

We Do What We Are: Representation of the Self-Concept and Identity-Based Choice

Stephanie Chen, London Business School (stephaniechen@london.edu)

Oleg Urminsky, University of Chicago (oleg.urminsky@chicagobooth.edu)

Jiaqi Yu, University of Chicago (jiaqi.yu@chicagobooth.edu)

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Abstract

We propose a novel approach to identity-based choice that focuses on consumers' representations of the self-concept, as captured by the perceived cause-effect relationships among features of an individual consumer's self-concepts. More specifically, we propose that consumers who believe that an identity, a social category that they belong to, is *causally central* (has influenced or was influenced by many other features of the self-concept) are more likely to engage in behaviors consistent with that identity than those who believe that the same identity is *causally peripheral* (influenced or influenced by fewer other features). Across five studies, we provide evidence for the role of causal centrality in identity-based choice. We demonstrate that among consumers who belong to the same social category, those who believe that the associated identity is more causally central are more likely to engage in behaviors consistent with the social category.

Keywords: causal reasoning, identity, identity-based choice, self-concept

“We do what we do, because of who we are. If we did otherwise, we would not be ourselves.” - Neil Gaiman, *The Kindly Ones*

People’s identities, the social categories that they belong to, are the basis of a broad range of consumer behaviors (see Reed II et al. 2012 for a detailed review). Much theoretical and empirical work has examined how norms of social identities drive behavior, suggesting that those who belong to a given social category are more likely to act in accordance with the norms of the category than non-members (Akerlof and Kranton 2000, 2010; Markus and Wurf 1987; Turner 1987). While this approach to identity-based behavior provides a good explanation for behavior at the category level, individual differences in behavior among members of the same group are less well understood.

How can we predict which members of a social category are more likely to act in identity-consistent ways? The literature suggests two answers. First, research has identified identity-salience as a situational factor that produces differences in behavior, finding that people are more likely to display identity-consistent behavior when the social identity is salient (e.g., Brough et al. 2016; Cohn et al. 2014; Forehand, et al. 2002; LeBoeuf, Shafir, and Bayuk 2010; Reed II 2004). Second, theoretical and empirical work suggests that a social identity has more influence on behavior when a consumer sees it as important (LeBoeuf, Shafir, and Bayuk 2010; Markus and Wurf 1987; Reed II 2004).

While both of these explanations have provided important insight into how identity drives behavior, they each leave unanswered questions. Identity salience cannot explain why consumers who hold the same social identity and are in similar situations often display different levels of identity-consistent behaviors. Additionally, while identity importance is useful in predicting which members of social categories are more or less likely to act in identity-consistent ways,

without a better understanding of the underlying psychology of identity importance, how social identities become important and how to influence importance, the construct does not provide generalizable insight.

To address these gaps in the literature, we propose a new approach to identity-based behaviors that focuses on consumers' representations of specific social identities within the self-concept. We draw on research from cognitive psychology on conceptual representation, which suggests that the aspects that are most defining of a concept are those that are seen as more *causally central* (i.e., seen as more influential on or influenced by other aspects, as measured by the number of cause-effect relationships with other aspects; Rehder and Hastie 2001). We hypothesize (and find) that a consumer who sees a given social identity as causally central—causally connected to other important features of people's own subjective self-concept (e.g., other identities, memories, moral qualities, and personality traits)—will see that social identity as more important and be more likely to act in identity-consistent ways than a consumer who believes that the same social identity is more causally peripheral (linked to fewer features).

By moving beyond previously studied situational determinants of identity-consistent behavior, our framework is able to explain variance in behavior among consumers who share a social identity and situation, and provides the first explanation, in terms of mental representation, of what makes a social identity more important to one person than another. Across five studies, we find that consumers who perceive a social identity as relatively causally central are more likely to engage in identity-consistent behaviors than other consumers who hold that social identity but perceive it as peripheral.

THEORETICAL DEVELOPMENT

Social Categories, Identity Importance, and Choice

Theories in psychology and economics hold that people are more likely to behave in ways that are consistent with their social identities, specifically the social categories that they belong to. In particular, these theories posit that people have multiple social identities with potentially conflicting norms (Akerlof and Kranton 2000, 2010; LeBoeuf, Shafir, and Bayuk 2010; Markus and Wurf 1987; Oyserman 2009). As a result, increasing the salience of one social identity, either through priming, identity threat, or social distinctiveness (i.e., making members of that social identity the numerical minority in the decision context), prioritizes the norms associated with that social identity. As a result, group members will be more likely to perform behaviors consistent with the social group norms than when the social identity is not salient (Broughs et al. 2016; Cohn et al. 2014; LeBoeuf, Shafir, and Bayuk 2010). Such identity-salience effects have been shown for a wide range of social categories including (but not limited to) gender (Broughs et al. 2016; Shang, Reed, and Croson 2008), race and ethnicity (Chen, Ng, and Rao 2005; Forehand, Despande, and Reed II 2002; Oyserman et al. 2007), occupation (Cohn et al. 2014; LeBoeuf, Shafir, and Bayuk 2010), and family roles (Reed II 2004; LeBoeuf, Shafir, and Bayuk 2010). Identity effects have also been identified for product-ownership identities. Salient product ownership can lead to increased performance on product-related tasks (and decreased performance on tasks not related to the product) by activating product-related identities and deactivating product-unrelated identities (Chung and Johar 2018).

While situational factors powerfully influence people's tendency to display identity-consistent behaviors, two people facing the same situational constraints may nevertheless

demonstrate very different behaviors. Thus, to fully understand variance in identity-consistent behavior, a focus on individual differences is needed. Some researchers have attempted to better understand individual differences in identity-relevant behaviors among people who hold the same social identity. Theoretical and empirical research investigating the effect of social identities on behavior suggests that the importance of an identity may be a moderator of how social identity relates to behavior (Markus and Wurf, 1987; Reed II et al. 2012). Reed II (2004) found that people who rate a social identity as more important react more favorably to products geared towards that social identity. Furthermore, the identity importance has been shown to moderate the effect of salience on behavior. In particular, people who believe a social group is more important to who they are show larger priming effects on behavior (LeBoeuf, Shafir, and Bayuk 2010).

However, what exactly importance means in the context of identity-based behavior remains vague. For example, scales that measure identity importance are quite general, asking how much the social identity reflects or describes who the person is (LeBoeuf, Shafir, and Bayuk 2010; Luhtanen and Crocker 1992; Reed 2004). While these measures seem to capture useful differences in how people think about a given social identity, the importance construct provides little theoretical insight into why an identity is perceived as important. Previous explorations of identity importance sought to examine specific influences on identity importance (e.g., possessions, media and social engagements, Laverie, Kleine, and Kleine 2002). We instead provide a broader theoretical explanation of identity importance that does not rely on specific antecedents of importance but instead focuses on consumers' internal representations of their self-concepts.

Representation of the Self-Concept

We suggest that understanding who is more or less likely to act in an identity-consistent way requires investigating how people think about that social identity in relation to the broader self-concept. In the social psychology, consumer behavior, and economics literature, an *identity* or a *social identity* generally refers to a social category that a person belongs to. However, a broad literature from philosophy and psychology on people's beliefs about what defines the self-concept instead defines personal identity in terms of individual-level psychological traits (such as memories and moral qualities) that are not necessarily associated with social categories (see Molouki, Chen, Urminsky, and Bartels 2020 for a review).

Philosophers have long suggested that continuity of memories allows for continuity of the self (Locke 1694/1979) and psychological studies have shown that disruption to memories leads to perceived disruption to self-continuity and to the perceived continuity of others (Blok, Newman, and Rips 2005; Nichols and Bruno 2010). Recent research has suggested that lay perceptions of the self instead put moral qualities at the center of the self-concept (Strohming and Nichols 2014, 2015). Strohming and Nichols (2014) found that changes to the moral features of the self-concept were more disruptive to self-continuity judgments than various other types of features (e.g., memories, personality, preferences and desires). In addition, maintaining moral traits like honesty have been found to be important for consumers ability to maintain a positive self-concept (Mazar, Amir, and Ariely 2008).

Further, research on psychological connectedness to the future self also suggests that a wide range of psychological traits define a person's self-concept (see Urminsky 2016 for a review). It has been argued that the extent to which one is psychologically connected to their

future self (i.e., shares psychological features like memories, intentions, beliefs, and desires) should determine how willing one is to give up current rewards for future ones (Parfit 1984). Indeed, marketing and psychological research has found that inducing people to think that their psychological characteristics will change leads to less psychological connectedness to the future self and less willingness to forgo immediate rewards for delayed ones (Bartels and Rips 2010; Bartels and Urminsky 2011; 2015; Ersner-Hershfield et al. 2009). These results suggest that individual-level traits are an important part of how people think about the self and have significant impacts on consumers' behavior.

