

CONSUMER SELF-DEVELOPMENT:
CONSTRUCT VALIDITY AND NOMOLOGICAL NETWORK OF A NEW
DIMENSION OF CONSUMER WELL-BEING AND THE CONSEQUENCES FOR
PRODUCT EVALUATIONS AND BRAND JUDGMENTS

by

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DEDICATION

To my father,

Antony McManus

my mothers,

Debbie McManus

Louise Clouâtre

and



Méline Barbe Clouâtre

1928 - 2018

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ABSTRACT

This dissertation establishes the novel construct of *Consumer Self-development (CSD)*. CSD captures the personal growth that people derive from consumption behavior and includes three dimensions: self-awareness, product knowledge, and perceived competence. Essay 1 develops a reliable scale of CSD and shows that CSD operates in theoretically predicted ways across measures of convergent, discriminant, and nomological validity. Essay 2 identifies the causal antecedents of CSD, using two pre-registered experiments, in the context of product evaluation. Specifically, the belief human nature is changeable (i.e., a growth mindset) and an emotional mechanism (i.e., interest) both produce CSD. CSD subsequently predicts favorable consumer judgements and enhanced well-being (e.g., meaning in life, satisfaction with life). Results also show that when people have little meaning in life, increases in CSD reduce the extent to which people search for meaning, suggesting that CSD meets the criterion of a psychological strength (Steger et al., 2008). Lastly, Essay 3 attempts to explain why prior work shows that people who believe human nature is fixed (vs. changeable) are more influenced by brand personality. These results show that fixed mindset consumers develop a deeper connection with brands, in general. This dissertation concludes with a meta-analytic summary of CSD and a discussion of the theoretical and managerial implications.

LIST OF ABBREVIATIONS AND SYMBOLS USED

CSD	Consumer Self-development
SDT	Self-determination Theory
EFA	Exploratory factor analysis
CFA	Confirmatory factor analysis
ANOVA	Analysis of variance
p	Assuming the null hypothesis is true, p is the probability of obtaining data as (or more) extreme than the results observed.
α	Cronbach's Alpha
ω	McDonald's Omega

GLOSSARY

Basic Psychological Needs Theory (BPNT): “BPNT argues that psychological well-being and optimal functioning is predicated on autonomy, competence, and relatedness. Therefore, contexts that support versus thwart these needs should invariantly impact wellness. The theory argues that all three needs are essential and that if any is thwarted there will be distinct functional costs” (Centre for Self-determination Theory, 2020).

Brand-engagement in Self-concept: “Individual difference representing consumers’ propensity to include important brands as part of how they view themselves” (Sprott et al., 2009, p. 92).

Consumer Self-development: A sense of personal growth that people derive from consumption behavior, which manifests as increased self-awareness, consumption knowledge, and perceived competence.

Gadget loving: An early adopter of innovation who influences the opinions of others (Bruner & Kumar, 2007, p. 329).

Hedonic consumption: “those facets of consumer behavior that relate to the multi-sensory, fantasy and emotive aspects of one’s experience with products” (Hirshman & Holbrook 1982, p. 92).

Hedonic and utilitarian attitudes: “Two-dimensional conceptualization of consumer attitudes: The first dimension is a *hedonic* dimension resulting from *sensations* derived from the experience of using products, and the second is a *utilitarian* dimension derived from *functions* performed by products (Voss et al., 2003, p. 2003).

Interest: “an emotion associated with curiosity, exploration, and information seeking” (Silvia, 2005, p. 2005).

Meaning in Life: “the sense made of, and significance felt regarding, the nature of one’s being and existence” (Steger et al., 2006, p. 81).

Mindsets: “Implicit theories—or mindsets—are the beliefs that people have about the nature of human characteristics (Dweck, 1999; Dweck & Leggett, 1988)... Some people subscribe to a fixed mindset, believing that human traits—such as intelligence, personality, and morality—are relatively fixed. Other people subscribe to a growth mindset, believing that people can substantially change (Dweck, 1999; Dweck & Leggett, 1988)” (Murphy & Dweck, 2016, p. 127).

Orientations to happiness: The strategies people use to experience happiness. Three orientations to happiness have been investigated: orientations to pleasure, meaning, and engagement (Peterson et al., 2005).

Personal growth: “has a feeling of continued development, sees self as growing and expanding, is open to new experiences, has sense of realizing his or her potential, sees improvement in self and behavior over time, is changing in ways that reflect more self-knowledge and effectiveness” (Ryff & Keyes, 1995, p. 727).

Psychological well-being: Psychological well-being consisted of six factors—personal growth, self-acceptance, autonomy, relatedness, relationships, and environmental mastery—representing unique elements of theorized self-actualization (Ryff & Keyes, 1995).

Satisfaction with life: “The Satisfaction with Life Scale was developed to assess satisfaction with people's lives as a whole. The scale does not assess satisfaction with specific life domains, such as health or finances, but allows subjects to integrate and weigh these domains in whatever way they choose” (Diener et al., 1985).

Self-awareness: “involves attentiveness to the internal, personal aspects of one’s self such as memories and feelings of physical pleasure or pain” (Govern & Marsch, 2001, p. 366).

Self-brand connection: “...symbolic properties of reference groups become associated with the brands those groups are perceived to use... When brand associations are used to construct the self or to communicate the self-concept to others, a connection is formed with the brand (Escalas & Bettman, 2005, p. 378).

Self-determination Theory: “the concept that regulation of behavior varies along a continuum from externally controlled (e.g., to obtain rewards or avoid punishments) to autonomous or intrinsically motivated (e.g., to have fun or explore interests). The theory emphasizes the importance of intrinsic motivation for producing healthy adjustment and asserts that negative outcomes ensue when people feel that they are driven mainly by external forces and extrinsic rewards” (APA Dictionary, 2020).

Subjective happiness: “a global, subjective assessment of whether one is a happy or an unhappy person” (Lyubomirsky, & Lepper, 1999)

Quality of Life: “Quality of life is defined by the World Health Organization Quality of Life (WHOQOL) Group as individuals’ perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns” (WHOQOL, 1998, p. 551).

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CHAPTER 1: INTRODUCTION

Nearly a quarter of humanity belongs to the *consumer class*, whose lifestyles are greatly influenced by the pursuit of non-essential products (estim. 1.7 billion, Gardner et al. 2004). Consumerism, formally defined as “a social movement seeking to augment the rights and power of buyers” (Kotler, 1971, p. 49), advances the living standards and future prosperity of society through innovation and employment. More conventionally though, consumerism is known as the “preoccupation with, and an inclination toward, the buying of consumer goods” (Merriam-Webster Dictionary). This latter aspect of consumerism has been criticized for promoting wasteful and unnecessary forms of consumption, such as those that are hedonic or conspicuous in nature (Cherrier, 2009).

After Americans spent \$7.1 billion on Black Friday in 2019, Pope Francis condemned consumerism: “Dear brothers and sisters, consumerism is a virus...because it makes you believe that life depends only on what you have...and so one ends up feeling threatened and always dissatisfied and angry” (Potter, 2019). More broadly, critics of consumerism have coalesced into the anti-consumption movement (Cherrier, 2009). Regardless of whether anti-consumption arises from concerns about ethics or sustainability, many critics assume that the products people buy are only gratifying in the moment and are largely meaningless in the grand scheme of life. Giving merit to this criticism, consistent with the old adage “money doesn’t buy happiness,” decades of research shows that increases in material values are associated with decreases in happiness, life satisfaction, and subjective well-being (Belk 1985; Burroughs & Rindfleisch, 2012).

Yet, it appears that not all consumption behavior falls victim to this criticism.

People benefit from learning about hedonic consumption (e.g., Clarkson et al., 2013; LaTour & LaTour, 2010; LaTour & Deighton, 2018; Fernbach et al., 2013). If consumer learning contributes to, the basic psychological need, competence (Deci & Ryan, 2000), then certain types of consumption could optimize well-being. People likely derive several psychological strengths from consumer behavior that contribute to well-being (Diener et al., 1985; Steger et al., 2006). These psychological strengths not only reflect the quality of a consumer's state of mind, they also predict positive aspects of physical health (Diener et al., 2017). Across numerous measures, better psychological health is associated with better stress regulation, immune and cardiovascular function, less severe cognitive decline in older age, and longer life expectancy (Boyle, Buchman, Barnes, & Bennett, 2010; Diener & Chan, 2011; Lyubomirsky, King, & Diener, 2005; Pressman & Cohen, 2005; Ryff et al. 2004). Despite advancements in Transformative Consumer Research (TCR), such as encouraging healthy eating or financial literacy, no research to date has established how the meaningful aspects of consumption produce optimal consumer well-being. Research also has yet to identify a measure that captures how consumption fosters optimal psychological functioning.

To address the gap in the literature, this dissertation synthesizes findings from positive and consumer psychology to develop a new construct related to consumer well-being. I review the literature on personal growth and offer examples for how personal growth can be obtained through consumption behavior. I then formulate the novel construct *Consumer Self-development* (CSD). CSD has three distinct factors: (1) building greater knowledge about the self (e.g., self-awareness); (2) acquiring greater knowledge about the product (e.g., product knowledge); and (3) expanding one's perceived

competence (e.g., feeling competent). Illustrated in Figure 1, Essay 1 develops and validates a measure of CSD; Essay 2 investigates whether differences in consumer mindset causally predict CSD; and Essay 3 further explores the role of consumer mindset in brand judgments.

Essay 1 presents the conceptual development and empirical validation of CSD. Two, well-powered, scale validation studies were conducted with customers of a monthly paid subscription service and included measures that establish convergent, discriminant, and nomological validity ($n_{\text{Essay 1}} = 1,350$). Results show that CSD accounts for up to 24% of overall personal growth and predicts substantial aspects of well-being (e.g., life satisfaction, meaning in life). CSD can also be considered a psychological strength, by an established criterion (Steger et al., 2008). These results support the idea that people can obtain substantive well-being from engaging in hedonic consumption. In sum, Essay 1 provides consumers with a roadmap for obtaining optimal well-being and indicates that CSD is an important dimension of consumer behavior worthy of further research.

