ASSOCIATION FOR CONSUMER RESEARCH

Finding Meaning in Mixed Affective Experiences

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We examine mixed affective experiences that consumers approach rather than avoid. Two studies show that mixed experiences are not only enjoyable but can lead to more enjoyment than pure positive experiences. This is because consumers derive more meaning from the mixed experience vis-à-vis pure positive experiences.

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Feeling Mixed? When, Why and To What End Do We Feel Mixed Emotions?

Chair: Patti Williams, University of Pennsylvania, USA

Paper #1: Finding Meaning in Mixed Affective Experiences
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Paper #2: Putting the Consumer in the Picture: Visual Perspectives and Mixed Emotions in Advertising
Iris Hung, National University of Singapore, Singapore
Anirban Mukhopadhyay, Hong Kong University of Science and Technology, China

Paper #3: Mixed Emotional Experience is Associated With and Precedes Improvements in Well-Being
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SESSION OVERVIEW

Over the past decade, scholars in marketing and psychology have investigated whether individuals can experience mixed emotions, the psychological processes associated with such experiences and the individual differences and situational factors that make them more or less likely. The majority of this work has focused on understanding when individuals are likely to experience discomfort in response to mixed emotions (e.g. Williams and Aaker 2002), with findings suggesting young, Caucasian Americans and those with a concrete construal mindset (Hong and Lee 2010) likely to experience discomfort and thus to find mixed emotions aversive.

Building upon, and yet in contrast to this previous work, the papers in this session suggest that mixed emotions are frequent experiences, even among those for whom past research has suggested they might be aversive. Mixed emotions may, in fact, even be deliberately sought. The papers in this session suggest that mixed emotions may be integral to goal pursuit and personal achievement, can be an essential component in meaning making, particularly in the face of adversity, may be perceived as reflecting reality, and can be processed fluently depending upon an individual's perspective toward them.

The first paper in this session (Mukherjee, Kramer & Lau-Gesk) suggests that consumers may not always want to avoid mixed affective experiences, particularly in the domain of goal pursuit and personal achievement, because a combination of positive and negative experiences is associated with the creation of meaning. In particular, the addition of some negative affect to goal pursuit can enhance feelings of accomplishment through hardship. This research suggests that while mixed-ness can be aversive when individuals are focused on the process of goal achievement, a focus on the outcome links mixed-ness to meaning-making and to more enjoyment of the experience itself.

The second paper (Hung and Mukhopadhyay) examines the impact of visual perspectives on the fluency with which consumers process advertising evoking mixtures of hedonic and self-conscious emotions , and hence on attitudes to products featured in the appeals. Results show that consumers who adopt a third-person, observer perspective process self-conscious emotional ads more fluently and evaluate them more favorably, while consumers adopting a first-person, actor perspective process ads that highlight hedonic emotions more fluently and evaluate them more favorably.

The third paper (Hershfield and Adler) suggests that concurrent experiences of conflicting emotions in times of adversity can ultimately lead to greater well-being over time. Individuals who sought therapeutic treatment for a wide variety of life events were asked to write about their experiences. These narratives were coded and results show that blends of happiness and sadness in response to therapy were associated well-being over time. As in the first paper, this research suggests that the blends may not have been pleasant at the time of their experience, but are shown to have a prospective influence, such that the impact of mixed emotions on well-being unfolds over time.

This session is likely to be of interest to ACR members studying emotions generally as well as those studying mixed emotions and those who are investigating well-being and how consumers find meaning in consumption experiences. The session furthers the conference's mission of appreciating diversity in a variety of ways. First, the papers investigate mixed emotions in a variety of settings, from the more traditional advertising context, to video game playing and to coping with life-stressors and therapeutic interventions. The papers in the session also examine a variety of different types of mixed emotions, from happiness and sadness to mixtures of hedonic and self-conscious emotions. Previous work on mixed emotions has focused upon when mixed emotions can be construed as more or less negative and aversive. This session, in contrast to that previous literature, focuses upon when mixed emotions might actually be processed fluently, actively pursued and associated with meaning-making and enhanced well-being, which is a substantial contribution to the current literature on mixed emotions.

Finding Meaning in Mixed Affective Experiences

EXTENDED ABSTRACT

Past research has shown that mixed affective experiences generally are aversive unless consumers find a way to cope with their associated discomfort (Williams and Aaker 2002). Yet consumers often knowingly seek out experiences that elicit both positive and negative affect. For example, skydivers find enjoyment from feeling intense happiness and fear during their jump (Celsi, Rose, and Leigh 1993). Thus, many mixed affective experiences are those that consumers actually wish for rather than wish to avoid. Responding favorably to this type of mixed affective experience seems not a function of coping with unpleasantness, but rather enjoying its pleasantness. Departing from past research which examines mixed affective experiences that consumers want to avoid, we investigate those that consumers actually desire. Specifically, we address two interrelated questions. First, can mixed affective experiences be more enjoyable than pure positive ones? And second, what makes such mixed affective experiences enjoyable to consumers?

We propose that in the context of mixed affective experiences that involve goal pursuit and personal achievements, mixed affective experiences can be more enjoyable than pure positive ones because consumers derive more meaning from the experience. This is based on past research which has discussed the importance of goal pursuit in deriving meaning where meaning is defined as having a sense of purpose and attainment of goals that are important to an individual (King et al. 2006). Thus, mixed affective experiences that involve goal pursuit not only are associated with mixed affect but are also likely to be linked with meaningfulness. In turn, consistent with re-

search showing that meaningfulness is often associated with greater levels of enjoyment (Csikszentmihalyi 1990), we suggest that consumers may seek out and enjoy mixed experiences from which they derive meaning. Further, we argue that mixed affective experiences can be enjoyed more than pure positive ones. This is because when engaged in goal pursuit, consumers may infer that detriments, such as negative affect, are necessary evils to experience on the way to success, as popularized by the expressions of "no pain, no gain," or "the road to accomplishment is through hardship." For example, Kramer et al. (2011) found that consumer responses to medications with severe, as compared to mild, side effects were more favorable. Further, a bad-tasting cough syrup was judged to be more effective at fighting colds than a good-tasting one. Likewise, Loewenstein (1999) found that the pain endured during mountain climbing reveals one's strength under harsh conditions to others.

To test our proposition, we directly examined mixed affective experiences that involve goals and personal accomplishments, such as mastering a videogame or a challenging mountain bike ride. We conducted a field study in a videogame arcade where 41 patrons played a videogame of their choice. After playing the game, participants reported their affective intensity and overall evaluations. As expected, results showed that participants evaluated the experience as significantly more enjoyable when it was mixed versus pure positive (6.09 vs. 5.5; $F(1, 39) = 4.64$, $p < .05$). In our second study, we examined the mediating role of meaningfulness. We also included felt discomfort measures to rule it out as an alternate mediator to demonstrate the novelty of desirable mixed affective experiences. Further, since we suggest that consumers obtain meaning from mixed affective experiences when such experiences are associated with goals and personal achievement, we theorized that this effect should emerge when consumers focused on the end goal (of accomplishment). Thus, in the next study, we manipulated the focus of participants' thoughts to either emphasize the end goal of achievement (outcome-focus) or emphasize the process or steps that lead to the goal (process-focus) (Escalas and Luce 2003).

One hundred and fifteen undergraduate students participated in a study on mountain-biking. A 2 (affective experience: mixed vs. pure positive) X 2 (focus: outcome vs. process) ANOVA on participants' enjoyment yielded the expected affective experience X focus interaction ($F(1, 111) = 4.62$, $p < .05$). Enjoyment of the mixed affective experience was significantly greater than the pure positive one (6.53 vs. 6.00; $F(1, 111) = 5.49$, $p < .05$). However, type of affective experience did not impact the level of enjoyment for participants in the process focus condition (6.15 vs. 6.26; $F(1, 111) = .31$, $p > .10$). To examine whether meaningfulness mediated the interaction between affective experience and focus on enjoyment ratings, a mediated moderation analysis was conducted (Muller, Judd, and Yzerbyt 2005). Results showed that the effect of type of affective experience on enjoyment is mediated by meaningfulness. However, and as expected, the observed effects only emerged for consumers who were focused on the outcome or end goal of the experience, as compared to the process. Further, findings showed that felt discomfort did not mediate the joint influence of type of affective experience and focus on enjoyment.

Together, the findings from our two studies show that mixed affective experiences are not only enjoyable but they can even provide more enjoyment than pure positive affective experiences. This adds to research across different domains of mixed experiences such as mixed affect (Williams and Aaker 2002) and cognitive dissonance (Elliott and Devine 1994).

Putting the Consumer in the Picture: Visual Perspectives and Mixed Emotions in Advertising

EXTENDED ABSTRACT

Advertising appeals that describe a consumption experience often elicit mixed emotions. Typically, such advertisements portray cognitively complex stimuli or phenomena (Larsen, McGraw, and Cacioppo 2001). For example, Williams and Aaker (2002) studied responses to an ad for a brand of photographic film, where a person was ostensibly commenting on a photograph of themselves as a baby posed with their now deceased grandmother. The commentary here was in the first person. ("My Nana, Emma, passed away this past year... I loved sharing time with her. I miss her…".) What factors influence the effectiveness of such mixed-emotional advertising? In this research, we investigate how the use of different visual perspectives, e.g., first versus third person, might influence consumers' responses to such mixed appeals. In so doing, we aim to identify one important factor that facilitates the processing of appeals that elicit mixtures of emotions, and therefore influences attitudes towards the advertised products.