In this paper, to provide a better understanding of which consumers are more likely to act in ways consistent with a given social identity, we connect research on identity-based choice with recent developments in research on the self-concept. We propose that differences in consumers' beliefs about how features of one's own self-concept relate to each other—including both individual-level characteristics and social categories—predict differences in identity importance and identity-consistent behaviors. In particular, we propose that it is specifically the perceived *cause-effect relationships* between a social identity and to other features of one's self-concept that predict the likelihood of displaying identity-consistent behavior. We use the term *social identity* to refer specifically to a social category and use the broader term *feature*¹ to refer to social categories and also individual-level properties or aspects of a self-concept, adopting terminology from the concepts and categories literature (e.g., Smith and Medin 1981; Tversky 1977). We use the term *self-concept* to refer to the full set of all the social identities and features, and the relationships among them, that a consumer believes makes them who they are as a person.

¹ We use the terms *feature* and *aspect* interchangeably to refer to any property of the self-concept, including social categories as well as other properties of the self, such as memories, personality traits, and moral qualities.

Causally Central Aspects of the Self-Concept

Research in cognitive psychology has long emphasized the use of causal relationships to understand of the world (Gopnik and Wellman 1994; Keil 2006; Murphy and Medin 1985), beginning in early childhood (Gopnik et al. 2001; Schulz and Gopnik 2004). As understanding cause-effect relationships allow organisms to intervene on the world (Sperber, Premack, and Premack 1995), it seems natural that causal relationships would play a privileged and pervasive role in human cognition.

Causal reasoning not only allows for effective interventions, but also provides a structure to organize knowledge. It has long been suggested that knowledge is represented as intuitive theories about the world that include causal relationships (Keil 1989; Murphy and Medin 1985). For example, consumers' knowledge of Apple products not only includes the knowledge that the products are high quality, have great customer service, and are expensive but also theories about how these features are causally related—e.g., Apple products are expensive *because* they are high quality and are supported by great customer service.

Consumers' theories involving causal relationships shape learning. New knowledge is easier to acquire if it is consistent with people's theories about the world (Cornwell et al. 2006; Gregan-Paxon and John 1987; Murphy and Allopenna 1994; Pazzani 1991) and people incorporate new knowledge into their existing conceptualization by generating theories about their relationship (Kaplan and Murphy 2000). For example, if the new iPhone is going to have a better camera, consumers may theorize that the reason for the upgrade is that Apple feels it needs to add better features if they want to keep charging so much for the iPhone.

Recent research has found that causal beliefs about aspects of the self-concept are also a critical part of how people think about the self. Inspired by literature from cognitive psychology on conceptual representation, Chen, Urmitsky, and Bartels (2016) suggested and found that features of the self-concept are seen as defining to the extent that they are seen as causally central—i.e., causally linked to many other features of the self-concept, either as a cause or as an effect (Ahn 1999; Ahn et al. 2000; Rehder and Hastie 2001; Rehder 2003; Sloman et al. 1998). Consistent with the prediction that people perceive features to be defining of the self-concept to the extent they are causally central, participants reported more disruption to self-continuity from changes to features that they indicated were subjectively more causally central (vs. changes to more causally peripheral features)—i.e., people believed that they would be more of a different person when causally central features were changed than causally peripheral ones.

To illustrate how causal centrality impacts beliefs about what is most defining of the self-concept, imagine two pre-school teachers, Ari and Mark. Ari believes that it is his high-level of patience that caused his love of young children and caused him to choose his profession, preschool teacher. Mark instead believes that it is being a preschool teacher that has caused him to develop a high-level of patience and love of young children. As a result, even if Mark and Ari's profession, patience, and love of children are identical, their self-concepts will be fundamentally different. That is, patience will be more central to Ari's self-concept than Mark's, while Mark's profession will be relatively more central. As a result, Mark would experience a change in profession as more of a disruption to his self-concept than Ari would.

Causal Centrality as an Explanation of Identity-Consistent Behavior

We propose a novel causal centrality account of identity-consistent behavior that integrates prior work on how social categories impact behavior, how the self-concept is constructed from individual-level features, and how causal relations structure the self-concept. By integrating these different lines of research, the causal centrality approach to identity-based consumption addresses recent calls to connect research on identity-based consumption with theoretical views of the self-concept that describe it as multi-faceted (Reed II & Forehand, 2016).

In our approach, each person's self-concept is a unique network of subjective causal relationships among various aspects, including not only social categories, but individual-level aspects like memories, goals, moral values, preferences, and personality traits. Our main hypothesis is that, across consumers who share a given social identity, differences in the subjective importance of that social identity and in the degree to which they engage in identity-consistent behaviors are predicted by differences in their beliefs about how that social identity is causally related to other aspects of their self-concept.

More specifically, we propose that consumers who believe that a specific social identity is causally linked to more other features of the self-concept are more likely to engage in behaviors consistent with that social identity than those who believe that the same social identity is relatively less causally linked to other features. Returning to the example above, our account predicts that Mark would be more likely to display behaviors consistent with his social identity as a teacher than Ari, because Mark sees the teacher identity are more causally connected to other features of his self-concept. Relationships broadly consistent with our theory have been found in the domain of political identity and attitudes (Chen and Urminsky 2019).

In this paper, we test our causal centrality approach to explaining differences in identity-based consumption. Across five studies (and two additional studies reported in appendix C), we

demonstrate that—among people who self-ascribe to the same social identity—differences in the causal centrality of that social identity predict differences in identity-based consumption. In study 1, we test whether the causal centrality of being a user of a specific brand predicts incentive-compatible choices of that brand. Next, we examine the relationship between causal centrality (measured in study 2 and manipulated in study 3) and identity importance in predicting willingness to spend on an identity-relevant experience among football fans. Finally, in studies 4 and 5, we examine whether the causal centrality of an environmentalist identity explains differences in choices between environmentally-friendly and standard consumer products. Across the studies, we distinguish causal centrality from identity salience and from mere associations between social identities and others aspects of the self-concept. In particular, we distinguish between the effects of manipulating specifically the perceived causal links to a social identity (study 3) and the effects of more generally manipulating the salience of the social identity (Study 4).

STUDY 1: CAUSAL CENTRALITY OF BRAND-USER IDENTITY

Study 1 had two main goals. The first goal was to provide an initial test of our hypothesis that people who see a social identity as more causally central will be more likely to make identity-consistent consumer choices, using an incentive-compatible task. As brands are used to express and build consumer's identities, both at the group and personal level (Belk 1988; Berger and Heath 2007; Escalas and Bettman 2003, 2005; Swaminathan, Page, and Gurhan-Canli 2007), we had participants report a brand that they not only use, but also see as part of their self-concept. We examined the relationship between the causal centrality of the brand-user identity

and consequential choices between receiving a gift card for the brand or an Amazon gift card. Participants were entered into a lottery in which ten winners received one of their choices.

The second goal of this study was to distinguish between our causal centrality approach to identity-based consumption and a more general association-based theory. The causal centrality account posits that it is beliefs about specifically causal relationships between a social identity and other features of the self-concept that predict identity-consistent behavior. This is consistent with research that suggests that beliefs about causal relationships appear to be privileged in our representation of concepts, relative to simple associations. People are significantly more likely to recognize that features are correlated if they can describe a causal relationship between them than when they cannot (Ahn et al., 2002; Malt and Smith, 1984). For example, when the fit between a firm and an event is low, consumers are more likely to remember that the company has sponsored the event if an explanation for the relationship between the company and the event was provided, compared to when an explanation was absent (Cornwell et al. 2006). An explanation provides a causal basis for the relationship, without which the event and the company are merely associated. Accordingly, in this study, we contrast consumers' perceptions of causal centrality from consumers' beliefs about associations as predictors of identity-consistent choices.

Method

Participants. Two hundred seventy-four U.S. Amazon Mechanical Turk participants passed the screener and completed the study. The survey yielded a total of 230 valid responses after excluding participants who provided duplicate IP addresses, failed an attention check, or gave inconsistent answers in the choice task. Recruiting and exclusion criteria were pre-

registered at AsPredicted.org, #22324 (<http://aspredicted.org/blind.php?x=c8mq6i>). For all studies, materials can be found in appendix A and data can be found at:

https://osf.io/k735u/?view_only=d25d024522d24a8a9000770cae5ec083.

Screening and Design. We screened participants to identify a brand that they saw as part of their self-concept. In the screening task, participants reported whether they were users of any of a list of 12 brands (“Are you a user of this brand?”) and whether they identified with any of the 12 brands (“Do you consider being a user of this brand a part of your identity?”). Only participants who answered yes to both questions for at least one brand proceeded to the rest of the study. On the following screen, participants saw a single qualifying brand (the target brand in the study, randomly selected if multiple brands matched the criteria) and confirmed that they viewed the brand as part of their self-concept.

As we describe next, the study consisted of four main tasks: participants 1) made choices between receiving an Amazon gift card and a gift card from the target brand that was identified as part of their identity (the brand shown on the confirmation page), 2) performed the “listing causal relationships” task with the target brand-user identity and other features of their self-concepts, 3) reported non-causal associative connections between the target brand-user identity and other features of their self-concepts and, 4) reported the degree of self-brand connection for the target brand (Escalas and Bettman 2003).