Essay 2 expands the phenomenon of CSD beyond hedonic consumption and shows that people expect self-development after learning about a new product. Two pre-registered experiments, conducted with random assignment and large sample sizes, identify the causal antecedents of CSD ($n_{\text{Essay 2}} = 536$). Results show that endorsing the belief that human character is changeable, rather than fixed in nature, caused people to experience greater CSD (i.e., growth vs. fixed mindset; Dweck, 2006). Interest partially explains why a growth mindset predicts CSD, and interest best explains this relationship when participants were low on trait self-development. Manipulating interest directly shows it also strongly produces CSD regardless of mindset. Indeed, participants who

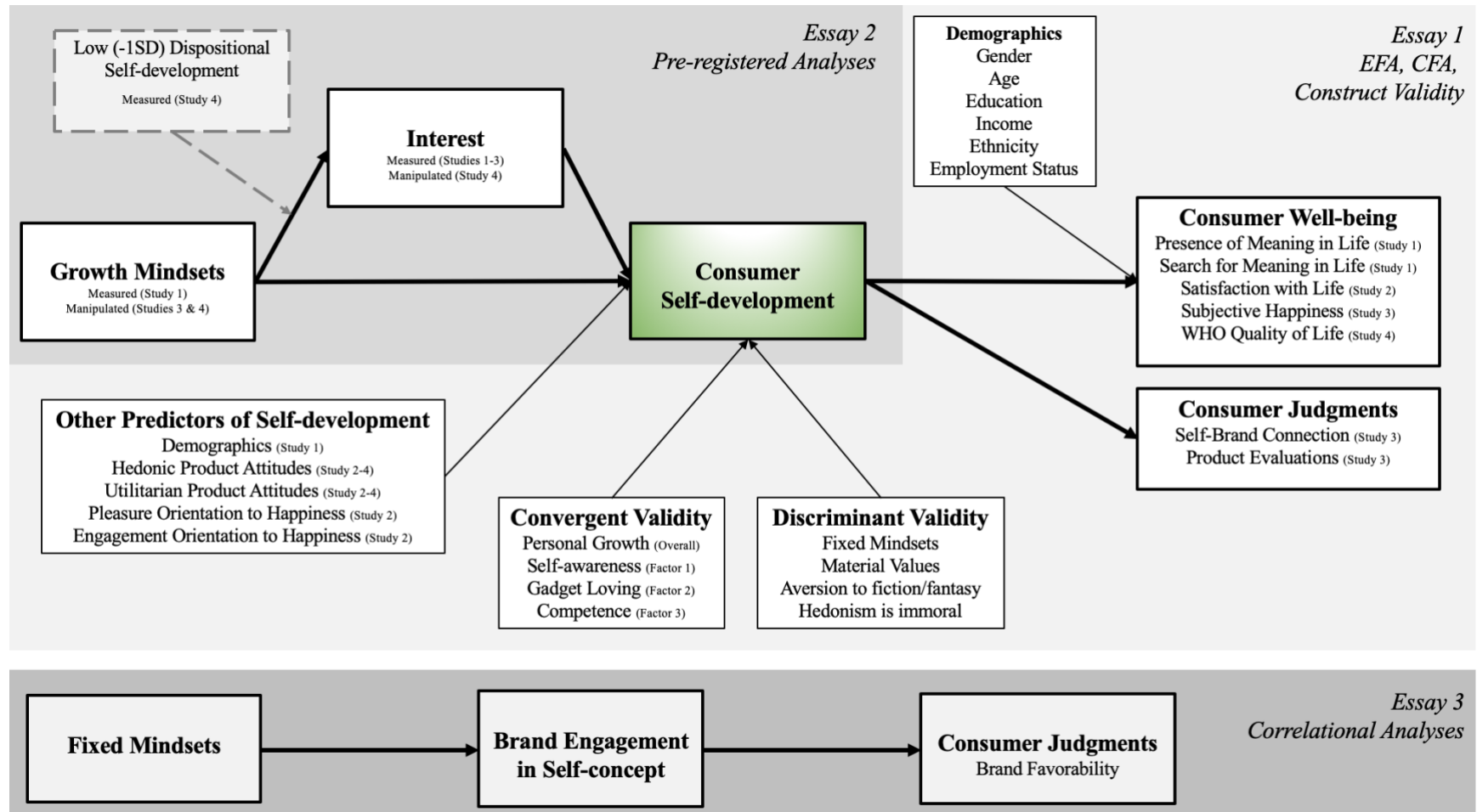
experience interest when learning about a new product report more CSD than 86% of participants who do not experience interest.

Finally, Essay 3 investigates the role of mindsets among brand judgments. Prior work suggests that people endorsing a fixed mindset glean more positive impressions of themselves and others based on information gleaned from brand personality (Park & John, 2010; 2018). Following this line of work, the final study in this dissertation investigates the possibility that individual differences in fixed mindsets will be positively related to individual differences in brand-self engagement. Furthermore, the present research also assesses whether this relationship is associated with how favorably these consumers perceive their favorite brand. Essay 3 is a preprint version of an article published in *Personality and Individual Differences*, 166, McManus, J. F., Trifts, V., & Carvalho, S. W., *The relationship between fixed mindsets, brand-self engagement, and brand favorability (2020)*, with permission from Elsevier (see Publishing Agreement in Appendix P).

In the conclusion, I summarize the aggregate effect of CSD on well-being and find that it is greater than the average effect size in social psychology over the past hundred years (Richard, Bond, & Stokes-Zoota, 2003). I also provide a meta-analytic summary of the causal antecedents of CSD and discuss how this research can be used to benefit both consumers and managers.

Figure 1.

A Conceptual Model of Consumer Self-development (Essays 1 & 2) and a Conceptual Model of the Relationship between Fixed Mindsets and Consumer Judgment (Essay 3)



Note: Conceptual model for the development and validation of consumer self-development (CSD). Essay 1, denoted by the light-grey area, developed a nine-item, three-factor, measure of CSD. Exploratory factor analyses (EFA) and confirmatory factor analyses (CFA) display excellent psychometric properties and together, Essay 1 establishes construct validity across convergent, discriminant, and nomological validity. Essay 2, denoted by the medium-grey area, establishes two causal antecedents of CSD using two pre-registered and high-powered experiments. This model should be interpreted holistically, as a collection of relationships establishing the antecedents and consequences of CSD, where: (a) controlling for demographics, CSD emerges as a key predictor of consumer well-being (e.g., meaning in life, satisfaction with life; Essays 1-2), (b) CSD, arising from a growth mindset, serves as a mechanism of consumer judgments (e.g., self-brand connection, Essay 2, Study 1), and the search for, and presence of, meaning in life (Essay 1, Study 1), (c) the relationship between a growth mindset and CSD is partially explained by interest (Essays 1-2), and especially at low levels of dispositional CSD (Essay 2, Study 2), (d) for conceptual clarity, variables used to establish nomological validity were grouped into predictors of self-development (e.g., hedonic product attitudes, utilitarian product attitudes, learning goals) and outcomes of self-development (e.g., metrics of consumer well-being and consumer judgment). The dashed line represents an exploratory moderator in the otherwise pre-registered model. In a related, but different, theoretical framework, Essay 3, denoted by the dark-grey area, investigated the effect of a fixed mindset on brand favorability via brand engagement in self-concept.

CHAPTER 2: THE DEVELOPMENT AND VALIDATION OF THE CONSUMER

SELF-DEVELOPMENT SCALE (ESSAY 1)

The Development and Validation of the Consumer Self-development Scale

A vital component of hedonic consumption is whether the experience of consuming the product or event is pleasurable. In fact, one might argue that, regardless of whether the consumption serves a practical purpose or is pursued on its own merits, whether it happens volitionally or by happenstance, and whether it is compared to other forms of consumption or is examined on its own, a universal and essential feature of hedonic consumption is that it is (and is expected to be) pleasurable (Alba & Williams, 2013, p. 3).

People use consumer products to maximize enjoyment in life. These entertainment needs are served by hedonic consumption and include the myriad forms of art, literature, and sport (Hirschman & Holbrook, 1982). Defined formally, hedonic consumption is “the multi-sensory, fantasy and emotive aspects of one’s experience with products” (Hirshman & Holbrook 1982, p. 92). Research confirms that people consume hedonic products for the purposes of momentary enjoyment, fun, or pleasure (Childers, Carr, Peck, & Carson, 2001; Mano & Oliver, 1993; Voss, Spangenberg, & Grohmann, 2003).

By emphasizing emotion, a state momentary in nature, the definition of hedonic consumption has guided researchers to focus on outcomes that are pleasurable, but transient. In many ways, the goal of enjoyment has shaped the use, perception, and study of hedonic consumption (Alba & Williams, 2013). For example, researchers have identified several sources of pleasure, spanning aesthetic design, pricing, experiences, and sensory perceptions, that produce enjoyment, positive word of mouth, and positive attitudes toward the product (Chandon et al., 2000; Chitturi et al., 2007; Elder & Krishna, 2010; Fernbach et al., 2013; Lee et al. 2006; Norman, 2004; Redden, 2010; Van Boven & Gilovich, 2003). In addition, the formal study of consumer well-being, Transformative Consumer Research (TCR), has encouraged the study of dark-side consumption

behaviors leading to the negative aspects of well-being, such as suboptimal decision-making or macro social concerns (Burroughs & Rindfleisch, 2012). In contrast, this research is aligned with a recent call for understanding the bright-side aspects of consumption that produce positive dimensions of well-being (e.g., hobbies; Mick & Netemeyer, 2020). No research, to my knowledge, has investigated how hedonic products, or consumption more broadly, contribute to the more meaningful aspects of consumer well-being (e.g., meaning in life). In this dissertation, I show the first empirical evidence that consumers experience personal growth through consumption behavior. Furthermore, I argue that research on hedonic consumption does not capture the growth that people experience when engaging in pleasurable behaviors for the purposes of interest and learning.

The pursuit of momentary enjoyment, interpreted from the definition of hedonic consumption, is rooted in physical hedonism, a perspective discussed in ethical philosophy. This perspective addresses the primary reason people buy hedonic products and suggests that well-being can be obtained by maximizing enjoyment in life through the pursuit of pleasure, the reduction of pain, and the attainment of self-interests (Ray, 2020). The implication is, if hedonic products only provide consumers with momentary enjoyment void of meaning, then hedonic consumption is an inefficient route to well-being. This is consistent with other research showing that attempting to gain happiness through material possessions is associated with decreases in subjective well-being and self-actualization (Belk, 1985; Burroughs & Rindfleisch, 2002, 2012; Mick, 1996). Furthermore, hedonic products often underlie the indulgence in vice over virtue (Voss et al., 2003; Wertenbroch, 1998), which has led some researchers and laypeople alike to

assume that hedonic behavior plays a superficial role in the meaningful aspects of life (e.g., well-being, Ryan & Deci, 2001). But are these assumptions justified?

Hedonism need not be the only motivation underlying hedonic consumption (Huta & Ryan, 2010). Both anecdotal and empirical evidence suggests that hedonic products have more to offer than enjoyment or pleasure alone. For instance, consuming alcohol is hedonic and at times may involve inebriation (i.e., pleasure), but the motivations of an aspiring sommelier to learn, explore, and satiate curiosity, are critically different from basic physical hedonism (Stewart, Zeitlin, & Samoluk, 1996). Indeed, building expertise leads to increased enjoyment during and after hedonic consumption (Redden, 2008). During hedonic consumption, then, accumulating greater knowledge may promote a more stimulating and enriching experience (Redden, 2008). The fact that people learn about products to enhance subsequent experiences (Clarkson et al., 2013), does not preclude the possibility that people learn about new products for other reasons, such as personal growth. That is, consumption behavior may help consumers develop a greater understanding of themselves, a greater understanding of emerging technologies, and a greater sense of competence. Yet, little is known about the personal growth that consumers derive from any consumption behavior.

In contrast to a hedonic perspective of well-being (where pleasure-seeking is the primary goal), this dissertation draws on a eudaimonic perspective of well-being, originally set forth by Aristotle (Broadie & Rowe, translated, 2002). Eudaimonia is a broad philosophical concept that emphasizes cultivating virtues, personal growth, meaning, and the development of one's best self (Ryan & Deci, 2001). Importantly, a combination of hedonic and eudaimonic perspectives are ideal for well-being and enable

more fulfilling experiences (Huta & Ryan, 2010; Peterson et al. 2005). Therefore, to capture how consumers may optimize well-being, this dissertation integrates the concept of eudaimonia within hedonic consumption by following early empirical investigations of eudaimonia (e.g., Ryff & Keyes 1995; Waterman, 1993).

This research expands the scope of hedonic consumption by adding to the limited knowledge of how consumption intended to be pleasurable can enrich the lives of consumers, beyond momentary gratification. The primary contribution is the development of, the novel construct, consumer self-development (CSD) and the validation of a, theoretically motivated, measure with strong psychometric properties. CSD consists of three factors: self-awareness, product knowledge, and perceived competence. Results show that people experience CSD from hedonic consumption, which accounts for up to 24% of overall personal growth. CSD meets the criterion of a psychological strength (Steger et al., 2008) and predicts meaning in life and life satisfaction. Results also support an established model that explains how people search for meaning in life (compared to an opposing model, Steger et al., 2008). These results contribute to the literature on TCR because CSD has the potential to improve the well-being of individuals and societies (Mick 2006).