Consumers viewing advertising such as the above may visualize the advertised situation and transport themselves into it in one of two ways. They may view the situation in the first person as if they are living it, as in William's and Aaker's stimuli, or they may observe the situation as if they are watching a movie of themselves. In either case, they may use the elicited emotions as bases for evaluating the product (Sujan, Bettman and Baumgartner 1993; Escalas 2007). Hung and Mukhopadhyay (2012) demonstrated that the visual perspectives people take to view a given situation influence the intensity of the emotions people experience, such that people who take an actor's (i.e., first person) perspective feel stronger hedonic emotions whereas those who take an observer's perspective experience stronger self-conscious emotions. Based on this, we argue that when depicting mixed emotions, ads that use an actor's (observer's) perspective facilitate the processing of the hedonic (self-conscious) emotions involved. The ease with which the emotion is processed should consequently increase evaluations of the advertisement as well as the advertised product.

Product consumption often involves simultaneous experiences of different specific emotions (Larsen et al. 2001; Williams and Aaker 2002). For example, an ad portraying the consumption of a late-night snack because one has to study for an exam thereby foregoing a concert by one's favorite band might elicit both the hedonic emotion of sadness (for missing out on the concert) and the self-conscious emotion of pride (for studying hard). Hedonic emotions such as excitement and sadness are relatively spontaneous and can be elicited without much cognitive deliberation whereas self-conscious emotions such as pride and guilt are characterized as being accompanied by thoughts about how others might evaluate me/the desirability of my behavior (Leary 2007). Given the difference in the nature of these emotions, recent findings show that visual perspectives, which dispose people to focus on different aspects of information (Jones and Nisbett 1972), might influence people's experience of these emotions (Hung and Mukhopadhyay 2012). Actors, who pay more attention to situational circumstances, might respond more fluently to aspects of events that elicit hedonic emotions. Observers, who pay more attention to the 'me' in the situation (i.e., as if one is seeing a movie of oneself), might respond more fluently to aspects of events that elicit self-conscious emotions.

Building on these findings, we examine the role of visual perspectives in responses to advertising appeals which feature product consumption experiences that typically elicit mixed emotions. We

propose that actors' (observers') perspectives should facilitate the processing of an appeal that highlights a hedonic (self-conscious) emotion in a product consumption experience that typically elicits a mixture of hedonic and self-conscious emotions. Consequently, the ease with which actors (observers) process the appeal should increase evaluations of the appeal itself as well as the advertised products.

Three experiments support these propositions. Participants took either an actor's or an observer's perspective to process an appeal that described a product consumption experience eliciting a mixture of hedonic and self-conscious emotion (experiments 1 and 3). Regardless of the valence of the emotion highlighted, actors evaluated the ad and the advertised product more favorably when the ad highlighted a hedonic emotion than observers did. In contrast, observers evaluated the ad and the advertised product more favorably when the ad highlighted a self-conscious emotion than actors did. Experiments 2 to 3 further examined whether similar effects of visual perspectives occur when the use of visual perspectives were subtly manipulated by the appeal. Participants processed an ad describing a mixed-emotional experience that elicits a positive (negative) hedonic emotion of excitement (sadness) and a negative (positive) self-conscious emotion of guilt (pride). The mixed-emotional experience involved either studying in the library while one's favorite band was in concert (simultaneous sadness and pride), or attending the concert despite an exam the next day (simultaneous excitement and guilt). The visual for the ad featured a photograph of a library scene or a concert scene, as viewed on a mobile phone. The text in the ad however highlighted only one of the four emotions involved: positive hedonic (excitement), negative hedonic (sadness), positive self-conscious (pride), or negative self-conscious (guilt). Visual perspectives were manipulated integrally, using tag-markers on the photograph itself. Participants reported their attitudes towards the ad, and the advertised products. Across three studies, results consistently showed that the ad and the advertised product were evaluated more favorably when participants took an actor's (observer's) perspective to view a mixed-emotional situation that highlighted a hedonic (self-conscious) emotion. This effect was mediated by the ease of processing the appeal, and was observed when the visual perspective was induced incidentally as well as integrally by the advertisement, and whether the advertisement was viewed subsequently or simultaneously.

Overall, this research contributes to the understanding of the conditions under which mixed emotional appeals are likely to be fluently processed, thereby increasing consumers' evaluations of advertised products. This research also sheds new light on the role of visual perspectives in the impact of appeals that depict integral and mixed emotions, by examining the relative impact of mixed emotions that might typically be elicited in product consumption experiences portrayed in emotional appeals. Theoretical and practical implications will be discussed in the session.

Mixed Emotional Experience is Associated With and Precedes Improvements in Well-Being

EXTENDED ABSTRACT

The respective benefits and drawbacks of positive and negative emotional experience on well-being have been well documented (e.g., Lyubomirsky, King, & Diener, 2005). Yet, considerably less attention has been given to the ways in which the experience of mixed emotions – that is, the concurrent experience of positive and negative emotions – can affect well-being. A notable exception is the co-activation model of health proposed by Larsen and colleagues (2003), which holds that experiencing positive emotions concurrently with negative emotions may detoxify them, transforming a negative emo-

tional experience into fodder for meaning-making and subsequently enhanced well-being. Although recent work has tested the postulates of Larsen's model on physical health (Hershfield, Scheibe, Sims, & Carstensen, Under review), very little research to date has directly examined the connection between mixed emotional experience and enhanced well-being. In the present study, we investigated whether mixed emotional experience – specifically the concurrent experience of happiness and sadness - prospectively benefits improvement in well-being. The context for this investigation was a naturalistic longitudinal study of psychotherapy in an outpatient clinic. Psychotherapy is fundamentally concerned with emotional experience (Greenberg & Safran, 1987) and provided an opportunity to assess the unfolding relationships between mixed emotional experience and well-being. The present study aims to demonstrate that concurrent happiness and sadness may temporally precede improvements in well-being.

When facing negative events in the course of one's life, people may choose to either suppress negative emotions (Gross & John, 2003) or express them (e.g., Pennebaker, 1997). There are benefits and drawbacks to both approaches, but failing to confront negative events can ultimately lead to increased stress levels (Pennebaker, Kiecolt-Glaser, & Glaswer, 1988). Larsen and colleagues (2003) propose that a third strategy, one of "taking the good with the bad", might actually benefit individuals during difficult times by allowing them to confront adversity and ultimately find meaning in life's stressors (a eudaimonic outcome), as well as to feel better in their wake (a hedonic outcome). In their co-activation model, allowing for the experience of positive emotion alongside negative emotion prompts individuals to face negative life events and gain insight into them. Larsen and colleagues' model thus suggests that during difficult situations, a mix of positive and negative emotions may be optimal for well-being. For instance, when experiencing the loss of a loved one, allowing positive memories to be experienced alongside sadness could potentially lead to a healthier bereavement process (Folkman & Moskowitz, 2000). As Davis and colleagues (Davis, Zautra, & Smith, 2004) note, one key to resilience across the adult life span, may be the "ability to maintain affective complexity in the face of life's inevitable difficulties" (p. 1155).

Although prior work offers preliminary evidence for the positive role that the blending of positive and negative emotion can play in well-being, none has systematically examined the *prospective* benefits that mixed emotions may have on well-being over time in a fine-grained way. Thus, in the present study, we sought to examine whether mixed emotional experiences are prospectively linked to enhanced well-being.

Forty-seven adults (M_{age} = 36 years) who sought treatment at a major outpatient clinic for a wide variety of problems, ranging from significant psychopathology to more typical life events such as divorce or the transition to parenthood, were enrolled in the present study prior to beginning treatment. In order to tap a broad conception of well-being encompassing both hedonic and eudaimonic elements (Ryan & Deci, 2001), the Systemic Therapy Inventory of Change was selected as the primary outcome measure (STIC; Pinsof & Chambers, 2009). To assess the emotional content of participants' experiences in psychotherapy, we collected private narratives about participants' perspectives on treatment. The present study asked participants to reflect in writing on their thoughts and feelings associated with being in therapy, including the way they saw the treatment fitting into their overall life or sense of self. As such, the narratives discussed both participants' life events as well as their experiences in treatment.

A team of two trained raters (undergraduate research assistants, trained by the first author, who were blind to the hypotheses of the study and unfamiliar with the coactivation model) coded the narratives for their emotional content. Previous theoretical and empirical work on mixed emotional experience has taken a broad approach to operationalizing the construct, including generic categories of "positive" and "negative" emotional experience. In contrast, in the present study we sought to empirically identify the specific blend of positive and negative emotions that are associated with improvements in well-being. Given that happiness and sadness were the only specific emotions to show a significant relationship with well-being over time, the six other specific emotions were dropped from subsequent analysis and a composite variable, representing instances when happiness and sadness co-occurred, was created.

The primary analytical strategy applied growth curve modeling to the data. This technique is well-suited to accommodate missing data and unbalanced spacing of assessment points, both of which are inevitable in data collected from a naturalistic sample. The results indicate that participants who experienced a concurrent mixture of happiness and sadness during the course of treatment enjoyed subsequent improvements in their well-being. This finding remained significant when controlling for the impact of the passage of time as well as that of dispositional personality traits associated with affect. In addition, the results suggest that the significant association between the experience of concurrent happiness and sadness is uniquely related to well-being at the following assessment point, but not concurrently, when controlling for the independent impacts of happiness and sadness themselves. In other words, mixed emotional experience was seen to have a prospective influence on well-being, but its concurrent association with well-being was explained by the independent effects of happiness and sadness. This suggests that mixed emotional experience may have a distinct prospective potency; its association with well-being unfolds over time. Thus, while the concurrent experience of happiness and sadness in the face of adversity might not provide immediate benefit, it may signal enhancements in well-being in the near future.

