaction (relative to brand betrayal) led to greater activation in the *orbitofrontal cortex*, $t(30) = 5.40$, $p < .001$, and the *anterior cingulate cortex*, $t(30) = 4.77$, $p < .001$. We depict these results in table 3. The fact that betrayal and dissatisfaction create activation in distinctly different areas of the brain clearly supports our proposition that consumers experience betrayal and dissatisfaction differently at the brain level, ceteris paribus.

Results Interpretation Based on Region of Interest Analyses. One way to interpret and check the validity of neuroimaging results is to build on extant research that has studied the constructs we are investigating. We identified past research dealing with the neural correlates of feelings of anger and rumination (Denson et al. 2009). We then defined 4 mm spheres around the Talairach coordinates reported in these authors' works and ran a random effects general linear model for each of these regions of interest (for the same contrast of interest, as described above).

Results confirmed the involvement of several regions identified in our main analyses. For both brand betrayal and brand dissatisfaction, activation in the *insula*, *thalamus*, and *anterior cingulate cortex* was found, which Denson et al. (2009) had also associated with anger. For brand betrayal (but not brand dissatisfaction), activation in the *superior frontal* and the *thalamus* was found, which Denson et al.

Table 3. Results of Study 2: Incidents Appraised as Brand Betrayal Engage Different Brain Areas than Incidents Appraised as Brand Dissatisfaction (Relative to Each Other)

Talairach coordinates of the cluster's peak activation voxel			Brain region corresponding to the peak activation voxel	Brodmann area	t	p	Cluster size (voxels)
x	y	z					
Activated by appraisals of brand betrayal (relative to brand dissatisfaction)							
−27	−91	−8	*Occipital gyrus*	18	10.98	.00	6,001
27	−92	−8	*Occipital gyrus*	17	9.48	.00	7,857
−48	11	31	*Dorsolateral prefrontal cortex*	9	7.46	.00	61,671
33	20	4	*Insula*	13	5.66	.00	1,763
−36	−31	37	*Inferior parietal lobule*	40	5.03	.00	1,840
−54	−34	−2	*Medial temporal gyrus*	n/a	4.84	.00	3,914
12	−4	16	*Caudate body*	n/a	4.52	.00	941
−33	−61	34	*Angular gyrus*	39	4.19	.00	2,677
−33	−16	−8	*Caudate tail*	n/a	4.16	.00	336
Activated by appraisals of brand dissatisfaction (relative to brand betrayal)							
54	−52	−5	*Medial temporal gyrus*	37	−4.26	.00	1,148
−36	−82	13	*Occipital gyrus*	19	−4.53	.00	970
0	17	1	*Anterior cingulate cortex*	25	−4.77	.00	379
24	−82	13	*Cuneus*	17	−5.00	.00	5,492
27	33	−11	*Orbitofrontal cortex*	11	−5.40	.00	519

Note. Contrast: "Appraised as betrayal" > "Appraised as dissatisfaction" (controlled for baseline) at $q(\text{FDR}) < .05$. Positive t values denote greater bold activation for brand betrayal (relative to brand dissatisfaction), and negative t values denote greater bold activation for brand dissatisfaction (relative to brand betrayal).

(2009) associated with rumination. While this approach of building on the results of *specific* extant research carries sub stantial risk in reverse inferring psychological function from neurophysiological activation (Poldrack 2006), there is at least some value in cross validating the identified results with past research.

Results Interpretation Based on Meta Analyses. Another way to analyze the results is to conduct exploratory reverse inference meta analyses using the neurosynth.org database (Yarkoni et al. 2011). With this method, one identifies the activated areas of the brain and searches for prior research that has studied activation in this area. Notably, though, meta analyses are only as good as (1) the number of neuro imaging studies that have been added to the database and (2) the way they have been coded. We linked the activation map from our results with the brain activation maps in the neurosynth.org database (Chen, Nelson, and Hsu 2015). This meta analytic approach provided some support for the rumination and self castigation components of the betrayal experience. Brand betrayal (but not dissatisfaction) activates areas of the brain that previous research has as sociated with judgmental processes (*dorsolateral prefrontal cortex*), episodic memory, and memory retrieval (*angular gy rus*), as well as recollection (*caudate tail*). Figure 3 provides sagittal images for brain areas most relevant to the present research and lists some of the corresponding psychological functions of each brain area based on the meta analyses as well as a *z* score (i.e., the likelihood that a term is used in a study given the presence of reported activation) and the posterior probability (i.e., the estimated probability of a term being used given the presence of activation; Yarkoni et al. 2011). These results provide additional support for the possible involvement of self castigation (e.g., accessing episodic memories about why one had developed a relation ship with the betraying brand in the first place) and the involvement of rumination related processes (e.g., judgmen tal processes about possible ways to retaliate against the brand).