Choice Task. We informed participants that one of their choices could be consequential—ten participants would have one of their choices picked at random and would receive the option that they selected in that choice. Participants made ten choices between receiving an Amazon gift card and receiving a gift card for the target brand. The value of the Amazon gift card ranged from \$5 to \$50 and the value of the brand gift card was always \$50—e.g., the first choice was

between a \$5 Amazon gift card and \$50 brand gift card, the second choice was between a \$10 Amazon gift card and a \$50 brand gift card, etc. (see appendix A page 3).

The brand gift card was always of higher- or equal-value of the Amazon gift card to make up for the greater convenience and flexibility of the Amazon gift card. Thus, this task measures the premium people would pay for the less-restricted Amazon card that is not constrained to brand-specific spending. We predicted that those who saw their brand-user identity as more central would not be willing to pay as large a premium for the ability to spend on non-brand purchases because they value brand spending more than those who see the brand-user identity as more peripheral.

Measuring Causal Centrality. All studies used a “listing causal relationships” task, adapted from the approach used by Chen et. al (2016), to measure the causal centrality of features of the self-concept. In this task, participants reported the causal relationships between a set of participant-generated and/or experimenter-defined features of the self-concept. In study 1, the features used in the “listing causal relationships” task came from a list of 16 features found to be important to the self-concept in previous research (Chen et al. 2016; Strohming & Nichols 2014). Participants viewed this list and selected the 10 features that they saw as most important to their self-concepts (see appendix A, page 5). These 10 features, in addition to the participants’ brand-user identity (e.g. Apple-user), were used in the “listing causal relationships” task.

After completing two practice trials with an unrelated concept (see appendix A), participants completed one trial for each feature, in which that feature was the target (e.g., in figure 1, “Being a user of [brand]” is the target feature). In each trial, participants were shown the target feature at the top of the screen (along with the question text) and all of the other features, with check boxes, listed under it. Participants indicated which of the listed features, if

any, were caused by the target feature (see figure 1). Participants were required to check at least one option but could check as many as they wanted (unless they selected the “none” option in which case they could only select that option).

FIGURE 1

EXAMPLE TRIAL OF LISTING CAUSAL RELATIONSHIPS TASK

Think about the following aspect **Being a user of [brand]**

Which of the other features of your personal identity listed below, if any, are caused by this aspect, **Being a user of [brand]**. By caused, we simply mean the feature was influenced or shaped by: **Being a user of [brand]**.

You may select as many or as few features as you see fit. In the below list, please select all the feature that you believe are caused by the above feature.

- ☐ Goals for personal life
- ☐ Important childhood memories
- ☐ Intelligence level
- ☐ Favorite activities and hobbies
- ☐ Close friendships
- ☐ Aesthetic preferences
- ☐ Level of honesty
- ☐ Significant romantic relationships
- ☐ Cherished memories of time with family
- ☐ Level of loyalty
- ☐ None of the above

From this series of questions, we calculated the causal centrality of each feature—the total causal relationships that a feature participates in, as a cause or as an effect (Chen et al. 2016, Rehder and Hastie 2001). The number of relationships in which a feature is a cause was the number of features selected in the trial in which that feature was the target. The number of relationships in which a feature was an effect was the number of times it was selected across all the other trials (when it was listed as an option under the target). The sum of the number of links that feature was a cause for and the number of links the feature was an effect for provides us with the total number of causal relationships a feature participated in, our measure of causal centrality. As some theories suggest that a feature’s causal centrality is determined only by the number of

causal relationships in which the feature is the *cause* (Ahn et al. 2000; Sloman et al. 1998), we will also explore whether the number of times the feature is a cause of another features (as opposed to an effect of another feature) is the primary driver of the relationship between a social identity and identity-consistent behaviors.

Measuring Non-Causal Associations. After the “listing causal relationships task,” participants reported any of the features that they saw as merely associated with their brand-user identity. Participants saw their target brand identity at the top of the screen with a personalized list of features that they had not previously reported as being causally related to their brand-user identity. Participants were asked to select any features from the list that they saw as being somehow associated with (i.e., going together with or connected to) the target feature despite not being causally connected with the target feature (see appendix A page 14).

Measuring Self-Brand Connection. As an additional exploratory exercise, we examined whether our causal centrality measure was distinct from, and would predict choice above and beyond, a different measure of integration of a brand into the self-concept, the self-brand connection scale (Escalas and Bettman 2003). The scale consists of seven statements that describe how much consumers have used a brand to define and create their self-concepts (e.g., *I feel a personal connection to Brand X, I consider brand X to be “me”* appendix A pages 16-19 for all questions). Participants reported how much each statement described them on 7-point scale (*1 = Not at all, 7 = Extremely well*). Responses to the seven questions were averaged for each participant to create the self-brand connection score ($\alpha = .922$).

Results

Relationship Between Causal Centrality and Brand Choice. Consumers who saw the brand-user identity as more causally central (based on a median split), on average, were willing to pay a higher premium for the Amazon gift card than those who saw the identity as more peripheral. On average, high causal centrality consumers selected the brand gift card approximately one more time than low centrality consumers ($M_{\text{central}} = 6.37$, $M_{\text{peripheral}} = 5.40$, $t(228) = 2.27$, $p = .024$, 95% CI of the difference = [.13, 1.8]. As the value of the Amazon gift card increased by \$5 with each subsequent choice and the brand gift card value was always \$50, the observed difference between the high and low centrality consumers is equivalent to those who perceived the brand-user identity as more peripheral being, on average, willing to accept \$5 less in Amazon spending for the \$50 brand gift card than those who saw the brand-user identity as more causally central.

We also tested the continuous relationship between causal centrality and valuation of the branded gift card. We fit a linear regression predicting the number of choices of the branded gift card by the causal centrality of the brand-user identity, controlling for total number of links and income. (In all regressions across studies, we controlled for either the total number of links or the number of links reported for a control feature, to account for a general tendency to report more links as a potential confound.)

The results of the linear regression confirmed the relationship between causal centrality and choice. Consumers for whom the brand-user identity was more causally central were more likely to choose the brand gift card over the Amazon gift card, indicating a higher valuation for consumption of that brand ($B = .32$, $SE = .09$, $p < .001$, see table 2 in appendix B for details), controlling for total number of links. Further, as a robustness check, we added income as an

additional control. For all studies, the relationship between causal centrality and behavior remained significant when controlling for income (see appendix B for details).

Separating Cause and Effect Relationships. Our measure of causal centrality includes all causal relationships that an identity has with other aspects of the self-concept, regardless of whether the identity is a *cause* of the other feature or an *effect* of another feature, or both. As there is debate about whether people's reasoning about causal centrality involves both causes and effects (Rehder and Hastie 2001) or only causes (Ahn et al. 2000; Sloman et al. 1998), we examined the predictive power of causes and effects separately.

We performed a linear regression, predicting brand choice based on both the number of links in which the brand-user identity was the cause of the other feature and the number of links in which the brand-user identity was the effect of the other feature, controlling for total number of links. The relationships in which brand-user identity was the *effect* was a significant predictor of choice ($B = .49$, $SE = .17$, $p = .006$) and the relationships in which brand-user identity was the *cause* was not a significant predictor of choice ($B = .17$, $SE = .16$, $p = .275$, see table 43 in appendix B for details). Thus, we find no evidence in this study that a cause-only measure of causal centrality predicts choices.

We use a total measure, including both causes and effects (Rehder and Hastie 2001), for generality. As shown in appendix B, while our measure of causal centrality (that includes both causes and effects) was consistently a significant predictor of behavior across the studies, whether effects links or cause links were a stronger predictor varied across the studies (see tables 43-47 in appendix B for details). This is consistent with previous research that suggests that for both concepts in general, and in the self-concept specifically, causes and effects both contribute to casual centrality (Chen et al. 2016; Rehder and Hastie 2001).

Distinguishing Causal Centrality from Related Constructs. To examine the relationship between non-causal associative links and choices of the brand gift card, we added the number of non-causal associative links to the above regression. Causal centrality of the brand-user identity predicted branded gift card choices ($B = .31$, $SE = .09$, $p = .001$), controlling for the number of non-causal associative links to the brand, which was not a significant predictor ($B = -.17$, $SE = .18$, $p = .360$, see table 4 in appendix B for details). This is consistent with previous research that finds that causal relationships have a privileged status in cognition and supports our theoretical claim that it is specifically *causal* relationships between a social identity and other aspects of the self-concept (as opposed to general associations) that are relevant to identity-consistent behavior.

We also found no evidence that self-brand connection explains the relationship between causal centrality and choice of the branded gift card. Self-brand connection was correlated with both the number of brand choices ($r = .160$, $p = .016$) and centrality of the brand-user identity ($r = .344$, $p < .001$). However, a linear regression predicting choices of the brand gift card found that causal centrality of the brand-user identity was a significant predictor ($B = .27$, $SE = .10$, $p = .007$), but revealed no significant additional effect of self-brand connection ($B = .26$, $SE = .18$, $p = .150$, see table 5 in appendix B for details).² Further, a mediation analysis revealed that the causal centrality of the brand-user identity fully mediated the relationship between self-brand connection and gift card choices (see figure 1 in appendix B for details) suggesting that causal centrality explains the relationship between self-brand connection and gift card choice.

Discussion

² Although the two variables were correlated, the variance inflation factor suggested that collinearity was not an issue (VIF = 1.34, see table 5 in appendix B for details).