Numerical Cognition:
Numbers and Their Downstream Consequences for Consumer Behavior
Chair: Bart de Langhe, University of Colorado at Boulder, USA

Paper #1: Numerical Cognition and a Mere-Looking Effect in Multi-Attribute Choice

Ellen Peters, Ohio State University, USA
Louise Meilleur, Ohio State University, USA

Paper #2: Need for Speed?

Bart de Langhe, University of Colorado at Boulder, USA
Stefano Puntoni, Erasmus University Rotterdam, The Netherlands

Paper #3: Tipping the Scale: Discriminability Effects in Measurement

Katherine Burson, University of Michigan, USA
Richard Larrick, Duke University, USA

Paper #4: When to Put the Cart in Front of the Horse: How Presentation Order of Goal Reward and Effort Information Affects Goal Pursuit

Derick F. Davis, Virginia Tech, USA
Rajesh Bagchi, Virginia Tech, USA
Yong Kyu Lee, Virginia Tech, USA

SESSION OVERVIEW

Numerical stimuli in marketing are ubiquitous. For example, they are used by companies to communicate the performance of products or information about product attributes, they facilitate the interpretation of rating scale anchors, and they are used by consumers to monitor goal progress. Examining how consumers extract meaning from numbers is therefore crucial to understanding consumer decision making. This symposium consists of four papers that interconnect at different levels. Together, they provide new perspectives on numerical cognition and, more generally, the psychology of consumer decisions.

The first paper, by **Peters and Meilleur**, shows that numerical information drives early attention and subsequent choices. They argue that low Arab numerals are associated with a focus of visual attention to the left and that high Arab numerals are associated with a focus of visual attention to the right. Presenting a low (1) versus high (9) digit between two decision options also impacts choice in line with the authors' selective attention account.

The second paper, by **de Langhe and Puntoni**, draws attention to a factor contributing to consumers' willingness to pay for technological progress. The performance of many technologies is expressed in terms of speed (e.g., Internet bandwidth). Four studies show that consumers misunderstand the relationship between increases in speed and time savings. They hold the belief that the same increment in speed provides the same time saving regardless of whether the initial speed is low or high, even though time savings become in fact smaller as speed increases. The studies also show how to reduce this bias by drawing attention to time (e.g., via experience or by restructuring numerical information).

The third paper, by **Burson and Larrick**, examines how perceptions of magnitude affect conclusions about attribute importance that are inferred from conjoint studies. By multiplying a ratio scale by an arbitrary factor, numerical scales that are used to describe product attributes can be contracted (e.g., 1-10) or expanded (e.g., 1-100). The relative importance of attributes inferred from conjoint studies is greater when the scale is expanded, but decreasingly so because of decreasing sensitivity.

The fourth paper, by **Davis, Bagchi, and Lee**, investigates how the order of presentation of effort and reward information affects goal pursuit and examines the role of numerosity in this effect. In three studies, they manipulate the numerosity of the metric used to express the amount of effort required to meet a goal and found that in the presence of large number (connoting high effort requirements), presenting the rewards before the effort reduces effort salience and energizes consumers.

Because of the fundamental importance of numerical cognition for understanding consumer psychology, we expect this special session to be of interest to a wide audience. The session will appeal to researchers on topics as diverse as (1) motivation and goal achievement, (2) marketing research, scaling, and conjoint analysis, (3) attention, (4) decision making, and (5) innovation. Data collection in all papers is complete and the session features a total of 13 studies using a variety of paradigms and methods (e.g., choice, conjoint, priming). All participants have agreed to present, should the session be accepted. The chair will facilitate audience discussion drawing further connections between the new perspectives introduced in this session and other areas of consumer research.

In sum, we believe that this proposal fits both the spirit of ACR special sessions and the theme of the conference—appreciating diversity. In addition to the diversity of approaches to numerical cognition that the papers exemplify, the session also brings together researchers from different areas of research, including marketing, management and psychology. The participation of Ellen Peters, a leading psychologist and numeracy researcher, is especially noteworthy.

Numerical Cognition and a Mere-Looking Effect in Multi-Attribute Choice

EXTENDED ABSTRACT

Selective attention has been a long-standing theme in decision research (Einhorn & Hogarth, 1981; Weber & Johnson, 2009), but studies have not manipulated early attention in complex, multi-attribute decisions outside of awareness and independent of participant goals. In the present paper, we take advantage of symbols learned in early childhood – integers from 1 to 9 – that are not obviously directional but have been shown to have a left-to-right spatial orientation that can subtly shift attention (Dehaene, Bossini, & Giraux, 1993; Fischer, Castel, Dodd, & Pratt, 2003).

In four studies, we used these incidental attentional shifts to test their influence on high-level cognitive processes involved in multi-attribute binary choices. Of course, just because individuals look in the direction of information does not mean that they process or use it in decisions. However, some evidence exists for a disproportionate influence of early information on decisions (Weber & Johnson, 2009; DeKay et al., 2009; Russo et al., 2006). Thus, we hypothesized that presentation of an incidental small or large Arabic digit (physically located between two choice options) would shift visual attention to the left and right options, respectively, and information attended earlier would disproportionately influence information processing and choice – a mere-looking effect.

Results of the present four studies provided converging evidence, across diverse decision paradigms, to support the causal role of covert and overt shifts of attention in influencing the processing and valuation of decision options. In Study 1, the attention shift created by implicit cues – a "1" or "9" – located between two real choice options produced preference reversals. Faced with a simple choice between two identical erasers, "1" participants were more likely than "9" participants to choose the left-side eraser (65.2% and 33.3%, respectively; χ^2(df=1)=4.5, p=0.03, φ=.32). Study 1 provided evidence that the presentation of Arabic integers activated magnitude and shifted early attention to information that influenced choice. The effect occurred despite spatial attention being driven exogenously, from a normatively irrelevant and incidental source.

In Study 2, participants chose between two hypothetical vacation spots – one with average attributes; the other with both positive and negative attributes (materials adapted from Shafir et al., 1993). In a 2x2 between-subjects design, participants were shown either a large "1" or "9" in the middle column, with enriched Spot B's positive or negative attributes on top. When the enriched option was attended early, top-to-bottom attribute order significantly influenced choices; when the average option was attended early, the top-to-bottom order of attributes for the enriched option had little influence (interaction: Wald χ^2(df=1)=9.1, p=0.003, f=.22). In particular, when attention was directed left ("1"), B's attribute order did not influence choice; 60% versus 62% of participants chose Spot A when B's negative versus positive attributes, respectively, were on top. However, among "9" participants (attention directed rightward), significantly more participants chose left-side Spot A when B's negative attributes were on top (85%) than when its positive attributes were (47%). Mere looking did not produce simple liking of whatever is looked at first; instead, it biased choices based on <u>processing</u> the first-attended information.

Studies 1 and 2 provided initial evidence that the spatial orientation of the mental number line can orient attention and alter choices when no real difference exists between options (Study 1) or when the choice is hypothetical (Study 2). Study 3 provided evidence that "mere looking" at information matters in choices among consumer goods, specifically when choosing between a decision of the head and a decision of the heart. In this case, participants chose between two snacks – one that tasted better and another that was healthier. Such choices involve a tradeoff between perceived taste and healthiness; how individuals process these tradeoffs is unclear, however. Previous studies have indicated that decreasing available cognitive capacity can increase choices of the less healthy option (Shiv & Fedorikhin, 1998). In the present Study 3, cognitive capacity was not altered; instead, attention was simply directed first at one option or the other. Participants chose between Regular and Baked Lays (counterbalancing their left/right order) with "1", "9", or nothing between them. When nothing was in between the snacks, 69% and 19% of participants, respectively, chose Baked Lays, respectively, when it was on the left or the right. This result is congruent with previous eye-tracking results indicating that about 75% of participants in a binary choice look at the option on the left first (Krajbich et al., 2010). With Baked Lays on the left and using the attention manipulation, participants were more likely to choose them in the "1" condition compared to the "9" condition (60% and 31%, respectively, chose Baked Lays). With Baked Lays on the right, the effect reversed, with participants significantly less likely to choose them in the "1" than the "9" condition (47% and 75%, respectively, chose Baked Lays).

Finally, in Study 4, choices between 41 food pairs that varied in perceived healthiness and tastiness were made with "1", "9", or "5" between options in each pair. Our prior choice effects were rep-

licated. Preliminary analysis of eye tracking data supported the hypothesized information-processing mechanisms.

That the attentional effects of conventional, overlearned symbols can guide attention and influence choices suggests a strong link between visual attention and choice. Broader implications of this and other research also further highlight the constructive nature of choice (Lichtenstein & Slovic, 2006; Payne, Bettman, & Schkade, 1999), and, importantly, point towards some of the subtle influences that marketers and other information providers can exert on choices.

Need for Speed?

EXTENDED ABSTRACT
Technology often advances by increasing the speed of specific processes and, consequently, by reducing the time required to perform a particular task. Marketers tend to express the performance of time-saving technologies in terms of their speed. For example, the performance of computers' CPU is expressed in megahertz (MHz = cycles per second), Internet bandwidth is expressed in megabits per second (Mbps), the performance of printing technologies is expressed in pages per minute (ppm), and the performance of kitchen robots is expressed in rotations per second (rps). Increases in speed result in time savings. The speed of a product is thus a diagnostic *feature* allowing consumers to assess the *benefit* they receive in terms of time saved.