Discussion

Study 2 showed that participants can accurately distin guish between types of wrongdoings as examples of brand be trayal and brand dissatisfaction, and that they experience betrayal and dissatisfaction differently at the brain level. The neuroimaging results clearly showed that the neurophysiolog ies of betrayal and dissatisfaction are *not* one and the same. The hypothesis that brand betrayal (relative to brand dis satisfaction) involves rumination and self castigation also received support at the neural level. Not surprisingly, this

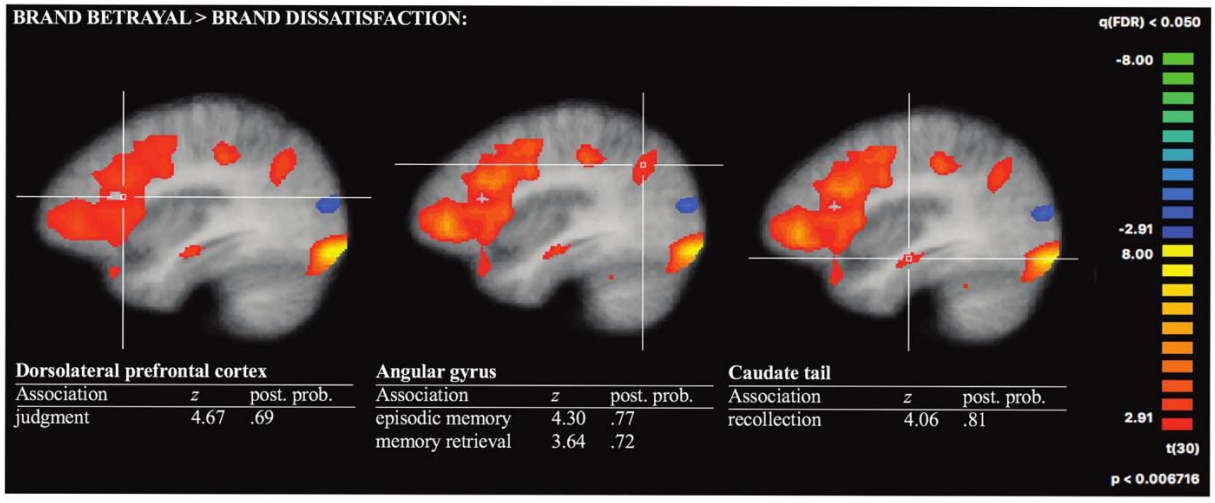

Figure 3. Results of study 2: Meta analytic interpretation of functional associations. *Note*: Results are shown at q(FDR) < .05. Functional associations were extracted from the neurosynth.org meta analytic database (Yarkoni et al. 2011) on January 1, 2018, based on MNI transformed Talairach coordinates reported in table 3. The location of the peak activation voxel is marked with crosshairs. Because the neurosynth.org is a live database, the functional associations, *z* scores, and posterior probabilities can vary over time. The *z* scores and posterior probabilities are estimates that signal some level of confidence that a given brain area is involved relatively selectively in a par ticular psychological function.

methodology was unable to differentiate between types of anger or to capture precisely feelings of psychological loss. This may reflect more about the state of neurophysiological research than the absence of a difference.

GENERAL DISCUSSION

Our studies offer novel insights into consumers' experience of brand betrayal. Converging evidence for its difference from brand dissatisfaction was obtained from conventional self report measures and differential brain activation. This work speaks to extant consumer research, linking betrayal with a perception of having been misled (Deighton and Gray son 1995; Parmentier and Fischer 2015). Whereas that prior work took a managerial perspective on betrayal, our work contributes to the theory on brand betrayal by shedding light on how it is experienced by consumers at a phenomenological and neural level. Study 1 showed that the two constructs are experienced differently, both in terms of the emotions each evokes and in terms of the ruminative cognitions that result from betrayal (but not dissatisfaction). Study 2 showed that the constructs differ in neural activation, with neural activa tion being consistent with prior neuroimaging work on an ger, pain, and rumination. Consumers experiencing brand betrayal are more likely than those experiencing brand dis satisfaction to (1) experience a sense of psychological loss from their need to terminate their brand relationship, (2) cas tigate themselves for having maintained a relationship with the betraying brand, (3) feel indignant (vs. frustrated) as a re sult of the brand transgression, and (4) ruminate about the transgressing brand incident.

Core Theoretical Contributions

On Brand Relationships. By providing novel insight into the psychological and neurophysiological experiences of brand betrayal, our work contributes to the notion that betrayal involves a serious violation of what is normative in the con text of a brand relationship (Grégoire and Fisher 2008; Wan et al. 2011; Parmentier and Fischer 2015; Wiggin and Yalch 2015). The present research thus supports the assertion that, compared with dissatisfaction, betrayal is likely to be more harmful to the brand, more difficult to deflect, and lon ger lasting. Importantly, our results provide some insight into why brand betrayal is experienced as psychologically discon certing and why it can lead to behaviors like revenge against the brand. Specifically, brand betrayal has the potential to harm consumers' sense of self by triggering experiences of self directed blame and psychological loss, which are likely to motivate consumers to take actions that will restore their sense of identity. Identity might be restored through brand relationship dissolution or revenge seeking behaviors. In deed, our findings show that betrayal increases rumination, which encapsulates both a protracted rehashing of the neg ative brand experience and the need to express these thoughts. Such ruminative contemplation has implications for the con tent and duration of betrayed consumers' negative word of mouth communications.

On Negative Consumption Experiences. Our work also adds to neurophysiological investigations of negative con sumption experiences (Craig et al. 2012). While prior research has investigated the neurophysiological underpinning of de ceptive advertising, our work is the first to investigate and compare the neurophysiological responses to brand betrayal and brand dissatisfaction. Understanding the "dark side of marketing" provides a more nuanced account of social inter actions and relationships in the context of consumption (Reimann and Zimbardo 2011; Schilke, Reimann, and Cook 2013; Neal, Shockley, and Schilke 2016).