Conceptual Development

In Western society, two perspectives in the debate on how to achieve optimal well-being are hedonia (Aristippus, 3rd Century BCE) and eudaimonia (Aristotle, 4th century BCE; Waterman, 1990). Aristippus of Cyrene (435–366 BCE) was a proponent of hedonia and believed that well-being in life is gained by experiencing pleasures, reducing pain, and fulfilling self-interests. Regardless of how pleasure is obtained,

Aristippus maintained that physical, momentary pleasure is the “sole good” (Tatarkiewicz, 1976, p. 317). In contrast, Aristotle’s concept of eudaimonia argues that well-being is more than just feeling good (Broadie & Rowe, translated, 2002). Eudaimonia emphasizes moral virtue and is produced by behaviors fostering personal growth, meaning, and the development of one’s best self (Ryan & Deci, 2001; Ryan, Huta, & Deci, 2008; Waterman, 1993). Eudaimonia emphasizes recognizing the difference “between those needs (desires) that are only subjectively felt and whose satisfaction leads to momentary pleasure, and those needs that are rooted in human nature and whose realization is conducive to human growth and produces eudaimonia,” i.e. true well-being (Fromm, 1981, p. xxvi).

These perspectives can be complimentary rather than oppositional. For example, people who endorse both hedonic and eudaimonic motivation, compared to either individually, experience greater well-being across many indicators (Huta & Ryan, 2010). Eudaimonia co-occurring with hedonic enjoyment produces greater interest and flow during an activity, compared to hedonic enjoyment alone (Waterman et al., 2008). Hedonic and eudaimonic orientations can also interact to produce greater overall well-being (Peterson et al., 2005). In line with these findings, consumption experiences that foster a mix of both hedonic and eudaimonic goals are potentially ideal. One way to achieve this mix is to imbue behaviors typically hedonic in nature with eudaimonic motivation. Therefore, hedonic consumption serves as an ideal context to test whether, this undiscovered (eudaimonic) dimension of consumer behavior is associated with well-being.

A Eudaimonic Dimension of Consumer Behavior

Eudaimonia is a broad concept that has been operationalized and measured as many higher-order psychological constructs, such as meaning or purpose in life (Huta & Waterman, 2014). However, some authors argue that Aristotle's eudaimonia best matches the concept of personal growth (Bauer et al. 2015; Ryff & Singer, 2008). Therefore, this dissertation will study a eudaimonic dimension of consumption that produces personal growth. The following conceptual development focuses on personal growth and integrates research on eudaimonia from social psychology with consumer psychology (Deci & Ryan, 2000; Ryff, 1989; Waterman, 1993). The personal growth that arises from consumer experiences provides a theoretical basis for the development of the novel construct *consumer self-development* (CSD). Construct validity is then established across convergent, discriminant, and nomological validity.

Theoretical Basis for Consumer Self-development

The development and maintenance of one's sense of self, otherwise known as self-development, is understood through the lens of autobiographical narratives (McLean et al., 2007). People create narrative accounts of personal memories and share them widely (Thorne, McLean, & Lawrence, 2004). These narratives assist to maintain and develop one's self-concept (Markus & Wurf, 1987). Importantly, narratives involving personal growth greatly shape self-development (McLean et al., 2007).

One under explored source of personal growth is consumer behavior. Many consumer experiences encourage people to learn deeply about products, which provides a source to build personal narratives, and therefore, experience self-development. In the domain of consumer learning, prior work has sought to understand how rote product

knowledge allows people to better categorize new information, discriminate subtleties that define category members, and process information at abstract schematic levels (Johnson & Mervis, 1997; Wood & Lynch, 2002). Expanding this perspective, the current research attempts to identify how learning about consumption enhances the personal growth and well-being of consumers. I argue herein that learning about hedonic consumption provides personal growth, which adds to a specific sense of self-development. The self-development studied here identifies how hedonic consumption impacts the self-conception and well-being of consumers (i.e., consumer self-development, CSD).

Drawing on research from psychological well-being and self-determination theory, personal growth is defined as greater knowledge about the self and the perception of improvement or development (Ryff & Singer, 1995). Personal growth is an intrinsic aspiration and is driven by intrinsic goals, meaning that people engage in learning and growth for its own sake (Deci & Ryan, 1980; Kasser & Ryan, 1996). One way people experience personal growth is through skill development (Waterman, 1993). This development is associated with greater feelings of challenge, effort, and competence (Waterman, 1993; 2008; Waterman et al., 2008). Therefore, if learning about hedonic consumption generates competence in the same way as (intrinsically motivated) skill development, then learning deeply about products could produce personal growth underlying self-development.

Like skill development, acquiring consumption knowledge also requires effort and elaboration, especially when people learn about new products (Moaz & Tybout, 2002). But despite the effort, people enjoy learning about hedonic products and seek out

these experiences (Clarkson et al., 2013; LaTour & LaTour, 2010). Building consumption knowledge allows people to have a more enjoyable future experience (Clarkson et al., 2013; Redden, 2008). For example, people who learn about wine, poetry, and art appreciate those consumption experiences more (Ballester et al., 2008; Leder et al., 2004; Peskin, 1998). Such experiences likely add more to life than enjoyment alone and produce personal growth.

The effort involved in personal growth represents instances of pique intrinsic motivation (Waterman, 2005). Intrinsic motivation appears to underlie learning about hedonic consumption (Clarkson et al., 2013) and is fundamental to other aspects of consumer behavior. When people evaluate new products, favorable evaluations often have more to do with the joy of learning (i.e., the positive emotion associated with understanding an innovation) rather than the joy of gaining functional utility, per se (Noseworthy et al., 2013). In other words, the positive emotion associated with understanding an innovation is misattributed to the product, which produces favorable product evaluations (Noseworthy et al., 2013). Therefore, learning about new products and learning about hedonic consumption may produce the ideal contexts for consumers to experience personal growth.

Construct Validity of Consumer Self-development

To summarize, prior work suggests that learning about hedonic consumption, and specifically new products, is challenging and effortful, but also intrinsically motivated (Clarkson et al., 2013; Noseworthy et al., 2013). More broadly, these products, over time, become tied to one's sense of self and provide identity and affiliation (Belk, 1989; Kettle, 2019). It makes sense, then, that expanding the breadth and depth of one's knowledge

about hedonic consumption gives rise to the personal growth that serves self-development (McLean et al., 2007). Therefore, personal growth will be used as the construct to establish convergent validity for consumer self-development. The following hypotheses, except those pertaining to growth mindsets, interest, and meaning, were constructed after the simple factor structure was established in Study 1.

Convergent Validity

Convergent validity is established when a new measure positively relates to other established measures of the same or similar constructs. It was expected that overall consumer self-development will positively correlate with personal growth. Stated formally,

H₁: There will be a statistically significant correlation between personal growth and consumer self-development (Study 1).

This construct is named with an emphasis on self-development, rather than personal growth, because this phenomenon adds more broadly to the self than growth alone. Although personal growth best fits convergent validity of the overall CSD construct, this research will also establish convergent validity for the sub-components of CSD. Three factors are discussed below: self-awareness, product knowledge, and perceived competence.

CSD Self-awareness. To establish convergent validity of the self-awareness factor of CSD, it was expected that CSD self-awareness would positively correlate with an established measure of self-awareness. Private self-awareness “involves attentiveness to the internal, personal aspects of one’s self such as memories and feelings of physical pleasure or pain” (Govern & Marsch, 2001, p. 366). Furthermore, it was predicted that

private self-awareness will most strongly correlate with CSD self-awareness rather than the other CSD factors (product knowledge and competence). Stated formally,

H₂: There will be (a) a statistically significant correlation between private self-awareness and CSD self-awareness, and (b) CSD self-awareness will demonstrate the strongest correlation to private self-awareness (compared to CSD product knowledge and CSD competence).

CSD Product Knowledge. To establish convergent validity of the product knowledge factor of self-development, it was expected that CSD product knowledge would positively correlate with gadget loving. Gadget loving defines a specific segment of consumers who are early adopters of new technology, specifically “people who adopt innovative technology relatively early and are influential sources of information that others use as references for their own behavior” (Bruner & Kumar, 2007, p. 329). Furthermore, it was predicted that gadget loving will most strongly correlate with CSD product knowledge rather than the other CSD factors (self-awareness and competence). Stated formally,

H₃: There will be (a) a statistically significant correlation between gadget loving and CSD product knowledge, and (b) CSD product knowledge will demonstrate the strongest correlation to gadget loving (compared to CSD self-awareness and CSD competence).

CSD Competence. To establish convergent validity of the competence factor of self-development, it was expected that CSD competence would positively correlate with the basic psychological need, competence (Ryan & Deci, 2000). Through the lens of self-determination theory (SDT), competence is related to personal growth, and includes

feeling effective in one's environment, being able to learn and master tasks, and feeling that one can do well in most activities (e.g., Sheldon et al. 1996). Furthermore, it was predicted that SDT competence will most strongly correlate with CSD competence rather than the other CSD factors (self-awareness and product knowledge). Stated formally,

H4: There will be a statistically significant correlation between (a) SDT competence and CSD competence, and (b) CSD competence will demonstrate the strongest correlation to SDT competence (compared to CSD self-awareness and CSD product knowledge).

Discriminant Validity

Discriminant validity is the extent to which CSD does not correlate with constructs that are theoretically unrelated. Discriminant validity was established across fixed mindsets and across two other, face valid, single-item constructs. First, fixed mindsets, otherwise known as an entity implicit self-theory, describe the belief that characteristics of the self are fixed in nature (Dweck, 2006). It was expected that fixed mindsets would not be related to consumer self-development. Stated formally,

H5: There will not be significant relationship (or a negative relationship) between consumer self-development and fixed mindsets.

Second, it was expected that experiencing self-development, through hedonic consumption, would not be related to the belief that hedonism is a moral violation. That is, believing pleasure seeking for its own sake is immoral.

H6: There will not be significant relationship (or a negative relationship) between consumer self-development and belief that hedonism is a moral violation.

Third, it was expected that experiencing self-development, through hedonic

consumption, would not be related to an aversion to (fantasy) fiction. That is, believing that there is no time in life to learn about things that are not real, such as science-fiction.

H7: There will not be significant relationship (or a negative relationship) between consumer self-development and an aversion to fantasy.

Lastly, it was expected there would not be a relationship between self-development and a pleasure-orientation to happiness. Stated formally,

H8: There will not be significant relationship (or a negative relationship) between consumer self-development and a pleasure-orientation.

Nomological Network

Nomological validity is established by showing positive relationships with theoretically-related, but distinct, constructs. These constructs are presented below as outcomes and predictors of CSD. The main outcome of CSD is consumer well-being. Predictors of CSD include consumer attitudes, beliefs about the self, and the emotion, interest.

Outcomes of CSD: Consumer Well-being. Consumer self-development is a positive psychological construct that represents a novel dimension of consumer well-being. CSD will broadly predict well-being because personal growth is positively associated with both physical and psychological health. Regarding physical health, personal growth is associated with better immune functioning and lower cardiovascular risk (Ryff & Singer, 1998, 2000). Higher (vs. lower) levels of growth and purpose correlate with more adaptive neuroendocrine stress regulation by way of lower salivary cortisol and higher levels of the “good” form of cholesterol (HDL cholesterol; Ryff et al., 2004). Regarding psychological health, increases in personal growth are associated with

increases in meaning, happiness, and life satisfaction (Ryff & Keyes, 1995; Steger et al., 2006). Perceived competence also predicts several dimensions of well-being (Sheldon, Ryan, & Reis, 1996; Reis et al. 2000). The two aspects of well-being investigated in Essay 1 are: meaning in life and life satisfaction (Diener et al., 1984; Steger et al., 2006).