Marketing theory suggests that, to maximize sales, in their communication to consumers marketers should focus on benefits as opposed to features. This suggests that marketers' focus on speed may negatively affect consumers' willingness to pay for technological progress. Our research shows that, in fact, consumers are willing to pay more for time-saving technologies when marketers highlight speed rather than time. This result occurs because consumers misunderstand the relationship between speed increases and time savings. They think this relationship is linear (i.e., an increase in speed has the same effect on time saved regardless of whether speed is low or speed is high), while in fact the relationship between speed and time is nonlinear (i.e., an increase in speed has a larger effect on time saved when speed is low than when speed is high).

In a first study, participants indicated how much they were willing to pay for 5 data transfer speeds (1MBps; 2 MBps; 3 MBps; 4 MBps; 5 MBps). Before indicating their willingness to pay, about half of participants were given the opportunity to actually experience how long it takes to download a 30 MB file with each transfer speed. For participants without actual experience, willingness to pay was linearly related to increases in data transfer speed. For participants with actual experience, willingness to pay was linearly related to time savings.

In a second study, participants rank-ordered five increases in printer speed (ppm) in terms of time saved (A: 15 ppm to 30 ppm; B: 5 ppm to 15 ppm; C: 18 ppm to 26 ppm; D: 12 ppm to 17 ppm; E: 7 ppm to 10 ppm). Participants' rank-order reflected increases in speed (A > B > C > D > E). That is, participants believed that larger increases in terms of ppm also result in larger time savings, while the correct ordering in terms of time saved should have been: B > E > A > D > C.

In a third study, participants were asked to choose between four kitchen robots that differed in terms of speed and price (A: 2.50 rps for $200; B: 3.33 rps for $250; C: 4.17 rps for $300; D: 5 rps for $350). For half of participants, we also highlighted the performance of the kitchen robots in terms of time savings. These participants were also presented with the performance of each kitchen robot in terms of seconds per rotation (A: 0.4 spr; B: 0.3 spr; C: 0.24 spr; D:

0.2spr). Participants receiving restructured numerical information in terms of seconds per rotation were more likely to choose a less expensive kitchen robot. While rotations per second highlights speed, seconds per rotations facilitates mental calculations regarding time saved.

To extend our findings to a setting where "slower is better", we also examined a situation where consumers pay a certain amount of money for a service per unit of time. In the context of mobile phone plans, for instance, consumers pay a specific rate where a lower cost per unit of time (i.e., a slower outflow of money) is preferred over a higher cost per unit of time (i.e., a faster outflow of money). In a fourth study, participants were asked to imagine they were willing to spend $50 per month on their mobile phone plan. We told participants that their current provider considered increasing their rate. Participants were asked how likely they were to switch to another provider if their current provider decided (a) to increase their rate from $0.10 to $0.15 per minute and (b) to increase their rate from $0.20 to $0.30 per minute. If participants accurately assess how the rate increase affects the number of minutes they can call for $50 per month, they should be more likely to switch when their rate increases from $0.10 to $0.15 (i.e., a loss of 167 minutes) than when their rate increases from $0.20 to $0.30 (i.e., a loss 83 minutes). However, participants indicated they would be more likely to switch when their rate increased from $0.20 to $0.30, again reflecting the erroneous mapping of speed on time.

In sum, companies' focus on communicating speed when promoting time-saving technological improvements of existing products leads consumers to overvalue technological progress. We will discuss the importance of our findings for marketers, but also for public policy makers.

Tipping the Scale: Discriminability Effects in Measurement

EXTENDED ABSTRACT

In Ireland, a District Court judge reduced the speeding charge of a driver who had been clocked going 180 kilometers per hour in a 100 kilometer per hour zone. Looking at this decision, an outside observer might conclude that the court believed the driver's speed was less important in the decision than, say, his previous driving record. However, the judge's explanation for the decision was that the speed did not look "as bad" when converted into 112 miles per hour in a 62 mile per hour zone (Associated Press, 2007). Objectively, speeding by 80 kph is still violating the law by the same proportion as speeding by 50 mph and thus warrants the same penalty. Any scale with ratio properties can be converted from one scale to another (without changing the information provided by the scale) by multiplying the original values by some constant factor. However, this trivial transformation is psychologically consequential, as is clear in this example: The expanded scale highlights the difference between the speed limit and the driver's speed, making that difference seem large. In contrast, the contracted scale minimizes the difference (Pandelaere, Briers, & Lembregts, 2011).

There are decades of research on how people perceive and interpret numerical attributes in psychology and in marketing. In summarizing these traditions, Mellers and Cooke (1994) propose a three-stage sequence by which a perceiver evaluates a multi-attribute object. First, there is a perceptual stage in which specific attribute levels are translated into internal representations. Then, there is a weighting stage in which different internal representations of attributes are combined into an overall judgment. Finally, there is a response stage in which an overall judgment is expressed as a judg-ment or choice. Market researchers attempting to understand consumer behavior often try to back attribute weighting (the second stage) out of observed preferences or choices (the final stage). For example, conjoint researchers infer participants' attribute importance from their responses. We argue that, like an outside observer of the Irish court decision, conjoint researchers may inappropriately attribute observed choices to attribute importance when what is actually guiding choice is the internal representation of the difference in products.

To test this hypothesis, we expand and contract attribute scales in a conjoint design and observe the impact on choice and inferred attribute importance. We propose that these manipulations directly influence internal representations because people focus on the attribute value and neglect the attribute's scale magnitude—alternatives seem more different on that expanded attribute and are encoded as such. This leads to shifts in choice, and thus in attribute importance inferred using the usual conjoint method. We go on to verify that the *actual* importance of attributes to participants is *not* influenced by scale expansion, only the internal representation. In addition, we show that because of diminishing sensitivity to scale expansion, extreme scale expansion does not continue to influence that internal representation.

Specifically, in each of two studies, we find that participants' choices closely track the expanded attribute in the conjoint design, replicating past research (Burson, Larrick, & Lynch, 2009). Because conjoint analysis determines the relative importance of a particular attribute by observing its impact on choices relative to the impact of other attributes, the natural conclusion of a market researcher examining one of our conditions in isolation would be that the attribute using an expanded scale is a very important attribute to consumers. Critically, however, our experiments show that this cannot be the case because that importance seems to vary from condition to condition. For example, in Study 1 one attribute appeared to be the most important attribute in choice when it was presented on an expanded scale (54%), but appeared to become less and less influential when it was contracted (44%). A similar pattern was revealed in Study 2 (relative importance of expanded conditions = 62% vs. contracted condition = 46%). These results are a statistical artifact. Just as the Irish judge in our opening example did not suddenly discount the importance of speeding in his penalty decision, participants in our studies are not revising the importance of product attributes. Rather, attribute expansion directly influences internal representations of products—exaggerating differences in products—but importance of an expanded attribute is no greater than that of a contracted attribute.

We confirm that relative importance is a statistical artifact by examining the rated importance of each feature. There was no change in these ratings in response to scale expansion. Furthermore, scale expansion was found to impact mental representations of the alternatives: Participants believed that an attribute had larger differences in the expanded conditions.

These findings have important implications for market researchers as our studies show that attributes represented on expanded attributes only *appear* to have inflated importance in consumer choice. The interpretation of a conjoint analysis will be sensitive to attribute expansion, thus marketers should take care when they choose how to infer preferences or how to describe their products. Furthermore, Study 2 also reveals that, due to diminishing marginal utility, scale expansion has its limits: Expanding an attribute from a 100 point to a 1000 point scale did not increase preference for the product that performed well on that attribute, nor the inferred importance of the attribute. Therefore, market researchers should also recognize the boundaries of scale effects.

When to Put the Cart in Front of the Horse: How Presentation Order of Goal Reward and Effort Information Affects Goal Pursuit

EXTENDED ABSTRACT

Why do consumers often fail to begin working towards a beneficial goal? One possibility may be that while effort has to be invested immediately, the benefits occur later. Thus, effort may be more salient at the outset and may overweigh perceptions of the benefits to be accrued from the outcome later. How can effort perceptions (effort salience) be altered to initiate action and/or goal-pursuit? We suggest that changing the presentation order of goal outcome and effort may influence how salient the effort is and may affect goal-pursuit.

Most research has focused on how motivation to pursue goals can be increased as the reward gets proximal. For instance, animals and humans have been shown to move faster when approaching a reward (Hull 1932; Kivetz, Urminsky, and Zheng 2006). Endowing consumers with progress at the outset can also increase acceleration (Nunes and Dreze 2006). However, it is not always possible to endow progress (e.g., when preparing for an exam, it is not possible to tell students that they have already reviewed a few chapters). We show one way in which consumers can be motivated to pursue goals at the initial stages of goal-pursuit.

We argue that when the effort involved in attaining a goal is perceived to be large (e.g. expressed via high numerosity; To get an "A" review 300 pages), presenting the reward first (To get an "A") followed by effort (review 300 pages) reduces effort salience relative to when effort is presented first followed by reward (Review 300 pages to get an "A") and has beneficial effects on goal-pursuit. This effect of information presentation order on effort is attenuated when smaller numerosities are used to express effort (To get an "A" review 10 (30 page) chapters). We demonstrate this effect in three studies. In study 1 we show the basic effect. In study 2, we show that this effect only occurs when the outcome is far (and thus effort required is large) and provide process support. Finally, in study 3, we prime focus (outcome vs. process), and show that the order effects persist when focus is on outcomes (vs. process), and show meditational support.