On Consumer Neuroscience and Its Relevance to Market ing Theory. Our research also underscores the importance of neuroimaging research in marketing and consumer psy chology. Localizing the activation of certain brain areas for one construct (here, brand betrayal) but not the other (brand dissatisfaction) can help to differentiate constructs and build novel theory. The fact that neuroimaging allows for the dis sociation of concepts (Yoon et al. 2006) without the use of self report measures (e.g., Reimann et al. 2011) suggests the potential to study new, relevant concepts through neuroimag ing that might otherwise remain hidden. We attempted to integrate both standard methods (survey research) and neu roimaging to gain a bigger picture across these different meth ods. The appendix and the appendix figure provide a primer detailing the design and conduct of a neuroimaging experi ment.

Future Work

Understanding Drivers and Recovery Processes from Brand Betrayal. The distinctiveness of brand betrayal from brand dissatisfaction, coupled with the fact that research on brand betrayal is in its infancy, suggests a need to de velop new theories regarding brand betrayal. Notably, mar ketplace examples abound of brands whose actions have misled consumers. Consider, for example, human brands like Lance Armstrong (denial of steroid use) and Tom Brady (the Patriots' "Deflategate" scandal), or corporate brands such

as VW ("clean diesel" software), Toshiba (overstating profits), Activia (false claims regarding the brand's nutritional bene fits), Kashi ("all natural" products made from mostly syn thetic and unnaturally processed ingredients), Taco Bell ("sea soned" beef that actually contained oat filler), and Hyundai and Kia (overstating the brand's horsepower), to name only a few. Our research sets the stage for (1) understanding other ways in which brand betrayal and brand dissatisfaction might differ, (2) identifying unique factors that drive brand betrayal versus brand dissatisfaction, and (3) understanding effective recovery processes for brand betrayal and brand dissatisfac tion.

Different Moderators. Because brand betrayal relates to violated relationship norms associated with being misled, constructs that are pertinent to the study of relationships may be relevant antecedents to or moderators of brand be trayal (but not brand dissatisfaction). One such variable is *attachment style*, which refers to individual differences in how one interacts with others in relationships. Individuals with a "fearful" attachment style are most likely to react in hostile and negative ways toward a brand with which they have previously ended a relationship (Thomson et al. 2012). Such individuals are more likely to complain to third parties, to obsess (ruminate) about the brand and how it had hurt them, and to seek revenge against the brand. Interestingly, the impact of a fearful attachment style on these anti brand actions was mediated by diminishment of the self concept and perceived loss of relationship benefits elements of loss that we associate with brand betrayal (versus brand dissatis faction). Whereas certain attachment styles might make in stances of brand betrayal feel worse, such styles may carry little weight in their impact on dissatisfaction.

An additional variable that may moderate the experience of betrayal versus dissatisfaction involves who discovers the transgression. Whereas brand dissatisfaction typically stems from *personal experience*, evidence that the brand has misled consumers can be garnered via *personal discovery* of a brand's actions, *information from other sources*, or *brand confessions/ disclosures*. This distinction might impact the magnitude of brand betrayal. One might predict that consumers would feel less betrayed if the brand confessed that its practices have been misleading than if the consumer personally unearths the misrepresentation or if outside sources expose it. A con fession implies that the brand no longer intends, and perhaps had never intended, to mislead. Consistent with this idea, re search on human relationships finds that the negative impact of serious relationship transgressions (such as incidents of betrayal) is greater when a third party discovers the trans gression or when the perpetrator is caught red handed than when the partner asks for or the perpetrator volunteers in formation about the transgression (Afifi, Falato, and Weiner 2001). Future research should investigate the impact of con fessions vis à vis other modes of discovery on the extent of brand betrayal.

Additional work is also warranted on the boundaries of brand betrayal. For example, research should examine whether consumers experience brand betrayal as strongly when the betraying incident hurts the self (as when the consumer has been misled) as when it hurts others (as when vulnerable populations have been misled). Research is also warranted on whether betraying acts of omission (e.g., failing to disclose in herently noxious effects of a product) incite betrayal to the same or perhaps an even higher degree than acts of commis sion (e.g., misleading consumers as to the product's efficacy). Work should also directly test how the strength of consum ers' brand relationship influences the effect of betrayal on the outcomes noted here. Past research has suggested that con sumers can engage in motivated reasoning processes that dis count the severity of a brand transgression through moral decoupling (Bhattacharjee, Berman, and Reed 2012). For ex ample, a consumer might acknowledge the immoral actions of the brand but dissociate these actions from the brand's performance. In this way, they can continue their brand re lationship while still acknowledging that the moral action was wrong. Moral decoupling is more difficult when the moral violation is related to the product's performance (as with the VW scandal). Research should investigate whether and when performance irrelevant moral violation might ironically strengthen (not just fail to weaken) a prior brand relationship.

Recovery. Because brand betrayal brings negative implica tions for the self and rumination, it might be more difficult for marketers to recover customers lost as a result of brand betrayal. Work is warranted that validates the more diffi cult recovery potential for incidents of brand betrayal ver sus dissatisfaction. Moreover, future research should com pare whether certain recovery tactics are more effective in the case of betrayal versus dissatisfaction. An example of a potential recovery tactic that may be differentially effective is the demonstration of self suffering. Evidence that the brand is suffering from its betrayal may be effective because it sug gests that the brand is experiencing psychological (vs. eco nomic) payback for the rumination, self castigation, and loss that the betrayed customer has experienced. For example,

Paula Deen's tearful public apologies in response to her having used a racial epithet suggested great suffering. In contrast, Lance Armstrong failed to show self suffering or remorse following the revelation that he had lied about using ste roids. While Deen was able to recover many of her fans after her transgression, Armstrong seems not to have. Regardless of the efficacy of communicating self suffering, future re search should examine whether and how brand betrayal and brand dissatisfaction differ in what constitutes a suc cessful recovery process.