The Presence of, and Search for, Meaning in Life. To establish nomological validity, it was expected that CSD would positively correlate with the presence of meaning in life and the search for meaning in life. Meaning in life is a positive dimension of well-being and is defined as “the sense made of, and significance felt regarding, the nature of one’s being and existence” (Steger et al., 2006, p. 81). According to Steger (2006), the meaningful life consists of a collection of experiences and perceptions, including: understanding one’s experiences, clarifying one’s identity, gaining a sense of purpose in life, and that one’s life matters.

Consumer self-development will be related to the presence of meaning in life because the self-awareness, consumption knowledge, and perceived competence people derive from hedonic consumption adds to the significance of one’s existence. This prediction is supported by the fact that personal growth is related to the presence of meaning in life (Steger et al., 2008). Consumer self-development will also be related to the search for meaning because consumer experiences are perceived as an opportunity for personal growth. Since personal growth can arise from adversity, it makes sense that people will seek meaning in consumer experiences during times of adversity. Note that the search for meaning is associated with less positive psychological experiences (e.g., depression).

H9: There will be a statistically significant relationship between consumer self-development and (a) the presence of, and (b) the search for, meaning in life.

Two opposing models of meaning will be compared to more thoroughly investigate how CSD contributes to meaning in life. The *presence-to-search* model of meaning suggests that the less meaning people experience in their lives, the greater they will search for it (Steger et al., 2006; Steger et al., 2008). This model suggests that people search for meaning when other psychological strengths, are reduced (Steger et al., 2008). At the crux of this argument is the assumption that psychological strengths operate in a hydraulic manner and are essentially fungible in nature. Therefore, if self-development operates as a psychological strength, the negative relationship supported by the presence-to-search model would be stronger at low levels of self-development. In contrast, the *search-to-presence* model (Frankl, 1963) suggests that the search for meaning enables a greater presence of meaning. Although the search for meaning can result in healthy psychological functioning by way of aspiration and challenge (Maddi, 1970), an inability to resolve negative experiences impedes meaning (Klinger, 1998) and is described as dysfunctional (Steger et al., 2008).

Satisfaction with Life. To further establish nomological validity, it was expected that consumer self-development would positively correlate with life satisfaction. Satisfaction with life “assess satisfaction with the respondent's life as a whole” and allows people to select and weight different life domains for themselves (Pavot & Diener, 1993).

H10: There will be a statistically significant relationship between consumer self-development and satisfaction with life.

Predictors of CSD: Attitudes, Beliefs, and Emotion

Hedonic and Utilitarian Product Attitudes. Hedonic dimensions of the product and utilitarian dimensions of the product will be positively related to CSD. Thus, CSD should be predicted by products that consumers perceive as both enjoyable and useful.

Stated formally,

H11: There will be a statistically significant relationship between (a) hedonic attitudes and consumer self-development and (b) utilitarian attitudes and consumer self-development.

Growth Mindsets. Whether a person views the self as malleable or fixed could be a key antecedent to learning. These beliefs potentially influence the extent to which hedonic consumption is viewed as an opportunity for self-development. For example, believing that one can improve personal qualities enhances learning goals (among other psychological mechanisms related to achievement, Blackwell et al., 2007). Growth mindsets, otherwise known as an incremental implicit self-theory, describe the belief that characteristics of the self are changeable (Dweck, 2006). It is expected that consumer self-development would be related to growth mindsets. Stated formally,

H12: There will be a statistically significant relationship between a growth mindset and consumer self-development.

Interest. Interest is an emotion that is predicted by novel information that pushes the boundary of one's current knowledge (Silvia, 2005). It is expected that CSD will relate to the emotional experience of interest. Stated formally,

H13: There will be a statistically significant relationship between a interest and CSD.

Lastly, it is expected that interest will partially account for the relationship between a growth mindset and CSD.

H14: The relationship between a growth mindset and CSD will be mediated by interest.

Overview of the Current Research

Studies 1 and 2 are two cross-sectional surveys, designed to develop a psychometrically sound measure of CSD and establish its construct validity. Participants in both studies are consumers of a paid subscription service. Study 1 tests the initial factor structure of CSD by asking participants to recall a hedonic experience and report CSD. Study 1 tests hypotheses related to discriminant and nomological validity (Hypotheses 5, 9_{A&B}, 12, 13, 14). Study 2 confirmed the factor structure by asking participants to report how much CSD they experience, in general, from their hobbies or recreational interests. Study 2 tests hypotheses across all metrics used to establish construct validity (Hypotheses 1-4,6-8, 10, 11_{A&B}).

Study 1: Do People Experience Self-development when Recalling Consumer Experiences? Development of the Consumer Self-development Scale

The goal of Study 1 was to develop and validate a consumer self-development scale, relying on current best practices for both (Boateng, Neilands, Frongillo, Melgar-Quinonez, Yong, 2018; Flora, 2018). Study 1 was a survey distributed to subscribers of an online comic who were offered the chance to win one of three \$100 gift cards to Amazon.com. Participants were asked to write about their experiences at a recent Comic-Con-like event and answer several questions about themselves. Comic book conventions provided a context that fits well with the definition of hedonic consumption, but also

encourages consumers to learn deeply about various product offerings (Seregina & Weijo, 2017).

Study 1 was designed to (a) explore the factor structure of the initial item pool, in order to establish a reliable measure of consumer self-development, and (b) provide initial evidence of construct validity for this measure. An initial pool of 22 items were deductively developed from the literature on personal growth and competence, with the intention of capturing all elements of self-development that people experience (e.g., Ryff & Keyes, 1995; Sheldon et al. 1996; Waterman, 1993). An interdisciplinary team of experts, consisting of a PhD student and two research faculty from marketing, and two research faculty from psychology, reviewed the initial item pool for content validity. No items were removed at this point (see Appendix A).

Methods

Participants and Design

Participants in Study 1 were consumers holding a paid subscription to an online comic, which has been published since 2004 and is written by a well-known American cartoonist. The lower- and upper-bounds of the target sample size for Study 1 was determined based on the corridor of stability surrounding correlation coefficients (Schönbrodt & Perugini, 2013) and the recommended sample size for scale development (Boateng et al., 2018), respectively. Monte Carlo simulations reveal that correlations stabilize when sample sizes are ≥ 250 (Schönbrodt & Perugini, 2013) and scale development is most appropriately investigated using samples of 300–500 (Boateng et al., 2018). Therefore, Study 1 aimed to collect at least 250 participants, with 500 serving as the upper-limit for data collection.

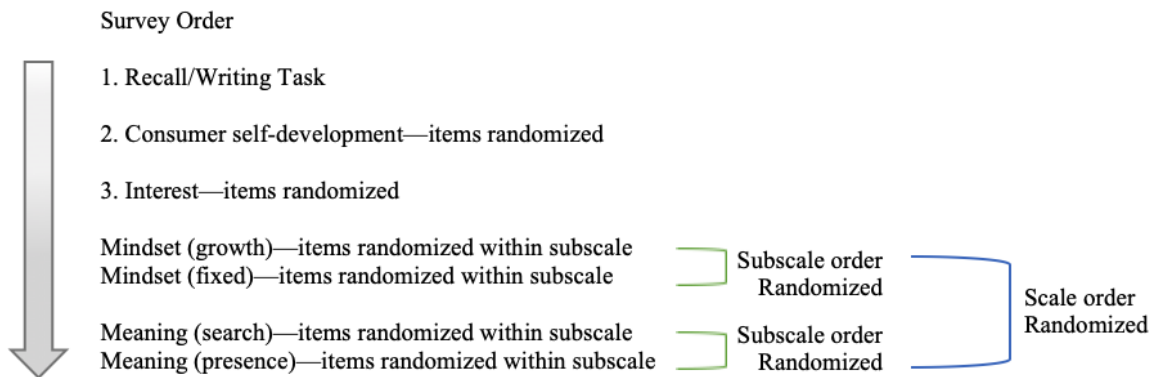
Participants ($N = 445$, $M_{\text{Age}} = 38.27$, $SD = 10.49$; see Data Screening in Appendix B) were 68.80% male (19.60 % female, 7.90% other [e.g., Non-binary, Transgender, Genderqueer], 1.6% prefer not to answer), with 2.2% cases of missing data. Participants were primarily of European origin (88.8%), employed (83.1%), and married or in a domestic partnership (55.5%). Income varied substantially: < \$20k (11.7%), \$20k-35k (12.2%), \$35k-50k (8.3%), \$50k-75k (17.9%), \$75k-100k (13.3%), \$100-150k (16.2%), >\$150k (12.6%), prefer not to answer (7.4%).

Procedures

Participants accessed the survey link after logging into their comic book account. Following informed consent, participants read some instructions and were asked if they had ever attended an event, such as Comic-Con, involving any form of narrative fantasy (e.g., comics, graphic novels, videogames, fan art, Warhammer, or fantasy role-playing games). Participants recalled the event they learned the most from and wrote about the thoughts and feelings they had during the narrative fantasy event. Participants were also given the following memory prompts: “What kind of activities did you participate in? What kind of fan-art did you see? Did you see any custom-made objects or replica items? Did you meet any celebrities? Did you attend a seminar? Did you participate in CosPlay or dress in special attire?” On average, participants spent 5.2 minutes writing about these memories. See Figure 2 for a graphical depiction of procedures.

Figure 2.

Study 1 Procedures: Scale Order and Randomization (Essay 1)



Participants were then presented, in randomized order, with all 22 initial items on consumer self-development (CSD) and were instructed to “Think of all the products you saw and all the experiences you had at the narrative fantasy event and answer the following questions. Note: We define products broadly to include tangible objects (e.g., comics/novels, game consoles, computer tech.), experiences (e.g., movies, video games), and creations from local artists (e.g., fan art, replica items).” Participants completed each item measuring CSD (e.g., “To what extent did you: ‘expand your sense of the kind of person you are,’ see Table 1). This was followed by a four-item measure of interest (e.g., “I found the products interesting;” “I would be interested in seeing more products from X company”; adapted from Silvia, 2005), the eight-item implicit self-theory scale (i.e., measure of growth/fixed mindsets; e.g., “People can change even their most basic qualities,” “Everyone is a certain kind of person, and there is not much that they can do to really change that”; Levy, Stroessner, & Dweck 1998), and a 10-item measure of the presence and search for meaning in life (e.g., “I have a good sense of

Table 1.

Initial Item Pool Assessing Consumer Self-development

1. Gain knowledge about myself that I did not have before
2. Better understand what I like and dislike
3. Expand your sense of the kind of person you are
4. Become more insightful about myself
5. Learn more about my own preferences
6. Develop a better understanding of myself
7. Realize a personal or professional goal
8. Reveal a new way of thinking about myself
9. Grow or develop as a person
10. Add something to who I am
11. Expand how well-rounded I feel
12. Acquire new facts or skills
13. Gain knowledge, that I did not have before, about new products
14. Become more well-informed about the product category
15. Expand my expertise
16. Develop a better understanding of how a product was created
17. Develop a better understanding of how a product functions
18. Become more experienced in the subject matter
19. Feel competent
20. Learn about the underlying meaning of what a product symbolizes
21. Broaden abilities or talents
22. Be more capable of understanding products in this category

Note: Final scale items are bolded. Self-awareness (3, 4, 6), product-knowledge (13, 14, 16), competence (15, 19, 21).

what makes my life meaningful,” “I am always looking to find my life’s purpose,”; Steger, et al., 2006). Study 1 finished by capturing demographics and providing a detailed debriefing page with a secondary consent form. See Appendix M for the full measures used in this dissertation.

Results

Preliminary analyses

Correlation (Size) Adequacy. Exploratory factor analyses require relationships in a correlation matrix (Flora, 2018). If these relationships are zero, they are in an identity matrix. Bartlett's test examines whether the variables are in an identity matrix or whether relationships exist. Thus, Bartlett's test was conducted to determine the adequacy of the correlation matrix, which tests whether the correlations were large enough to perform an EFA. This test found that a factor analysis is acceptable using these items, $\chi^2(231) = 5482.77, p < .001$.