Study 1: Reviewing Course Materials for a Grade

We used the scenario described above. We told undergraduates the requirements to get an "A" in a class and manipulated presentation order and numerosity, as described above. Thus, we used a 2 Order (reward-effort vs. effort-reward) x 2 Numerosity (high vs. low) full factorial between-subjects design. Participants indicated the likelihood of pursuing an "A", effort perceptions, and the likelihood of recommending this class to friends. An ANOVA revealed the predicted order x numerosity interaction (F (1, 96) = 4.01, $p < .05$) for pursuit likelihood. Participants were more likely to pursue an "A" when reward was presented first in the high numerosity condition ($M_{reward-effort}$ = 5.71 vs. $M_{effort-reward}$ = 4.64; $p < .02$), but no difference emerged when numerosity was lower ($M_{reward-effort}$ = 6.19 vs. $M_{effort-}$ $_{reward}$ = 6.25; $p > .85$). Similar patterns emerged for perceptions of effort (interaction: F (1, 96) = 4.31, $p < .05$) and recommendation likelihood (interaction: F (1, 96) = 5.33, $p < .05$).

Study 2: Pursuing a Loyalty Reward

Participants learned that they could earn a reward upon accruing a certain number of points (effort). We manipulated presentation order by stating the reward first or the effort first. In the high (low) numerosity condition, 1,000 (100) points were needed. However, the step-sizes were also higher (10 vs. 1 point(s) per dollar). Therefore, the amount needed to earn the reward was constant ($100). Participants were either close to or far away from the reward. We thus used a 2 Order (reward-effort vs. effort-reward) x 2 Numerosity (high vs. low) x 2 Reward Distance (far vs. near) design.

Analysis revealed three-way interactions with consistent patterns of means across a range of dependent variables; program attractiveness ($F(1,335)$ = 4.72, $p < .04$), likelihood of earning the reward ($F(1,335)$ = 5.38, $p < .03$), satisfaction ($F(1,335)$ = 2.78, $p < .10$), positive store perceptions ($F(1,335)$ = 3.03, $p < .09$), recommendation likelihood $F(1,335)$ = 4.55, $p < .04$), store loyalty ($F(1,335)$ = 6.76, $p < .009$). Presenting reward first had a positive effect on the aforementioned variables relative to presenting the effort first when numerosity was high and the reward was far. Order effects did not emerge in other conditions. We also found that progress perceptions mediated the three-way interactions reported above.

Study 3: Priming Focus on Outcome or Process

Study 3 used a scenario similar to that used in study 2. We only used the far conditions and primed participants to focus on the outcome of achievement or on the process involved in achievement. We used a 2 Order (reward-effort vs. effort-reward) x 2 Focus (outcome vs. process) between-subjects design. Analysis revealed two-way interactions for program attractiveness ($F(1,152)$ = 5.64, $p < .02$), satisfaction ($F(1,152)$ = 6.44, $p < .02$), positive store perceptions ($F(1,152)$ = 4.78, $p < .04$), and loyalty ($F(1,152)$ = 3.41, $p < 0.07$). A consistent pattern of means appeared for these variables; the presentation order of reward and effort influenced perceptions with outcome-focus, but not with process-focus. Thus, when focusing on the process, effort is salient regardless of order. Although, priming people to focus on the outcome reduces the salience of effort, this salience is restored when effort is presented first. Progress perceptions mediated the effects of the variables reported above.

Conclusions

Findings are consistent across three studies—the presentation order of goal reward and effort information influences perceptions when the effort required to attain the goal is expressed in a high numerosity medium and the goal is distant. When goal reward is presented first, individuals see the goal in a more positive light relative to when the effort is presented first. We argue that presentation order influences the salience of the effort required, which in turn, influences perceptions related to the goal. We discuss implications and future research.

Mental Representations of Uncertainty and Risk

Chair: Bart de Langhe, University of Colorado at Boulder, USA

Paper #1: Lay Understanding of the First Four Moments of Observed Distributions: A Test of Economic and Psychological Assumptions

David Rothschild, Yahoo! Research, USA
Daniel G. Goldstein, Yahoo! Research, USA

Paper #2: Recency and Reference-Point Formation: The Effect on Risky Choice Behavior

George Wu, University of Chicago, USA
Michael Yeomans, University of Chicago, USA

Paper #3: The Role of Payoff Ratio in Decision Making Under Uncertainty

Bart de Langhe, University of Colorado at Boulder, USA
Stefano Puntoni, Erasmus University Rotterdam, The Netherlands

Paper #4: Outcome Neglect: How Guessing Heuristics Supersede Expected Value

Oleg Urminsky, University of Chicago, USA
Adelle Yang, University of Chicago, USA

SESSION OVERVIEW

Dealing with uncertain decision outcomes is a paramount challenge in consumer decision making. Consumers choose between brands while having imperfect knowledge about product quality; they participate in lotteries with different probabilities and outcomes; they choose between financial products with great uncertainty about future returns. Despite the complexity of dealing with uncertain prospects, consumers make decisions like this on a daily basis, and strikingly, most often they do this relying on judgment only. This session consists of four papers that provide new perspectives on consumer choice by showing how consumers' mental representations of risky prospects deviate from central assumptions made by standard psychological and economic models of decision making.

The first paper, by Rothschild and Goldstein, examines whether laypeople can comprehend and estimate the statistical moments (mean, variance, skewness, and kurtosis) of observed numerical information. The survey tradition in economics assumes only aggregated responses are useful and the behavioral literature suggests individual estimates are biased (e.g., the overconfidence and related literatures). Rothschild and Goldstein, however, show that laypeople's understanding of these subtle statistical moments is more accurate than is currently believed. New methods based on graphical interfaces allow non-experts to produce accurate estimates of all four moments of a distribution.

The second paper, by Wu and Yeomans, examines how people form reference points when choosing between risky decision alternatives. Most empirical tests of prospect theory either use the status quo as the reference point or code the outcomes relative to some pre-determined reference point. Wu and Yeomans show, however, that reference point formation is affected by very basic attentional processes. Because people use the most recent outcome as a reference point (a recency effect), they are more likely to choose a risky gamble when outcomes are revealed in an ascending rather than descending order. This is because individuals are typically risk-averse when gambles are framed as gains, but risk-seeking when the same outcomes are coded as losses.

The third paper, by de Langhe and Puntoni, examines how people mentally integrate uncertain gains and losses. Landmark norma-

tive and descriptive theories of decision making (like expected value theory and prospect theory) assume that people integrate, or combine, uncertain gains and losses using an additive integration rule (gain − loss). De Langhe and Puntoni show, however, that people show the pervasive tendency to rely on the payoff ratio (gain/loss), implying multiplicative integration of gains and losses. Reliance on the payoff ratio when choosing between mixed gambles leads to (1) suboptimal monetary outcomes when payoff ratio and expected value are dissociated and (2) to risk seeking (aversion) when choosing between mixed gambles with a negative (positive) expected value. The latter finding qualifies prospect theory's prediction of general risk aversion for mixed gambles.

The fourth paper, by Urminsky and Yang, shows that the maximization of expected utility can best be seen as one of many potential heuristics available to people. Depending on the goal that is activated by the context (e.g., accurately guessing a number in a lottery), people may rely on many other potential heuristics. They show that in both lab and field studies, when people have to guess an amount they could win, they neglect the fact that higher guesses represent the same probability of winning but a higher conditional payoff. They label this effect "outcome neglect".

The mental representation of uncertainty and risk is a fundamental topic that is likely to appeal to a wide audience, for instance, researchers interested in behavioral decision theory, behavioral economics, attention, numerical cognition, and consumer financial decision making. In line with the spirit of ACR special sessions and the theme of the conference—appreciating diversity—the session also brings together research scientists with different backgrounds such as marketing, management, and business (Yahoo!). The participation of George Wu, a world-renowned expert on decision making under uncertainty, is especially noteworthy. All participants have agreed to present, should the session be accepted. The chair will facilitate audience discussion drawing further connections between the new perspectives introduced in this session and other areas of consumer research.

Lay Understanding of the First Four Moments of Observed Distributions: A Test of Economic and Psychological Assumptions

EXTENDED ABSTRACT

Numbers abound in everyday life; laypeople regularly observe prices, sizes, distances, and beyond. Mental representations of this information can inform decision making, much as statistical summaries inform scientific inference.

Economic theory suggests that people coordinate subjective expectations with subjective utilities to determine what actions are undertaken. A fairly standard assumption in modeling is that individuals have perfect expectations. When generalizing from empirical data, it is similarly standard to only trust revealed behavior as the expression of both expectations and utility. Thus, economists study utility by assuming perfect expectations and study expectations by assuming rational utility calculations.

The practice of surveying assumes that, in aggregate, individual estimates of the first moment are unbiased. However, the individual decision making tradition has long reported biases that affect individual-level expectations, such as anchoring effects, primacy effects, recency effects, and attention to local maxima (e.g., peak-end biases).

While expected to be unbiased in aggregate, the view that individual-level estimates of expected value are accurate has no champions. Indeed, the "wisdom of the crowd" logic is based on that idea that estimates are inaccurate, though in symmetrical ways.

In survey research, it is common to ask laypeople what they believe to be an "average" value. However, there are many measures of central tendency, such as mean, median, and mode, and it is not clear which definition respondents assume.