Denial of Betrayal. Finally, there may be cases where rumi nation and self castigation may be strong enough to lead to a denial of the betrayal. Future work could identify contexts in which the final response to betrayal ironically generates greater brand loyalty. For example, would dedicated fans of VW increase their loyalty to the brand despite it having cheated?

Implications

The fact that consumers experience brand betrayal and brand dissatisfaction differently suggests that firms should assess which response consumers are experiencing as a result of a brand's transgression. The following vignette illustrates this case: VW dealer Steve Kalafer said he felt *betrayed* after spending millions of dollars buying diesel Volkswagens in the belief they were clean burning and highly fuel efficient. In response, a spokeswoman for VW of America said, "dealer and customer *satisfaction* is a top priority for Volkswagen."[1] This vignette about VW suggests that brand managers may as sume that consumers are experiencing dissatisfaction when they are actually experiencing brand betrayal. If there are differences in how dissatisfaction versus betrayal can be as suaged, it would be important for marketers to understand which state (betrayal or dissatisfaction) consumers are ex periencing.

THE LARGER THEME: NEGATIVE BRAND RELATIONSHIPS

Decades of consumer research have provided meaningful insight about positive brand relationships but have often overlooked whether and how consumers also form negative relationships with brands (Park, Eisingerich, and Park 2013; Alvarez and Fournier 2016; Albert and Thomson 2018). As shown in this article, understanding the negative affect that can be inherent in brand relationships is important because it allows consumer researchers to better recognize and pos sibly address the sources of negative product related behav iors such as negative word of mouth or boycotting. Consumer researchers have now started to empirically pinpoint the fact that negative affect both specific emotions and general emo tional states plays a profound role in consumer brand rela tionships. For example, Kristofferson, Lamberton, and Dahl (2018) highlighted the role of a specific emotion malicious envy and showed that low self esteem consumers depreci ate envied brands when experiencing envy, whereas higher self esteem consumers appreciate envied brands when expe riencing this specific emotion. Furthermore, John and Park (2018) investigated general emotional states and showed that when consumers failed to receive emotional support from a brand, those with weak brand relationships and strong (vs. weak) growth beliefs were more likely to experience emotional distress. However, when consumers received emotional sup port from a brand, consumers with weak brand relationships and strong (vs. weak) growth beliefs were more likely to feel emotionally attached to the brand.

In closing, we hope that future consumer researchers will investigate negative consumer brand relationships, especially how and why they differ along (1) the arousal dimension (e.g., negative high arousal emotions such as anger and annoyance vs. negative low arousal emotions such as sadness and depres sion), (2) their motivational strength (e.g., avoidance vs. ter mination vs. destroying the relationship; cf. Park et al. 2013), and (3) their anti brand intentions and behaviors.

1. See http://www.cnbc.com/2015/10/07/vw dealers customers feel betrayed by emissions cheating scandal.html.

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APPENDIX:

METHODOLOGICAL DETAIL OF THE NEUROIMAGING STUDY

The design, data collection, and data analyses of a typical neuroimaging study in consumer research often follows a specific set of steps. We visually illustrate these steps in the Appendix Figure.

(1) We designed a within-subjects, repeated-measures experiment in which participants evaluated eight brands characterized by two different types of brand-related information. We also created a standardized behavioral task in which participants could engage while undergoing functional magnetic resonance imaging. We broke the task down in several phases, similar to how consumers often perceive and process information related to brands (e.g., reading an article about the brand in the news). In the first trial phase, respondents viewed the brand logo for six seconds, so as to activate brand information. In the second trial phase, participants saw brand information for eight seconds. In the third trial phase, we prompted participants to categorize the information as an instance of brand betrayal or brand dissatisfaction. Four seconds were given for this task. In the fourth trial phase, participants saw a confirmation of their response (here, for two seconds). Finally, we added a fixation and other inter-stimulus intervals phases of 2 to 4 seconds in between each trial phases. These phases varied in length so as to make the task seem less repetitive to participants.

Breaking the judgment and decision-making process into steps allowed us to precisely compare activation at each phase. Each phase was divisible by two seconds in order to match the repetition time (TR) setting of two seconds at the brain scanner. We then reproduced the four-phase trial sequence for the repeated-measures design (here, evaluating eight brands required

eight identically-timed trial sequences) and had to exchange only the brand logos and textual information, *ceteris paribus*. We reproduced the set of eight trial sequences for the betrayal and dissatisfaction conditions, which resulted in a total of 16 trial sequences. Next, we pseudo-randomized the presentation of trial sequences. We then added several slides of instructions at the beginning of the stimuli shown to participants. Finally, we calculated the total timing of the task in seconds (here, 668 seconds). To avoid fatigue, we kept the task below 12 minutes.

(2) We transferred the operationalization of the behavioral task (which was done in PowerPoint) to a standard presentation software (here, E-Prime Professional 2.0) suitable for the brain scanner environment and that allowed the precise timing of the stimulus presentation.

(3) We piloted and refined the behavioral task, aimed to obtain the hypothesized behavioral effect in a small sample (here, n = 31).