The results of study 1 support our main hypothesis: consumers who see a social identity as more causally central are more likely to make identity-consistent choices in an incentive-compatible task. Specifically, in study 1, consumers who reported more links between their brand-user identity and other aspects of the self-concept were more likely to choose a brand-specific gift card over a less restricted gift card, demonstrating a higher revealed valuation for brand-constrained spending. This was not the case for mere associations between brand identity and other aspects of their self-concept.

STUDY 2: CAUSAL CENTRALITY AND WILLINGNESS TO PAY WHEN IDENTITY SALIENCE IS HIGH

The results of study 1 support our hypothesis that consumers who believe that a social identity is more causally central are more likely to behave in identity-consistent ways. In study 2, we extend this finding to a new social category, being a fan of a football team. Further, as prior research has shown that identity-consistent behavior increases when a social identity is made situationally salient, we examine whether the causal centrality of an identity can predict identity-consistent behavior even in situations in which the social identity is highly salient. We conducted study 2 at a time when the football fan identity was made highly salient by a real-world event, the Super Bowl. To test robustness of the results, we conducted two waves of the study across two years, either directly after (wave 1) or directly before (wave 2) a Super Bowl.

In study 1, the features of the self-concept used in the “listing causal relationships” task were selected by the participants from a list of 16 features found to be important to the self-concept by previous research. As a test of robustness of the results, and to ensure that our results

were not due to the specific features included in study 1, in study 2, we used an open-ended elicitation, having participants each generate the majority of features used in the “listing causal relationships” task.

As previously described, the subjective importance of an identity to an individual consumer has been shown to moderate the effect of that social identity’s salience on identity-consistent choice (Reed II 2004; LeBoeuf, Shafir, and Bayuk 2010) and has been theorized to predict which of a consumer’s various social identities will exert more influence on behavior (Markus and Wurf 1987). Thus, in wave 2 of study 2, we included additional identity importance measures to test our prediction that importance will partially mediate the relationship between perceived causal centrality and identity-consistent choice.

Method

Participants. In wave 1, 366 residents of North Carolina and Colorado (the home states of the two teams in the 2016 Super Bowl) were recruited from an online commercial marketing-research panel, and completed the study one to three days after the Super Bowl. Sixty of these participants reported not being football fans in the screener, leaving 306 football fans to take the study. After excluding participants who failed the attention check, provided invalid answers as features of their self-concept (all the same answer or not responding) or their willingness to pay (specifically, WTP of \$1,000,000,000,000,000), the survey yielded 253 valid responses.³

In wave 2, approximately 4.5 to 2.5 hours prior to the 2017 Super Bowl, we recruited 397 Amazon Mechanical Turk participants from throughout the U.S. One hundred fifty of these

³ None of the football fans had duplicate IP addresses.

participants reported not being football fans, leaving 247 football fans for the study. Five participants were excluded for failing an attention check, yielding 242 valid participants.⁴

Procedure. Participants completed an abbreviated version of the “listing causal relationships” task from Study 1, comprised of ten self-generated features that participants listed as defining who they are and six additional pre-specified features: being a fan of the football team they favored, childhood memories, personal life goals, friendships, values and principles, and personality. Wave 2 included one additional feature, “level of hunger”.

The task focused on the behaviorally-relevant feature, being a fan of their favorite football team, relative to a control feature. We elicited the causal centrality of either the (arbitrarily selected) fifth feature participants had listed (wave 1) or “level of hunger,”⁵ (wave 2) as a control, to account for potential differences in the general tendency to report features of the self-concept as causally linked. Participants completed two trials for each of the target features: one that measured the number of other features causing the target feature (i.e., the feature’s causes) and another that measured the number of other features caused by the target feature (i.e., the feature’s effects).

For example, a participant who reported being a Carolina Panthers fan would first be asked which other aspects of her self-concept *caused her* to be a fan of the Carolina Panthers. She would then be asked which other aspects of her self-concept were *caused by* her being a fan of the Carolina Panthers. The causal centrality of being a Carolina Panthers was calculated by summing the number of features selected across the two trials.

⁴ None of the football fans had duplicate IP addresses or reported invalid responses to the open-ended questions.

⁵ “Level of Hunger” was used as a control feature in wave 2 because in previous studies it consistently participated in very few causal relationships (Chen et al 2016), making it a good measure of participants’ tendency to report relationships merely because that is what the task involved.

Participants were then asked how much they would be willing to pay for a ticket to see their team play in the Super Bowl if their team made it the following year. Participants then reported measures of sports involvement: whether they knew who had won the Super Bowl (wave 1 only), whether they had watched the Super Bowl (wave 1) or how likely it was that they would watch the Super Bowl (wave 2), their interest in football, and how many hours per week they spent on sports (including participating, watching, playing sports video games, etc). As part of other studies, participants also completed other questions related to football (on hedonic adaptation in wave 1 and on projection bias in wave 2). At the end of the survey, participants answered demographic questions.

In wave 2, after reporting that they were an NFL fan but before the “listing causal relationships” task, participants completed identity importance (Reed II 2004) and esteem scales (Shang, Reed II, and Croson 2008; Luhtanen and Crocker 1992) for their NFL team fan identity. The importance scale is comprised of three items which ask how much participants felt being a fan of a team describes who they are, how much they identify with that group, and how much they admire the group. The esteem scale is intended to measure the participants’ perceived standing in the group. It is composed of four items that ask how worthy a group member they are, how much they have to offer the group, if they are a cooperative participant in group activities, and if they often feel as if they are a useless group member (reverse scored).

We included the esteem measure because previous literature on identity-based choice has found that it moderates identity congruency effects (Reed II, Shang, and Croson 2008). People who have high identity esteem are more likely to imitate the choices of other group members (even if these choices are not associated with the group) than those with low identity esteem. As

this study doesn't involve social congruency effects, the addition of esteem was exploratory and we did not have an a priori prediction about its relationship with causal centrality.

Results

Relationship Between Causal Centrality and Brand Choice. As the WTP data were positively skewed, we use the natural log of (WTP + 1) in all of our analyses. The results of the analyses with raw WTP values and for each wave are reported in appendix B. We regressed the log-WTP on the casual centrality of being a fan, controlling for the causal centrality of the control feature. As predicted, those who perceived being a fan as more causally central were willing to pay significantly more than those who perceived being a fan as more causally peripheral ($B = .14$, $SE = .03$, $p < .001$, see table 8 in appendix B).

While our focus is on identity-consistent behaviors, exploratory analysis revealed that causal centrality predicted interest in football (controlling for number of total links reported, $B = -.05$, $SE = .01$, $p < .001$, see table 12 in appendix B), suggesting that causal centrality may predict degree of involvement with the social identity. According to our account, football fans whose fandom is more causally central will be more willing to pay to see their team in the Super Bowl, because they perceive acting in identity-consistent ways as more congruent with who they are than those who perceive fandom as causally peripheral. However, it is also possible that the causal centrality measure is merely capturing differences in involvement with football. To examine this, we ran another linear regression, predicting log-WTP with football fan causal centrality and the control links, controlling for interest in football. The relationship between fan causal centrality and log-WTP remained significant ($B = .09$, $SE = .03$, $p = .002$), suggesting that

interest in football does not explain the relationship between causal centrality and log-WTP (see table 13 in appendix B).

To further examine whether involvement could explain the relationship between causal centrality and log-WTP, we added additional controls that serve as proxies for involvement to the above regression: whether they had watched the Super Bowl (for wave 1, which took place after the Super Bowl) or how likely there were to watch the Super Bowl (for wave 2, which took place before the Super Bowl) and the number of hours that they spend on sports per week.⁶ Even after adding these additional controls, causal centrality was a highly significant predictor of log-WTP ($B = .09$, $SE = .03$, $p = .004$, see table 15 in appendix B for details).

Exploring Esteem and Importance as Mediators. With the wave 2 data, in which we measured identity importance and esteem, we conducted mediation analyses to explore how the effects of causal centrality relate to prior findings suggesting that identity-consistent behaviors are influenced by these factors (Reed II 2004; Shang, Reed II, and Croson 2008).

We conducted a mediation analysis to test whether some of the relationship between causal centrality and valuation operates via importance of being a football-team fan, controlling for the control feature links. We found a significant indirect effect of causal centrality on log-WTP via fan identity importance ($B = .03$, $SE = .01$, 95% Bootstrapped CI = [.00, .06], see figure 2 in appendix B for details). Importance mediated 50% of the effect of causal centrality on log-WTP (direct effect of causal centrality on log-WTP: $B = .06$, $p = .108$). Causal centrality did not significantly predict log-WTP when controlling for importance ($B = .03$, $SE = .04$, $p = .413$).

We ran the same mediation analysis using esteem as the mediator and found a significant indirect effect of causal centrality on log-WTP via fan identity esteem ($B = .04$, $SE = .01$, 95%

⁶ As virtually all participants (97%) knew the winner of the Super Bowl in wave 1, this factor was not included in the regression.