The psychological literature assumes that estimates of the second moment are too narrow, the so-called overconfidence effect, which is moderated by various question formats that lead to better calibration and discrimination. We test, under the various elicitation techniques, whether estimates of distributions exhibit systematic overconfidence. Finally, there has been little research in any discipline on lay intuitions of third and fourth moments: skewness and kurtosis. Our tests of understanding the third and fourth moments help establish a baseline and gauge human sensitivity to higher moments.

In this research, we control the statistical information presented to decision makers and then gauge the degree to which people's perceptions of the first four moments are accurate. In order to simulate the natural flow of numerical information that decision makers might encounter in watching the news or observing prices over time, we provide participants with sequences of 100 numbers, drawn from six distinct beta distributions of varying shapes. Randomly assigned groups use one of multiple elicitation techniques to express beliefs about the quantities they observed.

At the start of the experiment, the participants are told "Imagine we have a bag with a million ping pong balls in it. Each ball has a value between 1 and 20 written on it. In the next 100 seconds, we will randomly choose 100 balls from the bag and show you their values." When the presentation begins, each number appears on screen for 3/5 of a second so that the participant sees 100 numbers in one minute. Participants are told "Now imagine we are throwing the 100 balls back into the bag and mixing them up. We will now draw 100 balls at random from the bag. We will refer to this as our *second draw*." After this, participants are randomly assigned to one of four main question sequences.

In the first condition we ask the respondents to create a full probability distribution that would describe the second draw. We do this by providing a graphical user interface with which the respondent can distribute 100 balls into buckets representing the 20 possible numbers of the distribution.

The second condition elicits fractiles of a distribution by asking respondents to "think about our second draw of 100 balls [and] imagine they were arranged in front of [the respondent] with the smallest values on the left and the largest values on the right. " We then ask them to provide the likely values of the 5th, 25th, 50th, 75th, and 95th balls from the left.

The third and fourth conditions address the first moment directly. In the third condition we ask the respondent to provide the mean of the second draw, providing the definition of a mean. This contrasts with the fourth condition, in which we ask for the "average" of the second draw, leaving the participants free to interpret the term as they wish, with the purpose of gaining insight into how people understand the term "average".

The fifth condition addresses the second moment directly. Participants are asked to provide the value they are 90% certain a random ball would be greater than and, in addition, a value they are 90% certain a random ball would be less than.

The sixth and seventh conditions take a step back and address the full distributions, rather than the moments that define them. In the sixth condition, participants try to identify the distribution they observed in a forced-choice task involving two histograms. The seventh condition is identical, except that participants choose between tables of numbers.

By way of results, we find that laypeople are able to produce accurate estimates of all four moments of a distribution: point-estimates -- including distinctions between the mean, median, and mode -- confidence ranges, and representations of the skewness and kurtosis. We show how the "average" relates to these different measures and that laypeople are able to make meaningful distinctions between these different kinds of average when they utilize a graphical elicitation method. Using new methods, including graphical interfaces that allow the specification of an entire distribution, we allow non-experts to expressed information that they have, but would be unable to communicate in ordinary surveys.

Recency and Reference-Point Formation: The Effect on Risky Choice Behavior

EXTENDED ABSTRACT

Prospect theory posits that outcomes are evaluated relative to a reference point (Kahneman & Tversky, 1979), with individuals typically risk-averse when gambles are framed as gains, but risk-seeking when the same outcomes are coded as losses. However, most empirical studies either use the status quo as the reference point or code the outcomes relative to some pre-determined reference point (for exceptions, see Abeler et al., 2011; Camerer et al, 1997; Heath Huddart & Lang, 1999; Heath, Larrick & Wu, 1999). Until recently, there has been almost no empirical or theoretical literature on how reference points are determined and updated.

Recently, Koszegi & Rabin (2006, 2007, 2009) proposed a theoretical model in which reference points are "rational expectations" of future outcomes (see Arkes et al. (2008) and Baucells & Weber (2011) for two recent empirical studies of reference point formation). We suggest that Koszegi and Rabin's theory is an incomplete account of the process of reference point formation. Consider, for example, an investor who has seen a series of prices for a stock. Beliefs may not be rational because an investor believes in momentum or regression effects. Moreover, there may also be attentional or memory biases that may influence how individuals weight information and hence make decisions.

In this paper, we examine how a very basic attentional bias, recency, influences reference point formation and ultimately whether participants choose a risky gamble. We control explicitly for beliefs by providing participants with objective information about the choices involved. We nevertheless find that participants are more likely to choose the gamble over a sure thing if the highest value of the gamble is revealed last, rather than first. We argue that this result is consistent with a recency-based reference point account. If the largest outcome serves as a reference point, then outcomes will be viewed as losses, a domain in which individuals are most likely to be risk-seeking.

Study 1

Study1 used a 2 x 2 between-subjects design in which participants saw outcomes either in an ascending or descending sequence and were either endowed with a gamble or the expected value of a gamble. The three possible outcomes were $2, $3, and $10. Participants who were endowed with the gamble were given the option to switch to a sure thing of $5, while others were given the option to switching from a sure thing of $5 to the gamble. To increase the possibility of an attentional bias, participants completed 3 minutes

of anagrams as a distraction after revealing each of the first two outcome values. After participants saw the final outcome, they were given the choice between the gamble or a sure thing (at EV).

Results

One hundred and forty participants were recruited through a downtown community sample. We analyzed the between-subjects effects of order and endowment in a binary logistic regression and found that both main effects are significant, with no interaction between the two. Participants gambled more when they were given the payments in ascending order (48.6%) than in descending order (33.3%). Participants also gambled more when they started with the lottery (50%) than when it was the sure thing (31.9%).

Discussion

We replicated Sprenger & Andreoni's (2011) finding of an endowment effect for risk, which could be the result of either an effect on risk preferences (Koszegi & Rabin, 2007), or a possession-based endowment effect (Brenner et al., 2007). We also find that participants gamble more when the last value was the highest than when it was the lowest, consistent with a recency-based account of reference point formation. One alternative explanation is that there is an effect of affect on risk preferences (Loewenstein et al., 2001) rather than an effect of attention on reference point formation. That is, participants may have felt happy after getting a high final value and which led them to be more risk-seeking. To rule out this alternative explanation, we must test multiple value sets, varying both the final value (low or high) and the relative order (ascending or descending).

Study 2

We conducted a second study to examine the robustness of our effect and to minimize the effect of positive affect. We implemented a within-subjects design and simplified the design from Study 1: the gambles had two rather than three outcomes and participants were always endowed with the gamble. We used 6 different gambles, ($1,$3), ($1,$6), ($1,$9), ($4,$6), ($4,$9), and ($7,$9), with each gamble shown in either ascending or descending order. To test for the ascending series as affect account, we used gambles in which the highest outcome was relatively low or relatively high.

During each of the 12 rounds of the study, participants learned the "heads" value of a coin, then spent 45 seconds doing anagrams as a distractor, then learned the "tails" value of the same coin, and finally chose between staying with the gamble or switching to a sure expected. After all 12 rounds, one of the 12 coins was randomly chosen from a bag and flipped "for real."

Results

Overall, participants were more likely to gamble when the same value pair was presented in ascending order (45.1%) than in descending order (40.3%). We found this directional pattern for 5 of the 6 series. A logistic regression, controlling for the fixed effects of value pair and participant, confirms this effect. A separate logistic regression that includes the value of the final outcome replicates this finding and shows no effect of that final value on risk preferences.

Discussion

We replicate the recency effect in a within-subjects design in another paradigm where beliefs are held constant. Note that we do not find evidence that the absolute level of the second value has an effect on risk preferences, which would be predicted by an affect account. Rather, we argue that increased attention on the second value, through both recency and the built-up anticipation during the anagrams, caused it to be a more salient comparison standard for the

choice. Consequently it received more weight as a reference point for evaluating the attractiveness of the gamble.

The Role of Payoff Ratio in Decision Making Under Uncertainty

EXTENDED ABSTRACT

Many decisions involve the possibility of financial gains and losses. Our understanding of decision making under risk is based on Expected Value Theory (Pascal, 1670/1966), Expected Utility Theory (von Neumann & Morgenstern, 1944), and Prospect Theory (Kahneman & Tversky, 1979). These landmark theories share the fundamental assumption that people integrate, or combine, expected gains and losses using an additive integration rule.

To illustrate, imagine that you are asked to choose between two gambles. With gamble A, you either win $5 or lose $9. With gamble B, you win $15 or lose $20. Which gamble should you choose, gamble A (+5, .50; -9, .50) or gamble B (+15, .50; -20, .50)? Additive integration implies subtracting expected losses (or a transformation thereof) from expected gains (or a transformation thereof). According to Expected Value Theory, for instance, the value of gamble A is -2 (i.e., $EV_A = 2.5 - 4.5$) and the value of gamble B is -2.5 (i.e., $EV_B = 7.5 - 10$). According to Prospect Theory, the value of gamble A is -5.72 (i.e., $PT_A = 2.06 - 7.78$)[1] and the value of gamble B is -10.29 (i.e., $PT_B = 5.42 - 15.71$). Both normative and descriptive theories of decision making therefore predict a preference for gamble A. We presented 109 college students trained in economics and statistics with this choice and 68% opted for gamble B ($\chi^2(1) = 10.96$, $p < .001$). We claim that people prefer gamble B because it has a more attractive gain/loss ratio, or payoff ratio (i.e., $15/20 = 0.75$), than gamble A (i.e., $5/9 = 0.56$).