(4) We ensured the timing of the task was accurate across all participants in the pilot study (i.e., one 668-second-long dataset per participant). We then created a *general* time course protocol (in Excel), which specified the onset, end, and content of each trial phase. The phases "View brand" (first phase), the "Read incident" (second phase), and "Appraise" (third phase) were each given their own predictor. The predictor "All other phases" served as a pool of the instruction, confirmation, fixation, other inter-stimulus intervals, and thank you phases, and was thus useable as an appropriate baseline phase against which to contrast the predictor of interests.

(5-6) We retested the behavioral task in a small sample, aiming to replicate the behavioral effect. The experimenter also self-tested the behavioral task for technical goodness inside the brain scanner (i.e., ensuring all stimuli were visible and behavioral responses were accurately recorded).

(7) The main data collection phase involved the acquisition of neuroimages while participants were engaging in the behavioral task. The onset of the behavioral task was synchronized across all participants. In particular, once the brain scanner was started, a trigger signal was sent to the presentation computer, which initialized the behavioral task, ensuring that the recording of neuroimages and the behavioral task started at the identical timestamp for all participants. Before entering the brain scanner, participants provided written informed consent, were checked for medical eligibility, and engaged in a short training version of the behavioral task to address any questions they have for the experimenter. In the present study, the scanner settings were as follows. For *functional neuroimaging*, a time series of 336 volumes with 33 slices in the transverse plane was obtained using single shot gradient-echo planar imaging (TR = 2,000ms, TE = 30ms, flip angle = 90°, resolution = 2.5mm × 2.5mm × 2.5mm, and FOV = 240mm). All functional neuroimaging runs were automatically motion-corrected during data collection as per Siemens' head motion correction protocol. For *anatomical neuroimaging*, we obtained a high-resolution image of the brain using a 3-D T1-weighted MPRAGE sequence (echo time (TE) / repetition time (TR) / inversion time = 2.32 / 2,300 / 900ms, flip angle = 8°, matrix = 256 × 256, field of view (FOV) = 240mm, slice thickness = .9mm without gap).

(8) After obtaining the aimed-for sample size, we first analyzed the behavioral data (here, the original aimed-for sample size was 30; the subject pool had provided us with one extra participant, resulting in a final sample size of 31). Based on each participant's individual behavioral responses (i.e., the categorization during the "Appraise" phase), we created *subject-specific* time course protocols. Specifically, we took the *general* time course protocol we had created earlier and—according to each participant's appraisal—added the respective time intervals to the appropriate predictor. As such, we modeled these time course protocols

according to each participant's subjective appraisal of the incident as evoking either betrayal or dissatisfaction. For example, if one participant had appraised an incident as betrayal, then this incident was assigned to the predictor called "Appraised as betrayal" and if another participant had appraised the same incident as dissatisfaction, then for this participant the incident was assigned to the predictor called "Appraised as dissatisfaction." In summary, the subject-specific time course protocols included a total of six predictors: "View brand" (same for all subjects), "Read betraying incident" (subject-specific), "Read dissatisfying incident" (subject-specific), "Appraised as betrayal" (subject-specific), "Appraised as dissatisfaction" (subject-specific), and "All other phases" (same for all subjects).

(9-14) We performed the neuroimaging analyses, following a number of standardized steps using the BrainVoyager QX 20.6 analysis software (Goebel, Esposito, and Formisano 2006): the data was preprocessed (i.e., head motion correction, slice-scan time correction, and temporal high-pass filtering) and the functional images and the anatomical images were co-registered to match participants' functional scans with their anatomical scans. Because every head and brain differs in size, the neuroimages were normalized to standard volume space (here, Talairach space; Talairach and Tournoux 1988). The resulting three-dimensional functional data were then smoothed with a 6mm Gaussian kernel. The onset of each predictor in the subject-specific time course protocols was convolved with a hemodynamic response function and modeled to recognize voxels (i.e., activated three-dimensional areas of the brains) with blood flow that correlated with the unique predictors, resulting in a single-design matrix for each participant. Translation and rotation head motion (*z*-transformed) were added as a set of confound predictors. Next, a multi-subject-design matrix was created, which included all 31 participants' single-design matrices. Data from this multi-subject design matrix were analyzed

with a random-effects, *z*-transformed general linear model. The two appraisal conditions were then contrasted against each other (as described next), and the coordinates of each resulting brain cluster's peak activation voxel were then submitted to the automated Talairach client to identify the corresponding brain region (Lancaster et al. 2000).

Predictor of Interest. Our subsequent analyses focused on the "Appraise" phase; that is, the four-second trial phase in which participants appraised the brand as either a feeling of betrayal or a feeling of dissatisfaction (in Figure 2, see "Appraise" phase highlighted with grey background). We had decided that the "Appraise" phase was the appropriate focus of our analyses as opposed to other phases of the trial sequence for the following reasons: during the "View brand" phase, participants were simply shown a visual image of the brand (i.e., the logo). Here, subjective thoughts, memories, and/or feelings could arise, which were specific and unique to each participant's prior experience with the brand (Reimann et al. 2012). During the "Read incident" phase, participants were provided with textual information about the brand transgressing incident. While this phase was intended ultimately to induce the distinct feelings of either betrayal or dissatisfaction, participants first had to read the textual information and process its content for several seconds in order for said feelings to arise. In summary, having first visually processed the brand logo and having then read the textual information, it was most likely that the distinct feelings would arise during the "Appraise" phase. This argument is supported by the fact that participants behaviorally confirmed their feeling by categorizing the incident as either betrayal or dissatisfaction during the "Appraise" phase. Note again that we modeled the time course protocols according to each participant's subjective appraisal of the incident.