Sampling Adequacy. A Kaiser-Meyer-Olkin (KMO) statistic was calculated to determine sampling adequacy. The current sample was superb, considering the range of acceptable KMO values (i.e., < 0.5 = inadequate, $0.5-0.7$ = mediocre, $0.7-0.8$ = good, $0.8-.0.9$ = great, >0.9 = superb; Hutcheson & Sofroniou, 1999). Specifically, the overall mean sampling adequacy was 0.95, and individual questions ranged from 0.91 to 0.97. Therefore, no questions were removed for sampling inadequacy.

Multicollinearity. The determinant score was calculated to test multicollinearity. The determinant score reveals the extent that the correlation matrix is perfectly related (determinant = 0) or unrelated (determinant = 1). This analysis revealed a score of 0.0000034, which is smaller than the required value (0.00001), suggesting some questions may be too highly correlated. However, upon inspection of the correlation matrix (see Table 2), no correlation exceeds 0.80 and therefore, no items were removed at this step.

What is the Optimal Factor Structure of Consumer Self-development?

Kaiser Criterion. Both the old (1.0; Kaiser, 1970) and the new (0.7; Kaiser & Rice, 1974) criteria for the Kaiser test suggests there are two factors. However, despite being widely used, the Kaiser test is “highly fallible for a variety of reasons” and not recommended (Flora, 2018, p. 258).

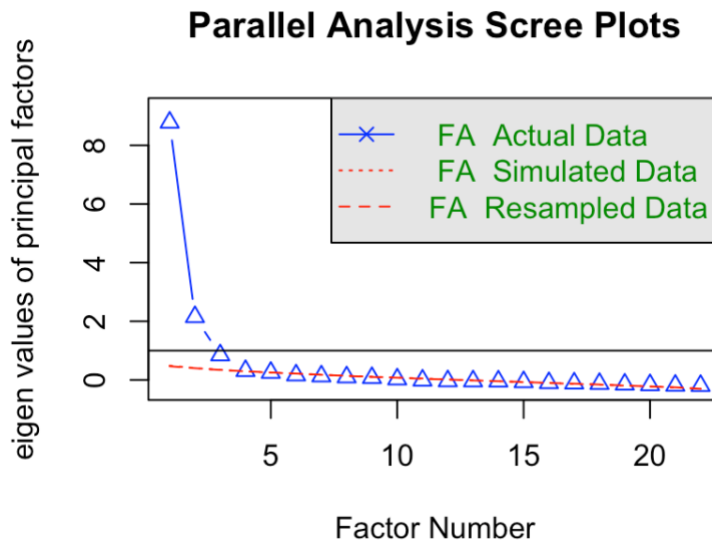
Parallel Analysis and Scree Plot. Therefore, the number of factors was further explored using graphical methods (i.e., a scree plot) and a parallel analysis (Horn, 1965). A parallel analysis compares the observed eigenvalues of the correlation matrix against a correlation matrix of random simulated data (Flora, 2018). Any relationships observed in the simulated random data are due to error. Thus, we can be confident that eigenvalues in the observed matrix (blue line in plot) that exceed the random eigenvalues (red dashed line) are due to a common factor and not sampling error (Flora, 2018). Specifically, this analysis “compares the scree of factors of the observed data with that of a random data matrix of the same size as the original” (Psych package for R, fa.parallel, p. 144). The parallel analysis was conducted using the maximum likelihood method and suggests that the number of factors = 3. A scree plot is “a scatterplot of the eigenvalues of a correlation matrix against their ranks in terms of magnitude” (Flora, 2018, p. 259). The scree plot is derived from the current data and it shows two factors with eigenvalues clearly above the scree and a third factor slightly above the scree. This third factor slightly above the scree suggests there is some explanatory value in a third factor. In other words, the point of inflexion occurs below the third factor (Figure 3).

Table 2.*Correlation Matrix of Consumer Self-development*

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	SD1	SD2	SD3	SD4	SD5	SD6	SD7	SD8	SD9	SD10	SD11	SD12	SD13	SD14	SD15	SD16	SD17	SD18	SD19	SD20	SD21	SD22	
SD1	445	4.75	1.48	–																						
SD2	444	5.62	1.07	0.43	–																					
SD3	445	4.9	1.38	0.64	0.43	–																				
SD4	444	4.83	1.36	0.69	0.5	0.69	–																			
SD5	442	5.63	1.1	0.52	0.58	0.56	0.54	–																		
SD6	439	4.79	1.43	0.71	0.5	0.72	0.73	0.57	–																	
SD7	443	4.42	1.76	0.35	0.22	0.34	0.33	0.24	0.41	–																
SD8	444	4.47	1.52	0.65	0.41	0.64	0.68	0.52	0.73	0.37	–															
SD9	442	5.08	1.33	0.65	0.44	0.64	0.67	0.49	0.7	0.38	0.62	–														
SD10	442	5.07	1.45	0.58	0.45	0.64	0.62	0.5	0.67	0.43	0.59	0.65	–													
SD11	444	4.91	1.41	0.54	0.39	0.58	0.55	0.49	0.58	0.3	0.6	0.58	0.56	–												
SD12	443	5.46	1.24	0.33	0.31	0.31	0.33	0.32	0.31	0.38	0.34	0.38	0.35	0.35	–											
SD13	442	5.63	1.36	0.17	0.24	0.16	0.19	0.3	0.18	0.23	0.16	0.16	0.23	0.22	0.4	–										
SD14	442	5.52	1.24	0.22	0.29	0.24	0.25	0.34	0.25	0.27	0.19	0.22	0.27	0.27	0.37	0.6	–									
SD15	440	5.05	1.44	0.31	0.31	0.31	0.3	0.29	0.34	0.39	0.34	0.43	0.38	0.43	0.52	0.32	0.37	–								
SD16	442	5.17	1.55	0.22	0.28	0.2	0.21	0.27	0.22	0.24	0.25	0.25	0.25	0.28	0.39	0.47	0.51	0.32	–							
SD17	444	4.96	1.49	0.25	0.32	0.24	0.27	0.35	0.29	0.28	0.26	0.24	0.26	0.29	0.38	0.51	0.54	0.41	0.46	–						
SD18	444	5.76	1.04	0.31	0.37	0.31	0.33	0.35	0.34	0.32	0.31	0.42	0.4	0.34	0.52	0.45	0.51	0.44	0.38	0.38	–					
SD19	444	4.84	1.5	0.28	0.22	0.29	0.3	0.22	0.35	0.3	0.35	0.44	0.35	0.39	0.25	0.08	0.23	0.48	0.19	0.26	0.34	–				
SD20	443	4.6	1.49	0.31	0.32	0.33	0.34	0.35	0.42	0.26	0.39	0.34	0.42	0.42	0.35	0.36	0.44	0.34	0.47	0.41	0.3	0.22	–			
SD21	445	4.69	1.54	0.43	0.29	0.42	0.43	0.31	0.46	0.37	0.48	0.55	0.48	0.42	0.46	0.15	0.18	0.55	0.21	0.33	0.35	0.45	0.31	–		
SD22	445	5.34	1.21	0.26	0.41	0.3	0.38	0.41	0.32	0.24	0.28	0.37	0.33	0.32	0.4	0.49	0.55	0.39	0.5	0.53	0.48	0.28	0.38	0.31	–	

Figure 3.

Study 1 EFA Parallel Analysis Scree Plot of Consumer Self-development (Essay 1)



Exploratory Factor Analysis

Several exploratory factor analyses (EFAs) were conducted using R with the Psych and GPARTATION package. These analyses used maximum likelihood estimates for factor extraction and an oblique (oblimin) rotation. Although the current scale development is guided by theory, it was unclear how many factors would emerge. It was possible that all items would be highly correlated and thus load onto one factor. It was also possible that two factors would emerge, since the 22-items ask questions about both self-knowledge and competence. However, the parallel analysis and scree plot both suggest a 3-factor solution. Therefore, multiple models were compared.

Initial EFAs were conducted for one, two, and three-factor solutions, using all 22-items measuring consumer self-development, to examine optimal model fit (Models A-C). A third EFA model was conducted to remove a split-loading item (Model D). Given

these preliminary results, two, more refined, models were then run: (1) a two factor solution containing the four highest loading items per factor (Model E), and (2) a three factor solution containing the three highest loading items per factor (Model F). Factor loadings greater than 0.299 were identified as loading on a given factor, based on the typical cut-off of .30. Highly loading items on a given factor were then interpreted for theoretical and substantive relevance. In other words, are there obvious, face-valid differences between what the high-loading items are measuring for each identified factor (e.g., did a three factor model simply identify a nonsensical extra factor?). Correlations between factors in Model F suggests this is not the case.

Table 3 presents various fit statistics for EFA Models A-G. Model A, a one factor solution, explained 39% of variance but had poor model fit across multiple indices. Model B, a two-factor solution, explained 50% of variance, but was not adequate across all fit statistics. Model C, a three-factor solution, explained 54% of variance across self-awareness (28%), product knowledge (16%), and perceived competence (10%). However, Model C revealed a split loading item (#12: “Acquire new facts or skills”), which loaded on both product knowledge (standardized loading from pattern matrix = 0.35) and perceived competence (standardized loading from pattern matrix = 0.43). Model fit improves marginally when this split-loading item is removed (Model D).

Three additional models were constructed to identify the optimal model. Model E was an eight-item two-factor model consisting of the four highest loading items per factor from Model B. Model F was a nine-item three-factor model consisting of the three highest loading items per factor from Model D.

Table 3*Summary of EFA model fit statistics*

	Model A	Model B	Model C	Model D	Model E	Model F	Model G
Scale items	1:22	1:22	1:22	1:11, 13:22	3,4,6,8,13, 14,16,17	3,4,6,13,14, 16,15,19,21	3,4,6,8,13,14, 15,16,17,19,21
CFI	0.741	0.919	0.967	0.972	0.999	0.998	
TLI	0.714	0.901	0.956	0.961	0.998	0.996	0.995
BIC	291.87	-536.26	-688.05	-626.33	-64.98	-58.94	-121.99
RMSR	0.11	0.05	0.03	0.03	0.01	0.01	0.02
RMSEA	0.12	0.072	0.049	0.047	0.016	0.021	0.023
RMSEA 90% CI	(0.12, 0.13)	(0.065, 0.077)	(0.04, 0.055)	(0.038, 0.053)	(0, 0.051)	(0, 0.055)	(0, 0.046)

Note: CFI = Comparative fit index, TLI = Tucker Lewis index, BIC = Bayesian information criterion, RMSR = Root-mean-square residual, RMSEA = Root-mean-square error of approximation. Model A = 1-factor solution, Model B = 2-factor solution, Model C = 3-factor solution, Model D = 3-factor solution without split-load item (#12), Model E = 2-factor solution (with only top 4 loading items per factor), Model F = 3-factor solution (with only top 3 loading items per factor), and Model G = an eleven-item three-factor model (consisting of Factors 1 and 2 from Model E and Factor 3 from Model F).

Lastly, Model G was a eleven-item three-factor model consisting of the four highest loading items on factors one and two and the three highest loading items on factor three (from Model F). Although Models E-G are statistically indistinguishable, insofar that they each provide good-excellent fit, it was decided that a three-factor model would more broadly capture consumer self-development. Therefore, Model E was dropped from consideration. In addition, since Model G provides no statistical benefit, parsimony in measurement was favored and Model F was selected as the final model (see standardized loadings Table 4).

Model F was a three-factor solution explained 60% of variance. The first factor captures self-awareness (25% of variance), the second factor captures product knowledge (18% of variance), and a third factor captures perceived competence (17% of variance). Model F revealed excellent model fit (CFI = 0.99, TLI = 0.99, SRMSR = 0.01, RMSEA = 0.02 [90% CI: 0, 0.05], BIC = -58.94, Figure 4). In Model F, the self-awareness factor was correlated with product knowledge ($r = 0.28$) and perceived competence ($r = 0.54$). The product knowledge factor was also correlated with perceived competence ($r = 0.40$).