Bootstrapped CI = [.02, .07], see figure 4 in appendix B for details). Esteem mediated 85% of the effect of causal centrality on log-WTP. Causal centrality did not significantly predict log-WTP when controlling for esteem ($B = .01$, $SE = .03$, $p = .693$). Thus both measures, which were strongly correlated with each other ($r = .47$, $p < .001$), mediated the relationship.

Discussion

Consistent with the results of study 1, the results of study 2 suggest that football fans who believe being a fan is causally central are more willing to spend in identity-consistent ways. The timing of the study, around a real-world event that made the football fan identity very salient, highlights the usefulness of our approach's focus on consumer's internal representation instead of situational factors. In this context, differences in WTP are unlikely to be explained by differences in situational salience of the social identity but were predicted by differences in the internal representations of the social identity's place in the broader self-concept. We replicate this finding with an experimental manipulation of salience in studies 4 and 5.

Further, the relationship between causal centrality and log-WTP remained when controlling for whether participants watched or planned to watch the Super Bowl and the amount of time spent on sports, suggesting that causal centrality is not simply a measure of involvement with identity-related activities. Among people who watched the Super Bowl, causal centrality predicted differences in willingness to pay for Super Bowl tickets. This perhaps reflects a difference in motivation for performing identity-consistent acts, such that those with higher centrality may have watched the Super Bowl because it more strongly reflects who they are and those with lower centrality watched for less identity-based reasons (e.g., to be with friends,

watch commercials) and would not be motivated to buy an expensive ticket as those reasons might not apply.

Finally, we found that both identity importance and esteem mediated the relationship between causal centrality and log-WTP. As previous research has found that people see more causally central aspects of the self as more defining of the self-concept (Chen et al. 2016), in the next study, we focus on identity importance as, conceptually, causal centrality is more in line with identity importance (i.e., how much a social identity reflects who someone is as a person) than identity esteem (i.e., how good a member of a group a person is). These results suggest that causal centrality explains identity-consistent behavior, in part, because more causally central identities are seen as more important. In fact, individual differences in the causal centrality of their football fan identity can help explain why fans differ in the perceived importance of their fan identity, even when their level of involvement in football is the same.

STUDY 3: MANIPULATING CAUSAL CENTRALITY

The previous studies provide strong correlational evidence for the relationship between an identity's causal centrality and identity-consistent behaviors. Thus far, we have studied causal centrality of an identity as a relatively stable individual difference. Consistent with this view, recent research has found, in a panel study of 171 undergraduate students over the course of their freshman year, that the causal centralities of identities are highly stable (average test-retest reliability $r = .60$; Chen and Urminsky 2020). However, given that causal centrality is based on a subjective perception, even if deeply held, it may be possible to experimentally increase the

causal centrality of a given social identity in the moment, specifically by prompting participants to focus on causal connections to that social identity.

In study 3, instead of measuring causal centrality, we experimentally manipulate causal centrality, to test whether highlighting a social identity's causal connections with other aspects of the self-concept increases the likelihood of identity-consistent behavior and makes the social identity seem more important. We again examined the relationship between the causal centrality of the football fan identity and WTP to see one's favorite team play in the Super Bowl. To manipulate perceived causal centrality of the football fan identity, prior to reporting WTP, we replaced the "listing causal relationships" measurement task from study 2 with a manipulation task, in which half of the participants listed the aspects of their self-concept that their football fan identity was causally related to and wrote about how all of these aspects were influenced by or influenced their football fandom.

Based on our theory and the results of study 2, we predicted that prompting participants to think about their football fan identity's causal relationships with other features of the self-concept would increase both perceived identity importance and WTP. In order to make sure that any effects found were the result of thinking causally about the football fan identity, rather than thinking about cause and effects between features of a social identity generally, participants in the control condition did the same task with a different social identity, their occupation.

Method

Participants. Four hundred twenty-six U.S. Amazon Mechanical Turk participants qualified and completed the study. The survey yielded a total of 407 valid participants, after

excluding those failed the attention check and gave non-valid answers to the open-ended questions. Recruiting and exclusion criteria were pre-registered at AsPredicted.org, #22324 (<https://aspredicted.org/blind.php?x=bh8jj8>).

Procedure. Participants first completed a screener in which they answered eight questions about specific identities, including if they were an NFL fan and if they were employed. (The remaining six questions only served to mask the purpose of the study so that participants could not strategically answer to gain access to the full study.) Only participants who reported being both NFL fans and employed were eligible for the main study. These participants then reported what team they were a fan of and what their occupation was.

The main study consisted of three tasks in which participants 1) listed and wrote about the aspects that caused or were caused by a target social identity (causal centrality manipulation), 2) reported WTP and, 3) completed the identity importance scale. To manipulate causal centrality of the football fan identity, participants were randomly assigned a target social identity (football fan or occupation) for the first task. In two open-ended questions, participants listed the aspects that 1) caused (shaped or influenced) the target social identity and, 2) the aspects that were caused by (were shaped or influenced by) the target social identity. They then wrote three sentences about how the aspects they listed in the previous questions were interrelated with the target social identity. (See appendix A page 50 for wording of the full task.) This manipulation differs from the identity salience manipulations used in the prior literature (Coleman and Williams 2013; Reed II 2004) by focusing participants specifically on the ways in which the target identity is interrelated with other aspects of identity.

Participants then reported how much they were willing to pay to watch their team play in the following Super Bowl and completed the identity importance scale (Reed II 2004 used in wave 2 of study 2). Finally, participants answered a few demographic questions.

Results

Effect of the Causal Thinking Manipulation on WTP. Participants who wrote about the causal relationships between their football fan identity and other aspects of the self-concept reported a higher log-WTP to see their favorite team in the Super Bowl than those who wrote about their occupation ($M_{\text{football}} = 5.89$, $M_{\text{occupation}} = 5.53$, $t(405) = 2.68$, $p = .008$, 95% CI of the difference [.09, .62])⁷. A linear regression predicting log-WTP with condition (football fan vs. control), controlling for income, confirmed that those who wrote about their football fan identity were willing to pay more to see their team play in the Super Bowl ($B = .17$, $SE = .07$, $p = .010$, see table 29 in appendix B).

Effect of the Causal Thinking Manipulation on Importance. Participants in the football fan condition reported significantly higher football fan identity importance than those in the occupation condition ($M_{\text{football}} = 5.40$, $M_{\text{occupation}} = 5.10$, $t(405) = 2.56$, $p = .011$, 95% CI of the difference [.07, .54]).

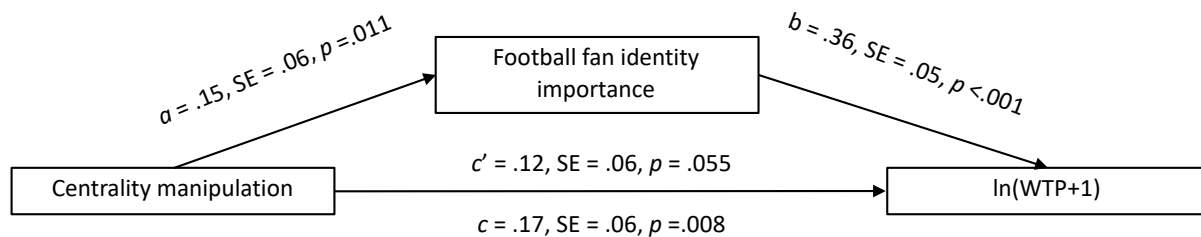
Mediation Analysis. We conducted a mediation analysis to test whether the effect of thinking about the football fan identity's causal relationships influenced log-WTP via importance. There was a significant indirect effect of the causal thinking manipulation on log-

⁷ We pre-registered analyses using raw WTP (reported in appendix B) and secondary analyses using log-WTP. Given the skew in the data, we now believe that using log-WTP is the correct analysis and we report this analysis in the paper.

WTP via fan identity importance ($B = .06$, 95% Bootstrapped CI = [.01, .11]). The relationship between log-WTP was partially mediated by importance and was marginally significant when controlling for importance ($B = .12$, $SE = .06$, $p = .055$, see figure 2).

FIGURE 2

STUDY 3: IDENTITY IMPORTANCE MEDIATES RELATIONSHIP BETWEEN THE CAUSAL CENTRALITY MANIPULATION AND LN(WTP+1)



NOTE—Centrality manipulation was coded as follows: occupation = -1, football fan = 1. Mediation analysis performed using the PROCESS bootstrapping macro (model 4) with 5,000 resamples. A 95% confidence interval was computed to test the indirect effect (95% CI of the indirect effect = [.01, .11]).

Discussion

The results of study 3 provide causal evidence for our account using an experimental manipulation of causal centrality. Participants who wrote about their football fan identity's causal connections with other aspects of the self-concept, reported higher WTP for an identity-relevant experience and perceived the football fan identity as more important than when they wrote about their occupational identity's causal connections. Additionally, replicating the results of wave 2 of study 2, identity importance mediated the influence of causal centrality on WTP, providing further support that causal centrality impacts identity-consistent behaviors in part by

making identities seem more important. While previous research has generally either focused on the antecedents of identity importance (e.g., Laverie et al. 2002) or the consequences of identity importance on behavior (e.g., LeBoeuf et al. 2010; Reed II 2004), the results of study 3 connect the antecedents (causal centrality) to the consequences (WTP) of identity importance.