Contrast of Interest. During the "Appraise" phase, participants were asked to categorize their feelings as either those of betrayal or those of dissatisfaction. Because this categorization

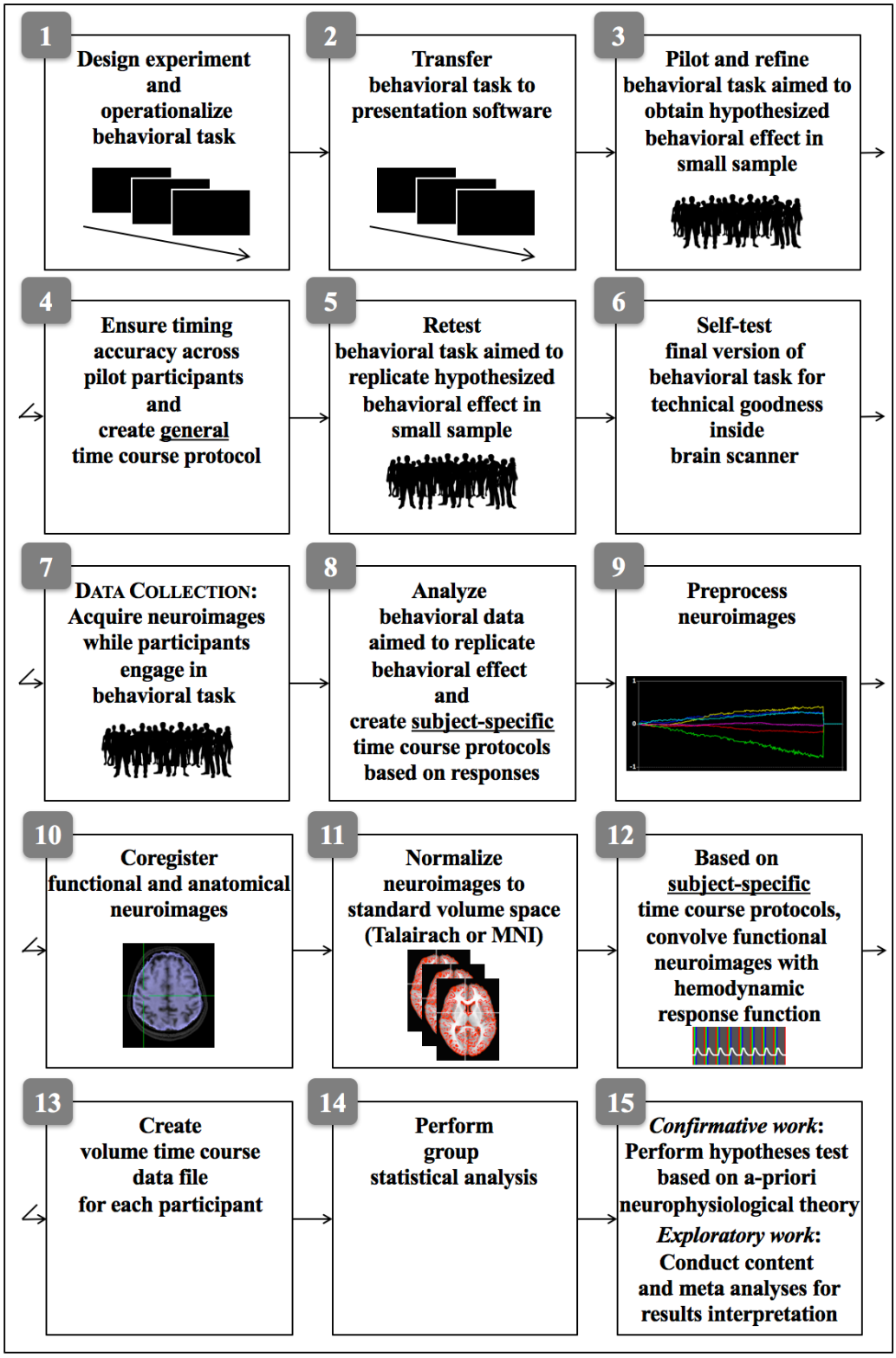
was done relative to the other state, the most appropriate contrast was a direct comparison of betrayal and dissatisfaction. As such, our analyses focused on the direct contrast of the "Appraised as betrayal" predictor and the "Appraised as dissatisfaction" predictor. To control for baseline brain activation in this direct comparison, we subtracted the "All other phases" predictor from both the "Appraised as betrayal" predictor with the "Appraised as dissatisfaction" predictor and then ran a conjunction analyses to compare betrayal and dissatisfaction.

Correction for Multiple Comparison. Recently, there has been considerable attention on the validity of fMRI research. While some investigators had argued that standard methods for multiple comparisons correction via cluster thresholding may have yielded false positives in a majority of published papers (Eklund, Nichols, and Knutsson 2016, a claim that these authors have corrected in the meantime), other researchers have at least questioned or even strongly countered that view (Cox et al. 2017a, b; Mumford et al. 2016). To check for the validity of our results, we followed pertinent recommendations in the BrainVoyager analysis software (Goebel 2016) and used an approach other than cluster thresholding. Specifically, we used the false discovery rate (FDR) approach for correction of multiple comparisons. The FDR approach controls for the number of false positive voxels among the subset of voxels labeled as significant (Genovese, Lazar, and Nichols 2002; Goebel 2016). A FDR of $q < 0.05$ would mean that five percent of the discovered voxels could be false positives (Genovese, Lazar, and Nichols 2002; Goebel 2016). We used this $q(FDR) < .05$ default for our purposes. We also examined the data at $q(FDR) < .01$, which still yielded significant results in many of the identified areas under the .05 FDR, but reported the results at the software default setting of $q(FDR) < .05$ (Goebel 2016).