In general, additive integration is suitable when the quantities to be integrated are commensurable—that is when they have a common standard or belong to the same category—but is not suitable when the quantities to be integrated are not commensurable. For example, when choosing between two jobs differing in workload (measured in hours) and salary (measured in dollars), to compute a summary statistic that jointly considers time and money, one does not subtract the number of hours worked from total dollars earned. In situations where the quantities to be integrated are not commensurable, multiplicative integration is appropriate. For example, a useful statistic to compare the two jobs could be dollars per hour.

Additive integration thus assumes that gains and losses are commensurable. From a normative point of view, this is of course warranted because gains and losses are typically measured with the same standard (e.g., money). From a psychological point of view, however, the assumption that gains and losses, even when measured with the same standard, are perceived as commensurable is not straightforward. Recent developments in emotion research (Cacioppo, Gardner, and Berntson 1999, Larsen, McGraw, and Cacioppo 2001) and neuropsychology (Yacubian et al. 2006; Zhong et al. 2009) suggest that losses are not merely the opposite of gains, but that they are experienced as something different altogether. When evaluating risky decision alternatives, people may therefore have a natural tendency to integrate gains and losses using a multiplicative rule. If so, the payoff ratio is a summary statistic that people may be especially sensitive to.

In a theoretical analysis, we analytically derive the conditions under which payoff ratio, expected value, and prospect theory are

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[1] Consistent with Tversky and Kahneman (1992), these estimates are based on a value function with an exponent of .88 and a loss aversion parameter of 2.25.

dissociated. This analysis also predicts that reliance on the payoff ratio as a proxy for expected value leads to risk aversion (seeking) for mixed gambles with a positive (negative) expected value, whereas prospect theory predicts general risk aversion for mixed gambles. Five empirical studies support the payoff ratio as an important driver of risky choice.

In our first study, participants rated one of four gambles on a scale from -10 (*extremely unattractive*) to +10 (*extremely attractive*): A(+4, .50; -2, .50), B(+8, .50; -5, .50), C(+2, .50; -4, .50), and D(+5, .50; -8, .50). Across both the positive (A and B) and the negative domain (C and D), participants rated the gambles with the higher payoff ratio, gambles A and D, as more attractive than the gambles with the lower payoff ratio, gambles B and C, although the gambles with the lower payoff ratio had a higher expected value.

In our third study, participants were asked to choose two times between pairs of gambles. The first pair of gambles was: A(+300, .50; -150, .50) and B(+500, .50; -200, .50). According to expected value, prospect theory, and payoff ratio, participants should favor gamble B. We constructed the second pair of gambles by adding a sure gain of $100 to all payoffs of the first pair of gambles: C(+400, .50; -50, .50) and D(+600, .50; -100, .50). Similar to the first pair, gamble D is superior to gamble C in terms of expected value and prospect theory. However, adding a sure gain of $100 reversed the rank of the two gambles in terms of payoff ratio. If individuals rely on payoff ratio to choose between gambles, we should observe a preference reversal across the two gamble pairs. Consistent with reliance on the payoff ratio, 78% of participants chose gamble B over gamble A and 64% of participants chose gamble C over gamble D.

In our fifth experiment, all participants are presented with a gamble A (+60, .50; -30, .50). Half of participants are presented with another gamble B (+80, .50; -__, .50) for which the loss is missing. The other half of participants are presented with a gamble C (+__, .50; -40, .50) for which the gain is missing. Participants are asked to match the two gambles in terms of attractiveness. We find that most participants match the payoff ratio of both gambles, but not the expected value.

We will discuss the implications of multiplicative integration for multi-attribute evaluations and attitude formation.

Outcome Neglect:
How Guessing Heuristics Supersede Expected Value

EXTENDED ABSTRACT

In decision-making, we often face situations where the goal of "getting it right" is highly salient, but the differences in consequences if we succeed may be more easily overlooked. Consider a common radio call-in contest: a winning number, representing the prize amount, has been selected within some known range, and the caller has to guess it. If the caller guesses correctly, she will win exactly that amount. Thinking in terms of expected utility (or any utility-maximization approach which incorporates probabilities and outcomes), the right strategy is to guess the highest possible number, as long as all payoffs have equal probability. However, we show that people very rarely use this strategy.

In the first study, participants made a single guess, for an amount drawn from a uniform distribution between $1 and $20, in increments of $.50. They were told that if they guessed correctly, they would win that amount of money, and that they would see the distribution of everyone's prize amounts at the end, to enable them to confirm. While the optimal guess was $20, 85% of participants gave a lower guess. The average guess was $13.11, significantly lower than $20.

In the second study, participants in a classroom setting played a sequential game. A prize amount was drawn at random from a pack of cards numbered between $1 and $10.95, in increments of $.05, in front of the participants. They then took turns guessing, and after each person's guess, all the participants were told whether the actual amount was higher or lower. When a participant guessed correctly, a new number was drawn, until all the participants had the opportunity to make one guess (4 rounds). Participants' guesses were scored from 1 (highest valid guess) to 0 (lowest valid guess). The average guess was .67, significantly lower than 1. While participants gave significantly higher guesses earlier in each round, there was no evidence of learning from observing others' outcomes (better guesses in later rounds). We also found some evidence that round numbers were more likely to be guessed.

In the third study, we analyzed 154 valid guesses made by callers to an actual radio contest, over the course of two months. In each game, a number between $750 and $2012 was chosen and callers made a guess. Similarly to Study 2, if the guess was correct, they won the guessed amount, but if not, whether their guess was too high or too low was announced on-air for the benefit of subsequent callers. Across 36 games, the first caller's guesses averaged $1381, significantly lower than the optimal guess of $2012. Rescaling all guesses to the interval between 1 (highest valid guess) and 0 (lowest valid guess), the average guess was .5, significantly lower than the optimal guess of 1. This did not vary with the time, number of elapsed guesses in that game, or the expected value of the best guess. These findings were confirmed with data from a second radio station contest with the same general format but a different audience demographic.

The field data confirms the presence of outcome neglect in a real-world setting with high potential stakes. It is important to note that callers' behavior could be explained by several alternative accounts, including not believing that the numbers were randomly drawn, wanting to help others by "narrowing down" the range of valid numbers or thinking that doing so might even benefit oneself in the future. However, the lab studies rule out any of these accounts.

Our findings have important implications for several lines of research. Our results suggest that maximizing utility is best seen as one of many potential heuristics available to people, which can be easily overlooked when the goal (e.g. "accurately guessing a number") suggests other heuristics as potentially more relevant. We will discuss the potential for re-framing manipulations to make utility maximizing heuristics more salient and thereby eliminate the effect.

While the irrationality of participants' behavior is clearly demonstrable in the specific setting we use, we argue that the basic notion of outcome neglect generalizes to many other goal-pursuit settings where the negative impact may be more difficult to identify. Arguably, a common mistake is to overinvest in low-payoff tasks because we want to "get it right", or to choose lower-payoff tasks strictly because of their feasibility, failing to adjust for the expected value. In these settings, outcome neglect may be an important cause. Lastly, we note that our findings represent a fairly strong failure of "wishful thinking", as participants' guesses did not reflect wishful thinking, even though it was in their interest to do so in this setting.

Identity Structure and the Boundaries of Identity Marketing

Chairs: Bella Rozenkrants, Stanford University, USA
Christian Wheeler, Stanford University, USA

Paper #1: Escaping the Crosshairs: Possibilities and Perils in Identity Marketing

Amit Bhattacharjee, Dartmouth College, USA
Geeta Menon, New York University, USA
Americus Reed II, University of Pennsylvania, USA
Jonah Berger, University of Pennsylvania, USA

Paper #2: When Do Consumers Prefer Mistargeted Products? The Effect of Structure and Competition on Preference for Identity-(In)Consistency

Julian Saint Clair, University of Washington, USA
Mark Forehand, University of Washington, USA

Paper #3: Repeated Exposure to the Thin Ideal and Its Implications for the Self: Two Weight-Loss Program Studies

Anne Klesse, Tilburg University, The Netherlands
Caroline Goukens, Maastricht University, The Netherlands
Kelly Geyskens, Maastricht University, The Netherlands
Ko de Ruyter, Maastricht University, The Netherlands

Paper #4: Identity Cues in Product Rating Distributions? The Role of Self-Concept Clarity in Consumer Preferences

Bella Rozenkrants, Stanford University, USA
S. Christian Wheeler, Stanford University, USA
Baba Shiv, Stanford University, USA

SESSION OVERVIEW

The powerful influence of identity on consumer behavior has captivated scholars and practitioners alike for decades (e.g., Belk, 1988; Levy, 1959). Identities that are salient (i.e., currently activated by context cues) guide behavior, and research demonstrates that consumers prefer products and messages that match their salient identity (Aaker, 1990; Wheeler, Petty, & Bizer; Reed, 2004). Accordingly, identity marketing has become a cornerstone of marketing theory and practice. But is simply seeking to match consumer identity enough? The present session presents evidence for the role of the consumer identity structure in preference and effectiveness of identity marketing. Specifically, we provide a deeper understanding of identity marketing by investigating the influence of identity clarity and identity structure on consumers' motivation to regulate and protect their identities.