As we have suggested that causal centrality is a largely stable individual difference and, as a result, may be difficult to manipulate, we performed a replication of study 3 to explore the robustness of the effect of thinking about causal relationships on identity-consistent behavior. The replication study was directionally consistent with study 3, but the difference in log-WTP across the football and occupation conditions was not statistically significant ($M_{\text{football}} = 5.66$, $M_{\text{occupation}} = 5.49$, $p = .207$, see study A3 in appendix C). Nevertheless, a meta-analysis combining studies 3 and A3 ($n = 800$) confirmed that the causal thinking manipulation significantly increased WTP but, consistent with our characterization of causal centrality as a largely stable difference, the effect size appears to be relatively small ($M_{\text{football}} = 5.78$, $M_{\text{occupation}} = 5.51$, $d = .20$, $p = .006$, see appendix C).

Our mediation results suggest that the causal thinking manipulation influences identity-consistent behaviors by bringing an identity's causal relationships with other important features of the self-concept to the forefront, making the social identity seem more important (including in the meta-analysis, indirect effect of the manipulation on log-WTP via importance, $B = .06$, 95% bootstrapped CI = [.02, .09], see appendix C). Thus, it is important to note that the manipulation may have no effect or even potentially backfire among people who hold a social identity but have a hard time thinking of what it is causally connected to (possibly making the identity seem *less* important). While we saw some anecdotal evidence for this in open-ended responses from a very small number of our participants, this study explored an identity that people self-select into

and therefore, we speculate, the effect of the manipulation may be more consistent here than for social identities that people do not self-select into (e.g., gender or age). For such social identities that people do not chose, some people who hold the identities (are members of the social category) may nevertheless not think the social identity is representative of who they are.

While the results of study 3 and the meta-analysis reported in appendix C suggest that causal centrality influences identity-consistent behaviors, the causal centrality manipulation not only highlighted the football fan identity's causal relationships but also made the football identity more salient. Thus, it is possible that identity salience may influence behavior via causal centrality and is what drives the relationship between causal centrality and identity-consistent behavior. We test these possibilities in Study 4.

STUDY 4: RELATIONSHIP BETWEEN IDENTITY SALIENCE AND CAUSAL CENTRALITY

In study 4, we test the generalizability of our findings by exploring the environmentalist identity. In this study, conducted with a different population of participants than the prior studies, we measured the causal centrality of the environmentalist identity and had participants complete a series of hypothetical purchase decisions in which they chose between two versions of a product: a more expensive environmentally-friendly version and a cheaper conventional version.

Prior research has found that the salience of an environmentalist identity impacts consumer choice and judgments (Bolton and Reed II 2004; Coleman and Williams 2013). In this view, the norms and/or emotional profiles associated with an identity become salient when the identity is salient, influencing behavior. We have posited that causal centrality of a social identity

guides behavior because of how people generally value behavior that is consistent with more causally central social identities, rather than because of identity salience temporarily activating norms. Consistent with this view, study 2 tested the effect of causal centrality specifically when the relevant social identity (football fandom) was already highly salient (the day of the Super Bowl). However, thus far we have not directly tested for a potential role of identity salience in the effects of causal centrality.

In order to examine whether identity salience drives the relationship between causal centrality and behavior, we manipulated the salience of the environmentalist identity with a task used in prior literature that does not highlight causal relationships (unlike the causal thinking manipulation used in study 3). If identity salience is responsible for the relationship between causal centrality and behavior, we would expect the salience manipulation to increase both causal centrality of the environmentalist identity and identity-consistent behavior. If, instead, identity salience and causal centrality are separable, we would expect each to influence behavior independently of the other.

Method

Participants. A power analysis from a pilot study result in which the effect of the salience manipulation was marginally significant suggested that detecting an effect of salience on causal centrality with 95% power in this context might require 191 participants per condition, so we aimed for 200 valid participants per condition (see study A2 in appendix C for details). To compensate for the planned exclusions, we recruited a total of 450 participants from Prolific

Academic, an online participant platform. Recruiting and exclusion criteria were pre-registered at AsPredicted.org, #42944 (<http://aspredicted.org/blind.php?x=hi83xk>).

We recruited U.S. participants who had previously reported caring about environmental issues (in the Prolific panel screening questions, answering a 4 or 5 on a 1-to-5 scale to the question, “How concerned are you about environmental issues?”). The survey yielded a total of four hundred eleven valid participants, after excluding those who failed the attention check or did not report wanting to be an environmentally-friendly person in the main survey.⁸

Procedure. At the beginning of the study, participants reported whether they agreed with an initial set of social identity related statements, including one about the target social identity: “I want to be an environmentally-friendly person”. The other five questions asked whether participants 1) were sports fans, 2) were pet lovers, 3) wanted to move to another city, 4) wanted to retire at age 65 and, 5) were frugal.







The rest of the study consisted of three tasks: 1) a writing task (the salience manipulation), 2) the “listing causal relationships” task to measure causal centrality and, 3) the environmental-products choice task. The salience manipulation was adapted from Coleman and Williams (2013). Participants were randomly assigned to either write about their environmentalist identity (environmentalist-salient condition) or to write about what they had done the previous day (control condition, see appendix A page 60-61 for wording.) Unlike the manipulation used in study 3, this more general manipulation of identity salience does not prompt participants to consider the ways in which the target social identity is interrelated with other aspects of the self-concept. Therefore, it is an open question whether manipulating general salience of an identity would increase its causal centrality.

⁸ No participants reported duplicate IP addresses and one participant provided an invalid response to both the writing task and the aspects of identity questions but was removed for failing the attention check.

Prior to completing the “listing causal relationships” task, participants reported the features that they felt were most important to the person who they are, in six categories found to be important to the self-concept in previous research (Chen et al. 2016, Strohming and Nichols 2014): memories, preferences, moral qualities, personality traits, goals/desires, and other (in which participants could describe anything important to their self-concept that they had not yet listed). Participants then completed the full “listing causal relationships” task from study 1 with twelve features of the self-concept, including their environmental identity, the six features they had just described, and the additional features reported in five questions from the initial set of identity questions. The presentation order of these features was randomized across participants (but each participant saw the features in the same order across all trials).

FIGURE 3

STUDIES 4 AND 5: CHOICE SETS, ENVIRONMENTAL-PRODUCTS CHOICE TASK

 	<p>GE 60-watt, 4-pack A19 light bulbs for \$4</p> <p>OR</p> <p>GE LED 4-pack replacement 60-watt light bulbs for \$19.99</p>
 	<p>Single-use plastic bag for \$0.10</p> <p>OR</p> <p>Re-useable canvas bag for \$3.99</p>
 	<p>Energizer 4-pack of AA alkaline batteries for \$4.99</p> <p>OR</p> <p>Energizer 4-pack of AA rechargeable batteries for \$13.99</p>

In the choice task, participants made three hypothetical purchasing decisions (see figure 3). Participants chose between buying an environmentally-friendly version and a cheaper conventional version in each of three product categories: light bulbs, shopping bags, and batteries. The placement of the choice options (environmentally-friendly vs. conventional) on the screen was randomized. They then rated which of the two products in each choice set they thought was better for the environment on a scale of 1 to 5 (1 = traditional version is better for the environment, 5 = environmentally-friendly version is better for the environment, end points of the scale were labelled with pictures of the products and short descriptions used in the choice task, e.g., 60-watt LED lightbulbs). Finally, participants answered a few demographic questions.

Results

On average, participants selected the more environmentally-friendly option in 2.03 (out of 3) choices. In each pair of options, the environmentally-friendly item was considered significantly better for the environment than the conventional item ($M_s \geq 4.35$ vs. midpoint of 3, $t_s > 27.83$, $p_s < .001$).

Effect of the Salience Manipulation on Causal Centrality. There was no significant difference in the causal centrality of the environmentalist identity between participants who wrote about their environmentalist identity ($M = 3.45$) and those who completed the control writing task ($M = 3.10$, $t(409) = 1.15$, $p = .249$, 95% CI of the difference = $[-.24, .94]$). To ensure that the salience manipulation didn't have an effect on total links reported in the "listing causal relationships" task that masked a specific effect on causal centrality, we also performed a linear regression predicting causal centrality by condition, controlling for total number of links. This

analysis confirmed that condition had no influence on causal centrality ($B = .16$, $SE = .18$, $p = .370$, see table 30 in appendix B). Thus, despite high statistical power, we find no evidence that manipulating the salience of the environmental identity affects its causal centrality, although the results are, of course, potentially consistent with a small positive or negative effect. For additional discussion of whether manipulating salience impacts causal centrality, see appendix C.

Effect of the Salience Manipulation and Product Choices. Consistent with prior research, participants chose more environmentally-friendly products in the environmentalist-salient condition ($M = 2.11$), than in the control condition ($M = 1.96$; $t(409) = 1.83$, $p = .068$, 95% CI of the difference = $[-.01, .32]$), a marginally significant difference.