Table 4.

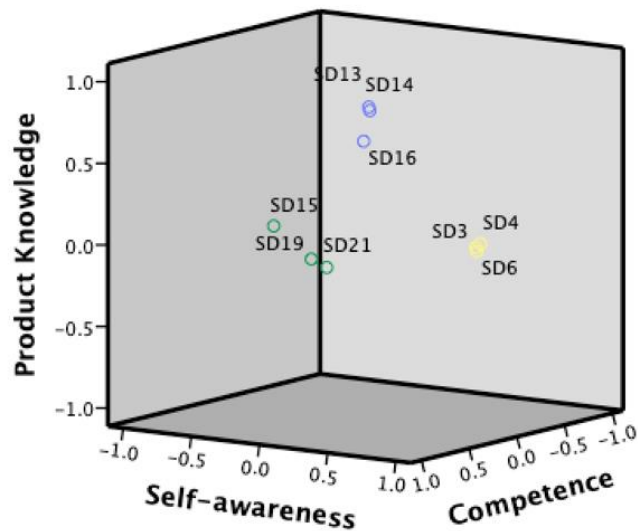
Study 1 EFA Standardized Loadings (Pattern Matrix) for the Selected Model (F) of Consumer Self-development (Essay 1)

	Factor 1	Factor 2	Factor 3
SD3	0.82	0.01	0
SD4	0.84	0.04	-0.02
SD6	0.85	0	0.04
SD13	0	0.78	-0.04
SD14	0.04	0.76	0.03
SD15	-0.09	0.14	0.78
SD16	0.03	0.58	0.09
SD19	0.06	-0.06	0.62

SD21	0.19	-0.11	0.66
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Figure 4.

Study 1 EFA Factor Plot of Consumer Self-development (Model F)



Note. This factor plot shows each factor of consumer self-development in three-dimensional space. Self-awareness is plotted in yellow, product knowledge in blue, and competence in green.

Reliability Analyses: Cronbach’s Alpha and McDonald’s Omega

The new measure of consumer self-development formed a reliable scale ($\alpha = 0.83$, $\omega = .83$) and each factor also demonstrated adequate internal consistency: CSD self-awareness ($\alpha = 0.88$, $\omega = .88$), CSD product-knowledge ($\alpha = 0.76$, $\omega = .77$), and CSD competence ($\alpha = 0.74$, $\omega = .75$). McDonald’s omega is preferred over Cronbach’s alpha, especially when tau-equivalence is violated (Dunn, Baguley, & Brunsten, 2014). McDonald’s omega is less likely to suffer from inflated or attenuated internal consistency and was calculated using JASP (v0.9.0.1; Halter, 2020).

Preliminary Analysis: Who Experiences Self-development?

What demographic variables predict self-development? A multiple linear regression was used to investigate the effects of demographic predictors on the criterion, CSD. Consumer self-development was regressed on gender, age, education, employment, marital status, income, and ethnicity (majority culture = 0, minority culture = 1). Gender was the only significant demographic predictor of CSD ($b = 0.24$, $SE = 0.12$, $p = .037$), suggesting that obtaining self-development can occur regardless of age, education, employment, marital status, income, and ethnicity. Gender only explained 1.2% of the variance in CSD.

Pearson correlations were conducted to assess the relationship between the new measure of self-development and various measures to provide evidence of nomological and discriminant validity.

Nomological validity

Consumer Well-being: Meaning in Life. Prior work suggests the presence of meaning and the search for meaning are rather distinct. For example, prior work shows the presence of meaning correlates with intrinsic religiosity ($r = 0.30$) and feeling the emotion of love ($r = 0.40$), and is negatively correlated with depression ($r = -0.48$, Steger et al., 2006). In contrast, the search for meaning has very different relationships with these variables ($r_{\text{Internal Religiosity}} = 0.11$, $r_{\text{Love}} = -0.04$, $r_{\text{Depression}} = 0.36$, Steger et al., 2006). Supporting H_{9A&B}, overall consumer self-development correlates with both the search for meaning ($\alpha = .94$; $r = .24$, $p < .001$, $R^2 = .06$) and the presence of meaning ($\alpha = .90$; $r = .21$, $p < .001$, $R^2 = .04$). Meaning search has the strongest relationship with self-awareness aspect of CSD ($r = .30$, $p < .001$, $R^2 = .09$), followed by competence ($r = .14$, p

= .005, $R_2 = .02$) and product-knowledge ($r = .10, p = .044, R_2 = .01$). Meaning presence has the strongest relationship with CSD competence ($r = .27, p < .001, R_2 = .07$), followed by self-awareness ($r = .11, p = .02, R_2 = .01$) and product-knowledge ($r = .09, p = .07, R_2 = .008$).

In the current study, the presence of meaning in life negatively correlates with the search for meaning in life ($r = -0.19, p < .001$), supporting the presence-to-search model of meaning. Following Steger and colleagues (2008), to test if CSD acts as a psychological strength, and further test the presence-to-search model, the following analysis investigates whether CSD moderates the relationship between the presence of and search for meaning. Results show that the presence of meaning negatively predicts the search for meaning ($b = -0.80, SE = 0.25, p = .002$) and a presence of meaning \times CSD interaction ($b = 0.10, SE = 0.05, p = .036$). Although the effect of the presence of meaning on the search for meaning was significant at high (+1SD) levels of CSD ($b = -0.18, SE = 0.07, p = .014$), the size of this relationship was twice as strong at low (-1SD) levels of CSD ($b = -0.37, SE = 0.06, p < .001$), which provides further support for the presence-to-search model and direct evidence that CSD contributes to consumer well-being.

Does Consumer Self-development Predict the Presence of Meaning in Life?

It was critical to not only determine whether CSD predicts the presence of meaning in life (Steger et al., 2006), but also whether it explains a unique proportion of variance beyond the effects of demographics. Several demographic variables were included in the model, including gender, age, education, employment status, marital status, income, and ethnicity. A multiple linear regression shows that many demographic variables predict the

presence of meaning in life, including age ($b = 0.03$, $SE = 0.007$, $p < .001$) and income ($b = 0.07$, $SE = 0.04$, $p = .046$). That is, people who are older and who have more money experience greater meaning in life compared to those who are younger and have less money. Importantly, CSD also predicted the presence of meaning in life ($b = 0.30$, $SE = 0.08$, $p < .001$) when controlling for demographics (see Table 5).

Table 5.

Study 1 Regression Coefficients Predicting the Presence of Meaning in Life (Essay 1)

Variable	<i>b</i>	<i>SE</i>	<i>t</i> -test	<i>P</i>
Constant	1.66	0.54	3.05	0.002
Gender	0.24	0.17	1.39	0.16
Age	0.03	0.007	4.0	< 0.001
Education	-0.003	0.06	-.05	0.96
Income	0.07	0.04	2.0	0.046
Employment status	-0.06	0.04	-1.63	0.10
Ethnicity	-0.12	0.18	-0.69	0.49
Self-development	0.3	0.07	4.17	< 0.001

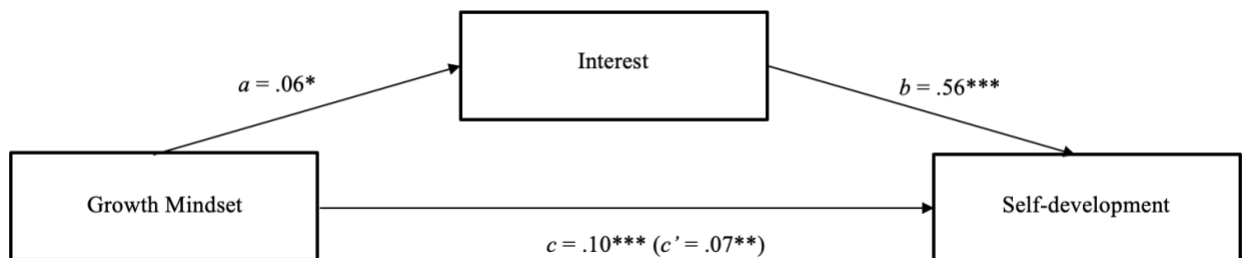
Growth Mindset. Supporting H₁₂, there is a positive relationship between growth mindsets ($\alpha = .91$) and overall CSD ($r = .14$, $p = .003$, $R_2 = .02$). Growth mindset correlates with the self-awareness factor ($r = .18$, $p < .001$, $R_2 = .03$) and the competence factor ($r = .11$, $p = .017$, $R_2 = .01$), but not the product knowledge factor ($r = .02$, $p = .72$) of self-development.

Interest. Supporting H₁₃, overall CSD correlates with the emotion interest ($r = .51$, $p < .001$, $R_2 = .26$). When examining each factor of self-development, interest correlates with CSD self-awareness ($r = .36$, $p < .001$, $R_2 = .13$), product-knowledge ($r = .45$, $p < .001$, $R_2 = .20$), and competence ($r = .37$, $p < .001$, $R_2 = .14$).

Mediation Analyses. To test whether the relationship between growth mindsets and self-development is mediated by interest, a simple mediation model was conducted using the PROCESS Macro for SPSS v3.4 (Model 4, bootstrapped with 10,000 samples; Hayes, 2012; see Figure 5).

Figure 5.

Study 1 Statistical Mediation Model of the Effect of Growth Mindsets on Self-development via Interest



Note: Unstandardized betas with statistical significance denoted by * ($p < .07$), ** ($p < .05$), *** ($p < .01$).

Supporting H₁₄, this analysis reveals that interest mediates the effect ($b = .03$, $SE = .02$, 95%CI: .0016, .0636), such that a growth mindset is associated with increased interest ($b = .06$, $SE = .03$, $p = .058$), which is in turn related to increased CSD ($b = .56$, $SE = .04$, $p < .001$). Specifically, we find that a one-unit increase in a growth mindset is associated with a .06-unit increase in interest, and that a one-unit increase in interest is related to a .56-unit increase in self-development. Note that the direct effect ($b_c = .10$, $SE = .03$, $p = .003$) is reduced when interest is inserted as a mediator in the model ($b_{c'} = .07$, $SE = .03$, $p = .02$).

A second mediation analysis tested whether the growth mindset → interest → self-development link extended to the presence of meaning, inserted as a distal outcome. The presence of meaning in life was regressed CSD, interest, and growth mindsets in a serial mediation model (PROCESS Model 6, bootstrapped with 10,000 draws; Hayes, 2012). This analysis provides evidence for both mediating pathways illustrated in Figure 1: (a) a serial mediation pathway ($b = .008$, $SE = .005$, 95% CI: .0002, .0206) where a growth mindset predicts interest ($b = .05$, $SE = .03$, $p = .070$), interest predicts CSD ($b = 0.55$, $SE = .05$, $p < .001$), and CSD predicts the presence of meaning in life ($b = .27$, $SE = .08$, $p = .001$), and (b) a simple mediation pathway ($b = .018$, $SE = .01$, 95% CI: .0020, .0398) where a growth mindset predicts CSD ($b = .07$, $SE = .03$, $p = .023$) and CSD predicts the presence of meaning in life ($b = .027$, $SE = .08$, $p = .001$).

Discriminant Validity

Supporting H5, no significant relationship is observed between a fixed mindset ($\alpha = .94$) and CSD ($r = -.06$, $p = .18$), nor did a fixed mindset correlate with any factor of CSD. When examining each factor of CSD, a fixed mindset did not correlate with CSD self-awareness ($r = -.07$, $p = .16$), product-knowledge ($r = -.01$, $p = .77$), nor competence ($r = -.06$, $p = .19$).