The first two papers examine how features of the self-concept representation itself (specifically its clarity and integration) affect preferences and behavior. Rozenkrants, Wheeler, and Shiv examine the role of self-concept clarity, or the extent to which people have clearly defined identities or self-views. Results show that people with low-self concept clarity prefer products with bimodal rating distributions as opposed to unimodal rating distributions. This is because products with polarizing (liked by some and hated by others) ratings are seen as more self-expressive. Similarly, Saint Claire and Forehand examine inter-identity structure. They show that people approach identity mismatching when they hold an associated (highly integrated) inter-identity structure and inter-identity competition is low or when they hold a disassociated (weakly integrated) inter-identity structure and inter-identity competition is high. Effects are driven by inter-identity associations or by identity-valence associations depending on whether inter-identity competition is low or high, respectively. The latter two papers examine how features of identity marketing (specifically its explicitness and extremity) affect consum-

er preferences and behavior. Bhattacharjee, Menon, Reed, and Berger show that people who have a clear definition of an identity and high identity relevance are turned off by marketing that defines the terms of identity expression. Instead, these consumers prefer identity marketing that merely references their identity and does not threaten their freedom in identity expression. Klesse, Goukens, Geyskens, and de Ruyter examine the structure of current and ideal identities. They show that when women are primed with extremely idealized identities, such as skinny models, they ironically behave in ways that run counter to the ideal, and actually gain weight. These findings suggest that identities that are made salient through exaggeration are seen as unattainable because of the large discrepancy between the current and ideal selves.

Together, these papers[1] emphasize the importance of identity clarity and structure, and provide a more complete and integrative view of how self-concept and identity marketing interact to shape preferences and behavior. Given the fundamental nature of these concepts, we expect that the session will be well attended by researchers interested in branding, advertising, persuasion, social cognition, attitudes, and consumer backlash, as well as in self and identity. In highlighting both the diversity of consumer identities and diversity in the way those identities are represented, our session complements this year's theme of "Appreciating Diversity."

Escaping the Crosshairs:
Possibilities and Perils in Identity Marketing

EXTENDED ABSTRACT

Marketing messages often appeal to consumers based on identities they possess. Jif peanut butter targets mothers by suggesting that, "Choosy Moms choose Jif." DirecTV advertises, "If you call yourself a sports fan, you gotta have DirecTV!" Similarly, Gamefly.com urges, "You call yourself a gamer? You have to have it!" Such approaches are consistent with decades of consumer research suggest that identity marketing leads to increased purchase and deeper loyalty (e.g., Berger and Heath 2007; Escalas and Bettman 2005; Levy 1959; Reed 2004).

In contrast, we propose that messages that explicitly connect consumer identity expression to the purchase of a particular product can backfire. Specifically, while marketing messages that merely reference consumer identity (*identity-referencing* messages) are beneficial, we argue that messages that explicitly define the terms of consumer identity expression (*identity-defining* messages) actually reduce purchase. The persuasive intent of identity-defining messages is especially salient, and thus, they may be perceived as an attempt to influence consumers and limit options for identity expression. Because autonomy is especially crucial in the context of identity expression (Deci and Ryan 1985; Kivetz 2005), these messages are likely to backfire. In order to reassert their autonomy, consumers may avoid products that would otherwise naturally resonate with their identity.

Five studies test this theorizing. An initial study sought to assess whether managers can anticipate consumers' need for autonomy in identity expression and craft messages accordingly. We expected that managers would prefer identity-defining messages,

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1   All the papers are in advanced stage: either in the last stages of data collection or under review.

since they are more explicit and more clearly intended for the target segment. A panel of actual executives selected one of three messages to advertise an environmentally friendly, biodegradable soap to a segment of "green" consumers: "Charlie's: A good choice for consumers." (non-identity), "Charlie's: A good choice for green consumers." (identity-referencing), and "Charlie's: The only good choice for green consumers!" (identity-defining). As expected, managers preferred the identity-defining message ($\chi^2(2) = 7.36, p < 0.03$), and predicted that it would lead to higher purchase than both the non-identity baseline ($t(57) = 7.59, p < 0.001$) and the identity-referencing message ($t(57) = 2.06, p < 0.05$). Confirming our expectations, ratings of explicitness in targeting were highly correlated with predicted purchase and perceived consumer freedom in identity expression (rs$(58) > .67, p$s $< .001$).

A second study tested the accuracy of managerial predictions by testing these same messages in a consumption scenario. We also tested the mechanism underlying these effects in two ways. If these effects are driven by identity, as we suggest, then they should occur only among consumers whose target identity is salient (e.g., Reed 2004). Accordingly, we primed participants with a green versus neutral identity. Moreover, we tested the proposed mediating mechanism of freedom in identity expression. As expected, message type had no influence among neutral participants. However, among green participants, contrary to managerial predictions, the identity-defining message decreased purchase relative to the identity-referencing message ($t(68) = 6.54, p < .001$) and even relative to the non-identity baseline ($t(66) = 2.24, p < .03$). This effect was mediated by reduced perceptions of consumer freedom in identity expression ($b = -0.29, z = -3.61, p < .001$), supporting our theorizing.

A third study using the same stimuli built on these findings by measuring instead of manipulating identity. We also tested a real behavior: actual choice of a sample of the target versus a neutral soap. As predicted, these effects held for actual soap choice, and were moderated by identity centrality (i.e. the extent to which an identity is deeply important). Message type had a significant effect on soap choice among high-centrality participants ($\chi^2(1) = 9.94, p < .01$), but no effect among low-centrality participants ($\chi^2(1) = 2.29, p > .13$).

A fourth study examined our proposed mechanism using a different moderator: individual sensitivity to constraint (Hong and Faedda 1996). Moreover, to establish external validity, we used a sample of mothers and actual identity marketing messages from the marketplace: "Moms like you choose Jif" (identity-referencing) versus "Choosy moms choose Jif!" (identity-defining). Mothers reacted increasingly against the identity-defining message as individual sensitivity to constraint increased ($\chi^2(1) = 4.49, p < .04$), further clarifying the mechanism.

Finally, a fifth study investigated an instance in which autonomy might be undesirable: when consumers are highly uncertain about what an identity means to them. According to our theorizing, greater identity definition is likely to be preferred in such cases. To test our predictions, we primed parent identity certainty versus uncertainty (Gao, Wheeler and Shiv 2009). While certain parents reacted against identity-defining messages (vs. identity-referencing; $F(1,142) = 4.59, p < .04$), uncertain parents welcomed identity definition and actually increased purchase ($F(1, 142) = 5.98, p < .02$), supporting our theoretical account.

While the literature has focused exclusively on the possibilities of identity marketing, our findings highlight its perils. Together with the drive to construct and define the self, the need for a sense of autonomy in doing so is one of the fundamental motivations of the self. Hence, considering consumer autonomy appears particularly crucial in the context of identity expression. Our findings simultaneously offer a caveat to the identity marketing literature and validate the power of the identity construct.

When Do Consumers Prefer Mistargeted Products? The Effect of Structure and Competition on Preference for Identity-(In)Consistency

EXTENDED ABSTRACT

A working-parent may prefer work-oriented products or family-oriented products depending on whether her employee or parent identity is active. Although the literature supports the notion that consumers have multiple identities and that priming a given identity can prompt approach toward identity-consistent (and avoidance of identity-inconsistent) preferences and behaviors (Forehand and Deshpande 2001; Forehand, Deshpande, and Reed 2002; Grier and Deshpande 2001; Zhang and Khare 2009), attention to the situations or factors that facilitate such response is sparse. We argue that two critical determinants of preference for identity (in)consistency are 1) The underlying inter-identity structure and 2) The level of inter-identity competition.

Past research within the Bicultural Identity Integration (BII) literature has shown that biculturals with a highly integrated, or "associated," inter-identity (II) structure demonstrate the typical identity priming effect whereby individuals approach behaviors consistent with the primed identity and avoid behaviors inconsistent with the primed identity. Alternatively, biculturals with a weakly integrated, or "disassociated," II structure demonstrate a contrastive effect wherein they avoid (approach) identity-consistent (-inconsistent) behaviors (Benet-Martinez et al. 2002; Cheng, Lee, and Benet-Martinez 2006; Mok and Morris 2009, 2010; see also Sacharin, Lee, and Gonzalez 2009; Zou, Morris, and Benet-Martinez 2008). These effects are argued to occur due to the positive and negative valence associations with cultural identity held by high and low BII consumers respectively (Benet-Martinez et al. 2002; Cheng et al. 2006; Mok and Morris 2009).

The above valence-driven effects are well established within the literature on cultural identity. However, it has also been suggested that consumers cognitively organize multiple identities within an associative network where identities may be associated or disassociated in a more benign, valence-neutral way (Amiot et al. 2007; Greenwald et al. 2002; Luna, Ringberg, and Peracchio 2008). As such, spreading activation suggests that priming one identity should inhibit the activation of disassociated identities (e.g., Hugenberg and Bodenhausen 2004) and facilitate the activation of associated identities. In this case, one would expect the typical priming effect in the presence of *disassociated* identities as individuals approach (avoid) the activated (inhibited) identity. Alternatively, when consumers possess associated identities one would expect dual approach of both the activated identity and the associated identity. These novel predictions are contrary to those of BII theory and are driven simply by the inter-identity association rather than by valence.

To reconcile the competing predictions regarding the influence of II structure on preference for identity (in)consistency, we propose that the predictions of BII will hold when II competition is high but not when II competition is low. The valence-driven effects of BII may be especially prevalent when two identities have a high degree of direct competition and associated stressors (Benet-Martinez and Haritatos 2005; Cheng et al. 2006). However, across the broader realm of consumer identities (e.g., student, female,