(15) The final step entailed the interpretation of data. For *confirmative investigations,* for which clear a-prior hypotheses based on established neurophysiological theory exists, standard

hypotheses testing can be performed. For *exploratory investigations*, it is recommended that the results from the neuroimaging experiment be compared to both content analyses (i.e., possibly running a region-of interest analyses at previously reported coordinates, as was done here) and a meta-analysis (e.g., Yarkoni et al. 2011) to narrow down the possible psychological underpinnings of the identified brain activations (as was also performed here). Note that the latter analyses requires MNI coordinates, so a transformation from Talairach coordinates into MNI coordinates is required. Note that—with several exceptions—any one brain area is likely to be associated with different psychological processes, which is why researchers should be cautioned against interpreting the activation of one brain area as evidence for the occurrence of one specific psychological process (Plassmann, Ramsoy, and Milosavljevic 2012; Poldrack 2006).

Appendix Figure: Flow diagram of neuroimaging study



Pretests to Study 2

We developed 26 incidents related to a set of 13 brands. For each pair of incidents, one described an event that could be appraised as misleading consumers about its actions, motives, or values, while the other described an event that could be appraised as inadequate in fulfilling a consumption goal. We held the brand constant for each pair to reduce variance that might arise from brand knowledge. To provide some assurance of generalizability, the scenarios included person brands, product brands, service brands, non-profit brands, and incidents in which the brand name was not mentioned. Furthermore, the scenarios included different forms of misleading consumers (e.g., providing misleading information, lying, misrepresenting information, and misleading consumers as to the brand's true values and beliefs).

First pretest. One hundred twelve Amazon Mechanical Turk panelists between the ages of 18 and 65 (53% under age 36) participated in the pretest in exchange for monetary compensation. Participants saw each of the 26 incidents in random order. For each, participants indicated whether they appraised the incident as misleading the consumer and immoral ("[The incident] is offensive, immoral, dishonest, or fundamentally wrong") or as lacking in fulfillment of a consumption goal ("[The incident] failed to serve the consumers' needs or deliver the product/service they expected"). At the aggregate level, consumers overwhelmingly appraised incidents designed to reflect an under-fulfilled consumption goal as such, X^2 (1, N = 112) = 70.42, $p < .001$, and the same was true for incidents designed to mislead consumers, X^2 (1, N = 112) = 56.50, $p < .001$. The Appendix Table summarizes the results.

Second pretest. A separate group of 103 Amazon Mechanical Turk panelists between the ages of 18 and 65 (49% under age 36) participated in a within-subjects design study in exchange for monetary compensation. Participants were presented with the 26 incidents, again in random

order, resulting in 2,678 (103 × 26) data points. Participants judged whether the consumer depicted in each scenario was more likely to feel betrayed or dissatisfied by the brand in response to each incident. Next, participants used a 9-point rating scale to indicate the degree to which they were confident in their assessment of the affective state (betrayed or dissatisfied) (1 = not at all confident; 9 = extremely confident). The majority of participants appraised brand actions that misled them as evoking betrayal (vs. dissatisfaction), whereas the majority of participants appraised the incidents involving under-fulfillment of a consumption goal as evoking dissatisfaction (vs. betrayal). Across all incidents, 88.9% of participants classified incidents that misled consumers as evoking brand betrayal (vs. dissatisfaction), χ^2 (1, N = 103) = 58.98, $p < .001$. Similarly, 91.3% of participants classified the unfulfilled goal incidents as evoking brand dissatisfaction (vs. betrayal), χ^2 (1, N = 103) = 66.58, $p < .001$. These results were replicated when we analyzed the results by scenario (see the Appendix Table).

Furthermore, participants were quite confident in their assessments. Across all scenarios, confidence ratings were high (M = 7.55 on a 9-point scale, SD = .29). In addition, consumers were as confident in their assessments of the incidents evoking betrayal as they were in their assessments of the incidents evoking dissatisfaction (M_{betrayal} = 7.49, SD = .32 vs. $M_{\text{dissatisfaction}}$ = 7.61, SD = .25, $t(24) = -1.10$, $p = .28$). Study 2 uses a subset of these stimuli to examine whether judgments of dissatisfaction or betrayal were associated with different brain activation regions.