Discussion

Based on prior work (e.g., Ryan & Deci, 2000; Ryff & Keyes, 1995; Waterman 1993), Study 1 intended to (a) develop a reliable measure of consumer self-development and (b) provide initial evidence to establish nomological and discriminant validity.

Results from the EFA indicate that a nine-item scale with a three-factor solution demonstrates excellent model fit. Upon examining the item content, it is clear that the

first factor measures self-awareness (or gaining self-knowledge), the second factor pertains to the acquisition of product knowledge, and the third factor taps perceived competence. Overall CSD, along with each factor, was internally consistent.

Turning to nomological validity, CSD relates to both the search for, and the presence of, meaning in life. Meaning search correlates most strongly with the self-awareness factor of CSD, whereas the presence of meaning correlates most strongly with the competence factor of CSD. These results suggest that competence is the most important factor for the positive dimensions of consumer well-being (i.e., the presence of meaning). To delve deeper and understand how CSD contributes to meaning in life, a moderation analysis shows that the predicted negative relationship between the presence of meaning and the search for meaning (*presence-to-search model*; Steger et al., 2008), was attenuated at high levels of CSD. That is, reductions in the presence of meaning predict the search for meaning ~50% less when people are protected by the psychological benefits of CSD compared to when people are not protected by these benefits.

CSD is unrelated to a fixed mindset but is related to growth mindsets and interest, adding to the demonstration of discriminant and nomological validity, respectively. This provides support for the idea that a growth mindset and interest are both causal antecedents of CSD. Specifically, the mediation result suggests that interest accounts for some of the relationship between a growth mindset and CSD. The second mediation analysis shows that CSD, arising from a growth mindset, serves as a mechanism for consumer well-being (i.e., the presence of meaning in life).

Although Study 1 provides promising results, both in terms of establishing a reliable and psychometrically-sound measure of CSD and in terms of providing

preliminary evidence of nomological and discriminant validity, Study 2 builds on this work by confirming the factor structure and expanding the battery of measures to better fulfill the criteria for convergent, discriminant, and nomological validity.

Study 2: What *are* Individual Differences in Consumer Self-development?

Convergent, Discriminant, and Nomological Validity

Study 1 developed a reliable measure of consumer self-development (CSD). When people recall an enjoyable consumer experience, they experience greater CSD, consisting of heightened self-awareness, product knowledge, and competence. The purpose of Study 2 was to extend this research in three ways: (1) confirm the factor structure of the new measure using a larger sample of consumers; (2) examine CSD at the level of individual differences, in relation to hobbies in general; and (3) more thoroughly establish construct validity by including measures that represent convergent validity, discriminant validity, and the nomological network.

Methods

Participants and Design

Consistent with best practices in scale development, Study 2 aimed to collect at least $N = 500$ (Boateng et al., 2018). Participants¹ ($N = 644$, $M_{Age} = 38.42$, $SD = 11.20$) were consumers drawn from the same population recruited in Study 1. Participants were

¹ Of 705 participants, 30 participants stopped after completing the CSD scale, leaving 675 (65.53%) participants who completed at least 25% of the study. Another 31 participants stopped at some point between the 25% mark and the end of the study, which were classified as partial responses. This resulted in a total of 644 fully completed responses (63.11%). All 705 cases are retained in the confirmatory factor analysis. See Appendix C for details.

65.80% male (19.60 % female, 4.7% other [e.g., Non-binary, Transgender, Genderqueer], 1.3% prefer not to answer, 8.7% missing data) and were primarily of European origins (81.4%), employed (76.9%), and married or in a domestic partnership (50.6%). Income varied substantially: < \$20k (9.4%), \$20k-35k (11.5%), \$35k-50k (13.2%), \$50k-75k (14.6%), \$75k-100k (12.6%), \$100-150k (13.6%), >\$150k (10.4%), prefer not to answer (6.1%).

Procedures

Participants accessed the survey link in the same way as in Study 1. Following informed consent, participants were asked to think about their hobbies and to consider all the products and experiences they engaged with for enjoyment as a result of these hobbies. Some examples were provided (e.g., narrative fantasy, culinary learning, sports/athletics, music, movies, or general arts, new gadgets/technology, guided tours). Participants then completed, in randomized order, the items that composed Model E (the best four items per factor for a two factor solution) and Model F (the best three items per factor for a three factor solution) from the EFA. Specifically, participants were instructed: “When answering the following questions, think about a hobby/interest that you learn the most from.”

Table 6.

Items Measuring Consumer Self-development in Study 2 (Essay 1)

-
- 3. Expand your sense of the kind of person you are**
 - 4. Become more insightful about myself**
 - 6. Develop a better understanding of myself**
 - 8. Reveal a new way of thinking about myself
 - 13. Gain knowledge, that I did not have before, about new products**
 - 14. Become more well-informed about the product category**
 - 15. Expand my expertise**

16. Develop a better understanding of how a product was created

17. Develop a better understanding of how a product functions

19. Feel competent

21. Broaden abilities or talents

Note: Final scale items are bolded. Self-awareness (3, 4, 6), product-knowledge (13, 14, 16), competence (15, 19, 21).

Participants completed each item measuring CSD (e.g., “In general, engaging with my hobby/interest allows me to...: ‘Expand your sense of the kind of person you are,’ see Table 6) on a scale anchored from 1 (*Strongly disagree*) to 7 (*Strongly agree*). This was followed by two measures of personal growth, intended to establish convergent validity of CSD. The first measure of personal growth was a seven-item measure from the theoretical framework of psychological well-being (Ryff & Keyes, 1995). This measure has demonstrated strong internal consistency in prior work ($\alpha = 0.81$, Ryff, 1989). On a scale anchored from 1 (*Strongly disagree*) to 7 (*Strongly agree*), participants responded to items like: “For me, life has been a continuous process of learning, changing, and growth.” The second measure of personal growth was a five-item measure from the theoretical framework of basic psychological needs (Kasser & Ryan, 1996). In prior work, this scale has demonstrated good internal consistency ($\alpha = .72-.89$). On a scale anchored from 1 (*Not at all important*) to 7 (*Very important*), participants responded to items such as “For you, how important is it...: ‘To grow and learn new things?’”

Participants then completed three measures, in counterbalanced order, to establish convergent validity of the three individual factors of CSD. To provide convergent validity of CSD self-awareness, participants completed the private self-awareness scale

(Govern & Marsch, 2001), which has demonstrated adequate internal consistency in prior work ($\alpha = 0.70$). On a scale anchored from 1 (*Strongly disagree*) to 7 (*Strongly agree*), participants responded to items like: “In general, I am conscious of my inner feelings.” To provide convergent validity of CSD competence, participants completed the competence facet of the basic psychological needs scale (Deci & Ryan, 2000), which has demonstrated adequate internal consistency in prior work ($\alpha = 0.71$; Kasser & Ryan, 1993). On a scale anchored from 1 (*Not at all true*) to 7 (*Very true*), participants responded to items like: “I have been able to learn interesting new skills recently,” or “Most days I feel a sense of accomplishment from what I do.”

To provide convergent validity of CSD product knowledge, participants completed an abbreviated four-item version of the gadget loving scale (Bruner & Kumar, 2006), which has demonstrated adequate internal consistency in prior work ($\alpha = 0.93$). Specifically, participants completed the four items that had the strongest factor loading in the original scale paper (Bruner & Kumar, 2006). On a scale anchored from 1 (*Strongly disagree*) to 7 (*Strongly agree*), participants responded to “Despite their age, I love to play around with technological gadgets,”

Next, participants completed several measures intended to establish nomological validity with overall CSD. First, participants were asked how they perceived their hobby/interest, in terms of hedonic and utilitarian attitudes (Voss et al. 2003). This scale consists of five, seven-point, semantic-differential items tapping hedonic attitudes (e.g., “fun-not fun,” “enjoyable-not enjoyable”) and five items tapping utilitarian attitudes (e.g., “necessary-unnecessary,” “functional-not functional”). All items were completed in a

randomized order. Voss and colleagues (2003) show that both hedonic ($\alpha = 0.93$) and utilitarian ($\alpha = 0.92$) dimensions of consumer attitudes are highly reliable.

Participants then completed two abbreviated, three-item versions of an engagement orientation-to-happiness and a pleasure orientation-to-happiness, in randomized order. Participants completed the three items that had the strongest factor loading on each factor in the original scale (Peterson et al., 2005). A pleasure orientation was captured by responding to items like “In choosing what to do, I always take into account whether it will be pleasurable,” on a 1 (*Not like me at all*) to 7 (*Very much like me*) point scale. Using the same scale, an engagement orientation was captured by responding to items like “Whether at work or play, I am usually “in a zone” and not conscious of myself.”

To further establish nomological validity of CSD, participants completed the satisfaction with life scale (Diener et al., 1985). On a scale anchored from 1 (*Strongly disagree*) to 7 (*Strongly agree*), participants responded to items like “In most ways my life is close to my ideal,” “The conditions of my life are excellent,” “I am satisfied with my life,” “So far I have gotten the important things I want in life,” and “If I could live my life over, I would change almost nothing.” This measure has demonstrated excellent internal consistency in prior work (e.g., $\alpha = 0.87$).

This was followed by two measures intended to establish discriminant validity of CSD. Participants indicated the extent to which they had an aversion to fiction (“I have no interest in things that aren't real, such as things based in fiction, sci-fi, or fantasy”) on a scale of 1 (*Strongly disagree*) to 7 (*Strongly agree*). Participants then indicated the

extent to which hedonism was a moral violation (“It is immoral to pursue pleasure for its own sake”) on a scale of 1 (*Strongly disagree*) to 7 (*Strongly agree*).

The survey ended by capturing demographics (e.g., age, gender, ethnic background). All participants were debriefed and offered the opportunity to enter a draw to win one of three gift cards to Amazon.com valued at \$100 USD, which was offered as an incentive to complete the survey. Note that the five-item conscientious responder scale, which instructs participants how to respond—to distinguish between conscientious responders and random responders—was randomly placed throughout the questionnaire (Marjanovic, Struthers, Cribbie, & Greenglass, 2014).

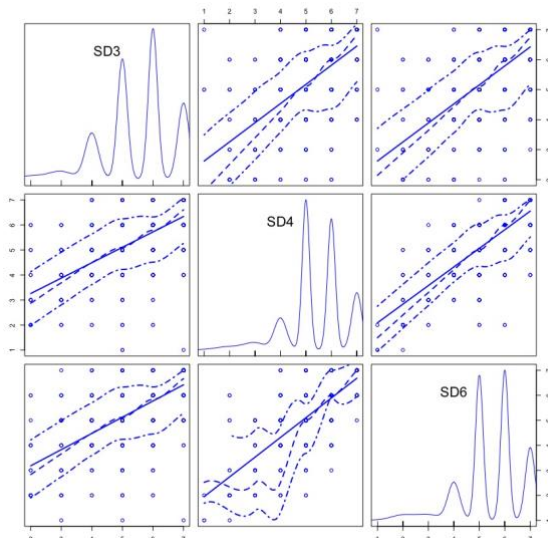
Results

Preliminary analyses

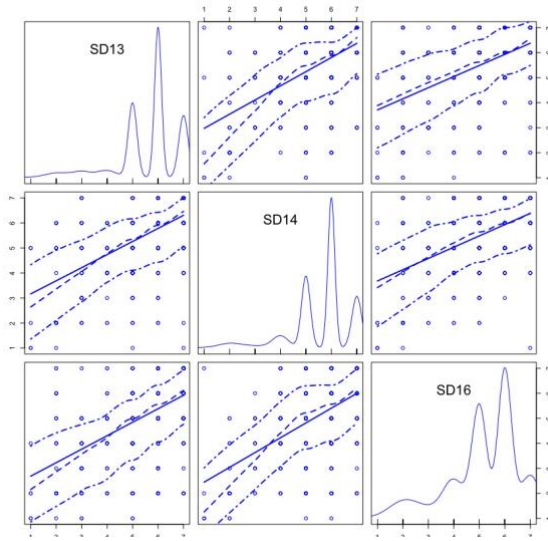
Before proceeding with the confirmatory factor analysis, scatter plots of associations between the CSD items were created to assess linearity. As illustrated in Figure 6, the distributions had a negative skew, suggesting that people were inclined to report higher levels of self-development across all items. Therefore, maximum likelihood robust statistics will be reported in the following analyses.