Relationship Between Causal Centrality and Product Choices. A linear regression confirmed that participants who saw their environmental identity as more (vs. less) causally central chose more environmentally friendly products ($B = .10$, $SE = .02$, $p < .001$, see table 32), controlling for total number of links. This generalizes our prior findings to the environmentalist identity and to choices between consumer products. The relationship between causal centrality and choice holds both in the environmentalist-salient condition ($B = .10$, $SE = .03$, $p = .004$) and in the control condition ($B = .10$, $SE = .03$, $p = .001$, see tables 34 and 35 in appendix B).

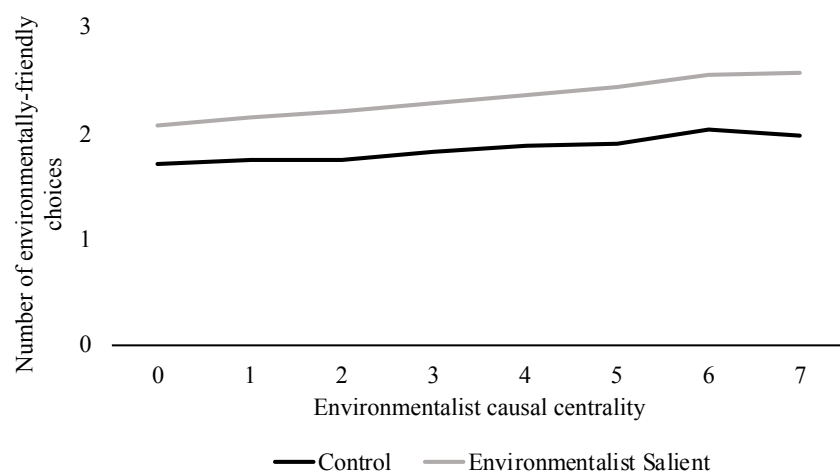
Relationship Between Causal Centrality, Salience, and Product Choice. A linear regression predicting the total number of environmentally-friendly choices found a significant effect of causal centrality of environmentalist identity ($B = .10$, $SE = .02$, $p < .001$) and a marginal non-significant effect of salience condition ($B = .13$, $SE = .08$, $p = .102$, see table 36 in appendix B), controlling for total number of causal links (see figure 4).

To test whether the relationship between causal centrality and choice was affected by salience, we re-ran the regression, adding a condition x causal centrality interaction term. The

interaction was not significant ($B = .00$, $SE = .04$, $p = .928$, see table 37 in appendix B), suggesting that causal centrality of a social identity predicts identity-relevant choices similarly regardless of whether the salience of the identity has been manipulated. Equivalently, the effect of the identity-salience manipulation did not differ based on how causally central the environmental identity was for a consumer.

FIGURE 4

STUDY 5: REGRESSION LINES PREDICTING NUMBER OF ENVIRONMENTALLY-FRIENDLY CHOICES WITH ENVIRONMENTALIST CAUSAL CENTRALITY, CONTROLLING FOR TOTAL LINKS



NOTE—Regression equation for the control condition is: $.10X_1 - .01X_2 + 1.90$. Regression equation for the environmentalism-salient condition is: $.10X_1 - .02X_2 + 2.18$. X_1 = environmentalism causal centrality, X_2 = total links. For each level of causal centrality, the mean number of total links for that level is plotted.

Discussion

The results of study 4 replicated the findings of the previous studies with a new social identity. Consumers who perceived the environmentalist identity as more causally central were more likely to make identity-consistent choices than those who perceived this identity as more causally peripheral, regardless of whether the social identity was first made salient or not. This main result was also replicated in two additional studies that used the same choice task as study 4, reported in appendix C. In both studies A1 ($n = 96$) and A2 ($n = 292$), causal centrality of the environmental identity predicted choice of environmentally-friendly products, controlling for total number of reported links (pilot study, study A1: $B = .139$, $SE = .05$, $p = .005$; study A2: $B = .09$, $SE = .03$, $p = .004$). Further, the results of the environmentalist-salient condition show that even when a social identity is experimentally manipulated to be salient, centrality still predicts behavior—a replication of the results of study 2 in which we found that centrality of the football fan identity predicted behavior even when the identity was made highly salient by a real-world event, the Super Bowl.

The results of study 4 (and study A2 in appendix B) were also consistent with the findings in the previous literature, that experimentally manipulating an identity to be more salient, generally makes consumers more likely to make an identity-consistent choice. However, we found no evidence that the influence of the salience manipulation on choice differs depending on the causal centrality of the environmental identity, suggesting that the salience manipulation is equally effective among consumers who see the identity as central and peripheral.

These results suggest that causal centrality and salience are dissociable and have separate influences on identity-consistent behavior. The salience manipulation had no influence on causal centrality, and salience and causal centrality both independently related to choices. Further, these results are inconsistent with an alternative explanation of our earlier findings, in which higher

causal centrality motivates identity-relevant choices by making the social identity more chronically salient, which would predict an interaction between salience and causal centrality.

STUDY 5: THE STABILITY OF CAUSAL CENTRALITY IN PREDICTING CHOICES

Study 5 was designed to address a potential self-generated validity confound (Feldman & Lynch 1988). In the previous studies, participants made their choices after reporting causal centrality in the same session, raising the possibility that participants' decisions may have been influenced by a desire to be consistent with their responses to the causally centrality task. We have posited that causal centrality of social identities is a largely stable individual difference, which suggests that choices should be predicted by causal centrality even when measured at a different time. In study 5, the two tasks were separated by one week. Importantly, the choices were made in the first week, so that participants had no knowledge of the causal centrality component of the study when making their choices, and causal centrality was then measured in the second week. As in study 4, we manipulated salience prior to product choices.

Method

Participants. Two hundred twenty-four U.S. Amazon Mechanical Turk participants qualified for the study and completed both parts of the study. The survey yielded a total of 208 valid participants, after excluding those who reported duplicate IP addresses and worker IDs, and failed the attention check. Recruiting and exclusion criteria pre-registered at AsPredicted.org, #35322 (<https://aspredicted.org/blind.php?x=gf6pa8>).

Design. The experiment consisted of two phases that were one week apart. With the exception of the salience manipulation (see below), the tasks used in study 5 were the same as those used in study 4 but presented in a different order. In phase 1, participants answered the initial questions about what social identities they possessed, wrote about either their environmentalist or frugal identity (the salience manipulation), and made choices between environmentally-friendly and conventional products. In phase 2, a week later, participants were given a second survey, in which they completed the “listing causal relationships” task.

Phase 1, Initial Identity Questions. As in study 4, at the beginning of the study, participants reported whether they agreed with a series of six identity related statements, including two that related to the target identities: “I want to be an environmentally-friendly person” and “I am a frugal person.” Only participants who answered “yes” to both questions were able to complete the study. The other four questions were unrelated to the two target identities and served to mask the survey’s intention so that participants could not strategically answer to qualify for the survey. These four questions asked whether participants 1) were sports people, 2) were pet lovers, 3) wanted to move to another city, and 4) wanted to retire at age 65.

Phase 1, Manipulating Identity Salience. Participants were randomly assigned to one of two conditions that manipulated the salience of the social identity: the environmentalist-salient condition or the frugal-salient condition. Following previous research on identity salience (e.g., Coleman and Williams 2013; Reed II 2004), to manipulate identity salience, participants wrote five sentences about either their environmentalist or frugal identity. Specifically, they were asked to “express any thoughts you have about this aspect of your identity that you listed earlier, and describe how it has affected you.” Thus, in this study both the experimental and control

conditions of the salience manipulation involved writing about an aspect of the self-concept (compared to Study 4, in which people wrote about a typical day in the control condition).

Phase 1, Choice Between Environmentally-Friendly and Conventional Products. Directly after the writing task, participants made the same three hypothetical purchasing decisions as in study 4 (see figure 3) and rated which of the two products in each choice set they thought was more environmentally-friendly. At the end of this task participants were told that they would be invited back the following week for phase 2 of the study.

Phase 2, Listing Causal Relationships Task. As in study 4, participants reported the features that were most important to the person who they are, from each of six categories (memories, preferences, moral qualities, personality traits, goals/desires, and other). Participants then completed the same “listing causal relationships” task used in study 4. Finally, participants answered a few questions about their attitudes toward protecting the environment, buying environmentally-friendly products, how financially constrained they felt, and reported demographic information.

Results

In each pair of options, the environmentally-friendly item was rated as significantly better for the environment than the conventional item ($M_s \geq 4.45$ vs. midpoint of 3, $t_s > 26.59$, $p_s < .001$). As the identity salience writing task occurred a week before the “listing causal relationships” task, we did not expect the salience manipulation to influence causal centrality. A t-test confirmed that there was no difference in reported links to the environmental identity

between the two groups ($M_{\text{environmental}} = 2.51$, $M_{\text{frugal}} = 1.99$, $t(206) = 1.48$, $p = .140$, 95% CI of the difference = $[-.17 \ 1.21]$).

Choice Analysis. Participants in the environmentalist-salient condition chose more environmentally-friendly products than those in the frugal-salient condition ($M_{\text{environmental}} = 2.29$, $M_{\text{frugal}} = 1.80$; $t(206) = 3.95$, $p < .001$, 95% CI of the difference = $[.25, .74]$).