Appendix Table: Results of the pretests: Incidents describing misleading consumers or failing to fulfill a consumption goal

Brand	Incident	Pretest 1: % Appraised Brand as Misleading Consumers	Pretest 1: % Appraised Brand as Failing to Fulfill Consumption Goal	Pretest 2: % Responded "Betrayed"	Pretest 2: % Responded "Dissatisfied"	Pretest 2: Mean Confidence in Rating (1= not at all; 9= very)
Paula Deen	Southern Celebrity Chef Paula Deen used a racial epithet that was derisive to African American consumers. Consumers felt____.	**96%**	4%	**88%**	12%	7.21 (1.63)
	Consumers who ordered Paula Deen's new cookbook were told it was backordered, required an extra shipping fee and took three weeks to deliver. Consumers were ___ by Paula Deen's business activities.	9%	**91%**	5%	**95%**	7.81 (1.40)
Dr. Oz	The Dr. Oz show featured a green coffee bean supplement touted as a "miracle" weight loss product. When consumers later learned that there was no scientific evidence supporting its effectiveness in weight loss, they felt ___.	**79%**	21%	**92%**	8%	7.53 (1.32)
	The Dr. Oz show spent an entire week discussing issues that had little to do with health, leaving viewers feeling ____ by this week's shows.	6%	**94%**	7%	**93%**	7.58 (1.44)
ADT Security	ADT's CEO said, "Our security system is so simple, even a woman can use it." Female consumers felt ____ by this statement.	**98%**	2%	**85%**	15%	7.26 (1.56)
	A customer who purchased a new ADT alarm system had difficulties on three occasions getting the alarm to work properly, leading to feelings of ____.	4%	**96%**	5%	**95%**	8.17 (1.01)
Shock Top	Shock Top beer was described as a craft beer produced by a small, independent brewery. Consumers who later learned that Shock Top was actually made by powerhouse brewing company Anheuser-Busch felt ____.	**85%**	15%	**93%**	7%	7.35 (1.64)
	Shock Top beer tasted much worse than consumers expected, leaving them to feel ____.	5%	**95%**	4%	**96%**	7.72 (1.48)
Ralph Lauren	Ralph Lauren manufactured U.S. Summer Olympics uniforms in China at a time when the U.S. was in a recession and American companies could have done the work. Consumers felt ____.	**83%**	17%	**85%**	15%	7.28 (1.59)

	Ralph Lauren's summer line featured clothes were unflattering, drab in color and made with an itchy material that was uncomfortable and irritated the skin. Consumers felt ___.	2%	**98%**	13%	**87%**	7.61 (1.41)
Netflix	A New York Times "article," "Women Inmates: Why the Male [Prison] Model Doesn't Work," was actually sponsored (paid) content produced by Netflix, which was promoting its "Orange is the New Black" TV series. Readers of the story felt ___ by Netflix.	**88%**	12%	**83%**	17%	7.16 (1.61)
	Netflix promoted its series "Orange is the New Black" so frequently that it interfered with consumers viewing experience, leaving them feeling ____.	12%	**88%**	11%	**89%**	7.49 (1.56)
Corinthian College	Corinthian College promised great job placements it misrepresented job placement data for nearly 1,000 students across its 12 campuses to increase applications to the college and enrollment. Enrolled students felt ____.	**87%**	13%	**91%**	9%	7.77 (1.37)
	Freshmen attending Corinthian College arrived on campus to find the dorms were extremely crowded, with some rooms holding more students than they should, leaving students feeling ___.	12%	**88%**	9%	**91%**	7.58 (1.43)
Walmart	A blog titled "Wal-Marting Across America" featured a couple driving across the U.S., capturing the lives and stories of Walmart employees. Consumers who thought that Walmart was actually sponsoring the couple's trip and had given them money to interview employees felt ____.	**92%**	8%	**85%**	15%	7.42 (1.50)
	Some of Walmart's new bathing suits were extremely low quality, and they started to fall apart the first time they were used, leading consumers to feel ___.	4%	**96%**	7%	**93%**	7.51 (1.61)
Bill Clinton	President Bill Clinton vigorously denied having a sexual relationship with Monica Lewinsky. But when Clinton later admitted that he had been lying about his affair, voters felt ___.	**98%**	2%	**93%**	7%	7.69 (1.45)
	President Bill Clinton tried to engage leaders of Israel and Palestine in productive talks, but they didn't go very far. When judging Clinton's performance, voters felt ____.	11%	**89%**	14%	**86%**	7.40 (1.45)
Susan G. Komen	Supporters of the Susan G. Komen Foundation learned that the Foundation decided to cut off its support to Planned Parenthood's reproductive education programs, leaving supporters feeling ____.	**71%**	29%	**82%**	18%	7.04 (1.79)

	Callers to the Susan G. Komen Foundation felt ____ when an unhelpful young woman answered the phone and did not provide any useful information about breast cancer screenings.	11%	**89%**	13%	**87%**	7.72 (1.40)
Investment Company (non-specified brand)	An investment company had been depicting itself as highly profitable and growing when it had actually accrued massive debt, leading investors to feel ____.	**94%**	6%	95%	5%	8.07 (1.29)
	An investment company that had been underperforming, doing somewhat worse than the S&P 500, left investors feeling _____.	11%	**89%**	11%	**89%**	7.35 (1.52)
Phone Company (non-specified brand)	A wireless phone company's privacy policy suggests that the company would not give customer information to other companies. When customers learned that the phone company actually did sell customer data to advertisers, they felt ___.	**91%**	9%	**96%**	4%	8.01 (1.35)
	Consumers who bought a phone that turned out to be a frail, fragile piece of garbage, and any minor shake made it stop working. The phone's poor performance left customers feeling ___.	8%	**92%**	9%	**91%**	7.86 (1.36)
Car Company (non-specified brand)	A car manufacturer was installing used parts in the model some consumers owned; a practice the company had tried to keep under wraps leaving consumers to feel ___.	**83%**	17%	**85%**	15%	7.53 (1.37)
	Consumers who test-drove a car that did not contain any impressive technology, including a built-in GPS or Bluetooth felt ___ by the manufacturer.	3%	**97%**	12%	**88%**	7.15 (1.49)

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