We fit a linear regression predicting the total number of environmentally-friendly choices based on identity-salience condition (frugal vs environmental) and measured causal centrality of the environmental identity, controlling for the total number of links. This analysis confirmed the main effect of salience-manipulation condition ($B = .49$, $SE = .13$, $p < .001$), and revealed a main effect of causal centrality of the environmentalist identity. Consumers who saw their environmental identity as more central chose significantly more environmentally-friendly products ($B = .08$, $SE = .04$, $p = .041$, see table 39 in appendix for details). Results were the same when excluding participants who did not follow the instructions for the writing task (see table 40 in appendix B). Further, the main effect of causal centrality of the environmentalist identity remained significant when controlling for the centrality of the frugal identity ($B = .08$, $p = .031$, see table 41 in appendix B for details).

In a follow-up regression which included a condition x causal centrality interaction term, the interaction was not significant ($B = -.04$, $SE = .07$, $p = .587$, see table 42 in appendix B). This suggests that the effect of the salience manipulation on choices did not depend on the causal centrality of the environmental identity, and that the relationship between choices and subsequently measured causal centrality was robust to the salience of the focal (environmental) identity at the time of choice (i.e., the relationship was consistent in the environmentalist-salient and frugal-salient conditions).

Discussion

The results of study 5 replicate the results of study 4 (and two studies reported in appendix C). The causal centrality of the environmentalist identity predicted choices of environmentally-friendly products. Further, as the choice and the causal centrality tasks were separated by a week, the results of study 5 suggest that the relationship between choice and causal centrality cannot be explained by self-generated validity.

The results of study 5 further demonstrate that salience and causal centrality are distinct psychological processes. Replicating the results of study 4, the effect of identity salience was distinct from causal centrality, shifting choices whether the social identity was causally-central or not. Furthermore, causal centrality predicted identity-relevant choices whether or not the social identity was manipulated to be more salient at the time of choice.

GENERAL DISCUSSION

Individual social identities have been identified as important drivers of consumer behavior (e.g., Brough et al. 2016; LeBoeuf et al., 2010; Reed II 2004; Reed II et al. 2012). Our studies demonstrate the importance of understanding how social identities interact with each other and fit into consumers' broader self-concept for explaining consumers' identity-based behavior. Across multiple consumer-relevant identities, we find that among people who belong to the same social category, those who perceived that social identity as more causally central are more likely to act in identity-consistent ways, compared to those who perceived the same social

identity as more causally peripheral. We provide evidence that the relationship between a social identity's causal centrality and identity-consistent behaviors cannot be explained by mere (non-causal) associations between a social identity and other features of the self-concept (study 1), self-brand connection (study 1), involvement in identity-related activities (study 2), identity salience (studies 2, 4, and 5), and self-generated validity (study 5).

Theoretical Implications

Our novel approach to identity-consistent behavior provides a number theoretical advances. First, as it focuses on internal representations, it explains otherwise puzzling variance in behavior across consumers who hold the same social identity and are in situations that make that social identity salient, something that accounts of identity-based consumption focusing on situational factors cannot do. The causal centrality of an identity predicted differences in identity-consistent behavior even when the social identity was made salient, either by a real-world event (study 2) or by an experimental manipulation (studies 4 and 5). Second, our approach reconciles an apparent mismatch between how theoretical approaches to the self and explorations of identity-based consumption characterize the consumer self. Theoretical approaches tend to focus on individual-level characteristics while approaches to identity-based consumption tend to focus on social categories. By focusing on how identities relate to the broader self-concept, our approach combines and builds on both lines of literature to provide more nuanced predictions of behavior.

Finally, our approach provides a novel psychological explanation of identity importance, a key determinant of an identity's influence on behavior. It is, however, important to clarify that

causal centrality is a broader construct than identity importance. High scores on the identity importance scale reflect both a positive evaluation of the group and identification with the group (i.e., as measured by identifying and admiring the group, and group membership describing who they are, Reed II 2004). A social identity's causal centrality, in contrast, is the extent that consumers perceive that a social identity has influenced or been influenced by other aspects of the self, regardless of the valence of a consumer's evaluation of the social identity or the social identity's influence on the self-concept. Causal centrality influences how disruptive changing an identity would be to the self-concept (Chen et al. 2016). That is, people think that they would be more of a different person if a causally central identity is changed than if a causally peripheral one is.

So, it is possible for a consumer to see an aspect as very causally central but not important in the way that is captured by the identity importance scale. For example, a consumer may see her social identity as an alumna of the college she went to as causally central because her undergraduate experience shaped her career, where she went to graduate school, and gave her the opportunity to study abroad. However, if that consumer doesn't have a positive evaluation of the alumna identity (she chose to study abroad and go to graduate school at a different university because she didn't like her undergraduate institution), she may not see her identity as an alumna as important as defined by the scale used in this paper but may see the social identity as defining of the self-concept (i.e., if she had not went to that college, she would be a very different person).

Our approach to identity-consistent behavior also has far-reaching implications for cross-disciplinary research on decision making. For example, inspired by social psychology, some economic models of utility incorporate identity by grouping people based on how much they accept the norms of their social category (e.g., Akerlof and Kranton 2000, 2010). That is, how

much utility an individual gains by acting in identity-consistent ways depends on how much they have embraced the social category. These models start with the assumption that different people embrace a social category to different degrees but does not attempt to measure or define these differences in adoption of an identity. We demonstrate, consistent with the model assumptions, that people who belong to the same category do indeed integrate the social identity into their self-concepts to different degrees and that these differences have implications for choice. Further, our approach to identity-based consumption provides a psychological explanation for what it means to adopt a social identity (i.e., integrating the social identity via causal connections to other features of the self-concept).

Further, our results extend our understanding of people's causal knowledge as essential to their representation of categories and reliance on subjective categories in decision-making. While previous research in psychology and marketing has examined the role of causal centrality in categorization judgments (e.g., Ahn et al. 2000; Rehder and Hastie 2001; Sloman et al. 1998) and consumer perceptions of products (Gershoff and Frels 2015), we have demonstrated that differences in causal centrality can explain differences in decision making. Going beyond prior explorations of how categories influence choice, which have mostly focused on how consumers categorize their choices or the situations in which they make choices (e.g., Chen, Ross, and Murphy 2014; Henderson and Peterson 1992; Moreau, Markman, Lehmann 2001; Ülkümen et al. 2010), we have demonstrated that understanding the conceptual representation of the self-concept provides insight into which social identities will motivate behavior.

Implications for Marketers

As an individual difference measure that predicts consumer choices, a consumer's perceived causal centrality of a social identity could have important implications for how marketers should target and communicate with that consumer. In our studies, we demonstrated that consumers for whom a social identity was causally central were willing to pay more for products associated with the social identity, compared with consumers for whom the same social identity was more causally peripheral. Our finding suggests a potentially effective means to target consumers who are most likely to base their consumption on a given social identity and therefore be less price sensitive. Furthermore, our findings suggest that causally linking a social identity to other features of consumers' self-concepts at the time of choice could provide additional motivation for making identity-consistent choices. Thus, marketing may be most effective when it not only establishes a link between a product and a social identity but also prompts consumers to causally link this social identity to important aspects of their self-concepts.

Future Directions

Our investigation of identity-based consumption thus far has focused on behaviors relating to clear group norms. However, some behaviors that are *associated* with identities may not represent norms and may therefore not be predicted by the causal centrality of the identity. For example, while many environmentalists likely drive Priuses, it is not clear that there is a norm for them to drive Priuses (certainly not descriptively, but perhaps not even prescriptively). In more extreme cases—when consumers' beliefs about what behaviors are identity-consistent conflict with behaviors that are associated with the identity (via marketing efforts or

otherwise)—causal centrality may even predict the opposite behavior. For example, Times Square may be associated with New Yorkers but a real New Yorker knows never to go there.

Similarly, some attempts to market products towards women have famously backfired (Grose 2013)—e.g., the Bic Pen for Her (pink and pastel pens) or the Della computer for women (marketed by emphasizing its ability to aid with stereotypically female activities like cooking). Although marketers were communicating an association between these products and the female identity, that association was seemingly rejected by consumers. In fact, it may be that to the extent that female consumers see their gender identity as including more progressive values, more casual centrality of the female identity might related to higher likelihood of rejecting such unnecessarily gendered products, as violating one's personal gender norms. Thus, future research should examine whether the relationship between causal centrality and identity-relevant behaviors extends to behaviors where there is not a clear group norm.

While we have focused our exploration on consumers who share a social identity, our approach to identity-based behavior has implications for understanding how the multiple social identities within a single consumer interact and relate to behavior. As consumers have multiple social identities with potentially conflicting norms (LeBoeuf et al., 2010; Markus & Wurf, 1987; Oyserman, 2009; Reed II et al., 2012), a key question is: for a given *individual*, which of her social identities is most likely to influence her behavior? Our approach to identity-based behavior would predict that in cases where an individual's social identities have conflicting norms about behavior, a social identity would be more likely to influence an individual's behavior the more central it is relative to the other competing social identities (perhaps also depending on the centrality of other social identities whose norms are consistent with the focal social identity's norms). Examining these predictions is an important avenue for future research.

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