Figure 6.

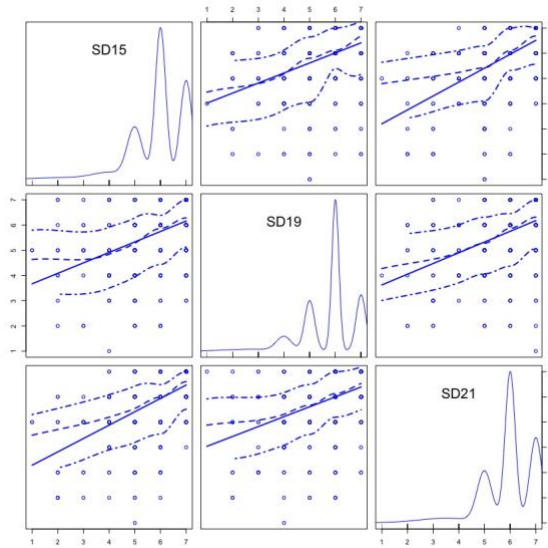
Study 2 CFA: Scatter Plots Assessing Linearity of Consumer Self-development (Essay 1)



(a) CSD Self-awareness



(b) CSD Product knowledge



(c) CSD Competence

Confirmatory Factor Analysis

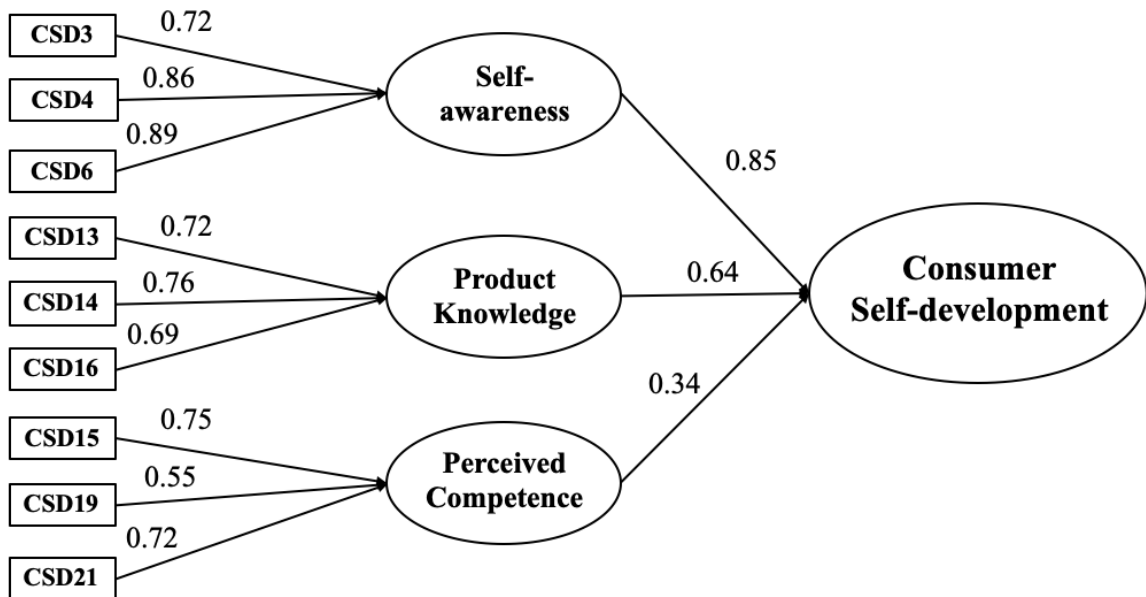
Confirmatory factor analyses (CFA) were conducted with R using the psych and lavaan packages (see Table 7). These analyses used maximum likelihood estimates (robust) for factor extraction. Several CFAs were conducted to identify optimal model fit. By and large, Models B-E clearly outperform Model A. The BIC statistics suggest that Model D fits the data best, followed by Models E and C. However, since the two-factor and three factor solutions are nearly indistinguishable based on fit, a three-factor solution is preferred as it provides greater measurement sensitivity allowing for the measurement of an additional, theoretically-relevant, element of self-development. Therefore, Model D was dropped from consideration. Lastly, Model C (Figure 7) was selected over Model E due to (1) the slightly smaller lower bound for the 90% CI of RMSEA, which is a recommended method for parsing apart similar fitting models to identify optimal fit (Preacher et al., 2013); and (2) consistency with the state-level solution found in Study 1 (i.e., given the similarity of fit statistics, using the same items for both the state and individual differences version will reduce researcher error and confusion). Importantly, both the overall scores for the new measure of CSD ($\alpha = 0.77$) along with the specific factors of CSD were internally reliable (self-awareness $\alpha = 0.86$, product knowledge $\alpha = 0.76$, and competence $\alpha = 0.71$).

Table 7*Summary of CFA Model Fit Statistics (Essay 1)*

	Model A	Model B	Model C	Model D	Model E
Scale items	3,4,6,8,13,14,1 6,17,15,19,21	3,4,6,8,13,14,1 6,17,15,19,21	3,4,6,13,14,16, 15,19,21	3,4,6,8,13,14,16, 17	3,4,6,8,13,14,1 6,17
CFI	0.533	0.987	0.987	0.989	0.989
TLI	0.417	0.982	0.981	0.984	0.984
AIC	23,223	21,725	18,125	16,047	17,914
BIC	23,323	21,839	18,221	16,124	18,010
SRMSR	0.208	0.033	0.032	0.031	0.032
RMSEA	0.184	0.032	0.033	0.037	0.034
RMSEA 90% CI	(0.176, 0.191)	(0.021, 0.042)	(0.018, 0.047)	(0.022, 0.051)	(0.019, 0.048)

Note: CFI = Comparative fit index, TLI = Tucker Lewis index, BIC = Bayesian information criterion, RMSR = Root-mean-square residual, RMSEA = Root-mean-square error of approximation. Model A = one-factor solution, containing the best 11-items from the EFA in Study 1; Model B = a three-factor solution, containing the best 11-items from the EFA in Study 1; Model C = a three-factor solution that favored parsimony, containing the best nine items from EFA (three items/factor); Model D = a two-factor solution, containing the best eight items from the EFA (four items/factor); Model E = a three-factor solution, containing the best nine items from CFA (three items/factor).

Figure 7. Study 2 CFA Factor Loadings (Essay 1)



Reliability Analyses: Cronbach’s Alpha and McDonald’s Omega

Consumer self-development again formed a reliable scale ($\alpha = 0.77$, $\omega = .78$) and each factor also demonstrated adequate internal consistency: CSD self-awareness ($\alpha = 0.86$, $\omega = .87$), CSD product-knowledge ($\alpha = 0.76$, $\omega = .76$), and CSD competence ($\alpha = 0.71$, $\omega = .72$).

Who Experiences Consumer Self-development?

These analyses intend to identify (1) the demographic variables that predict individual differences in CSD and, (2) whether the strategies people generally use to experience happiness (i.e., orientations-to-happiness) predict CSD.

What demographic variables predict self-development? A multiple linear regression is used to investigate the demographic predictors of CSD (Table 8). CSD is regressed on gender, age, education, employment, marital status, income, and ethnicity (majority culture = 0, minority culture = 1). Younger and less educated, rather than older

and more educated, adults experience greater self-development from their hobbies. This analysis further suggests that CSD is perhaps a widely occurring phenomenon and occurs regardless of employment status, marital status, income, and ethnicity. Demographic variables explain approximately 2.8% of the variance in CSD.

Table 8.

Study 2 Demographic Regression Coefficients Predicting CSD (Essay 1)

Variable	<i>b</i>	<i>SE</i>	<i>t</i> -test	<i>p</i>
Constant	6.00	0.16	38.23	0.00
Gender	0.04	0.08	0.54	0.593
Age	-0.007	0.003	-2.27	0.024
Education	-.05	0.02	-1.91	0.057
Income	0.004	0.017	0.24	0.81
Employment status	0.017	0.03	0.56	0.57
Ethnicity	0.11	0.09	1.25	0.21

Do the Strategies People Use to Experience Happiness Predict CSD? A

multiple linear regression is used to investigate whether those with a pleasure orientation-to-happiness or an engagement orientation-to-happiness (or their interaction) experience greater CSD. In steps one and two, a pleasure orientation-to-happiness and an engagement orientation-to-happiness uniquely predict CSD. In step three, although neither main effect is significant, there is a pleasure × engagement interaction ($b = 0.04$, $SE = 0.02$, $t(644) = 2.05$, $p = .048$) on CSD, which is predicted by prior work (Peterson et al., 2005). Peterson and colleagues (2005) find that these orientations can interact such that greater levels of both orientations predict greater life satisfaction (Table 9).

Table 9.

Study 2 Orientation to Happiness Regression Coefficients Predicting CSD

Variable	<i>b</i>	<i>SE</i>	<i>t</i> -test	<i>p</i>
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Step 1: ($F(1, 646) = 17.35, p < .001$)				
Constant	5.13	0.11	48.01	0.00
Pleasure-orientation	0.09	0.02	4.16	< .000
Step 2: ($F(1, 645) = 14.10, p < .001$)				
Constant	4.87	0.13	36.48	< .000
Pleasure-orientation	0.09	0.02	3.83	< .000
Engagement-orientation	0.07	0.02	3.25	< .001
Step 3: ($F(1, 644) = 10.84, p < .001$)				
Constant	5.53	0.35	15.78	.000
Pleasure-orientation	-0.06	0.07	-0.78	0.44
Engagement-orientation	-0.09	0.08	-1.09	0.28
P × E Orientation	0.04	0.02	2.05	0.041

To probe this interaction, simple effects reveal that the nature of this interaction is that being motivated to gain happiness through pleasure (i.e., the supposed motivation underlying hedonic consumption) only predicts CSD when people endorse average ($b = 0.09, SE = 0.02, t(644) = 3.80, p < .001$) or high levels of engagement (+1SD; $b = 0.13, SE = 0.03, t(644) = 4.20, p < .001$). In other words, for people to maximize CSD from hedonic consumption, they must attempt to gain happiness through both pleasure and engagement.

In the following analyses, Pearson correlations are conducted to assess the relationship between CSD and various other constructs, to establish convergent, nomological and discriminant validity.

Convergent Validity: What is Consumer self-development?

Overall Consumer Self-development.

Personal Growth. Two measures of personal growth are used to establish convergent validity with overall CSD. Supporting H₁, personal growth arising from intrinsic aspirations (Kasser & Ryan, 1996) positively correlates with overall CSD ($r =$

.49, $p < .001$). In addition, CSD positively correlates with personal growth ($r = .31, p < .001$) measured by the psychological well-being scale (Ryff & Keyes, 1995).

Factors of Consumer Self-development. Private self-awareness, gadget loving, and perceived competence are used to establish convergent validity of CSD self-awareness, CSD product knowledge, and CSD competence, respectively. To ensure that these measures uniquely validate each factor, Pearson correlation coefficients are converted to a z -score to test whether there are significant differences between correlations (Eid, Gollwitzer, & Schmidt, 2011).

Private self-awareness. Private self-awareness (Govern & Marsch, 2001) positively correlates with overall CSD ($r = .22, p < .001$). Supporting H₂, private self-awareness correlates more strongly with CSD self-awareness ($r = .32, p < .001$) compared to CSD product knowledge ($r = .03, p = .37$) or CSD competence ($r = .11, p = .004$). The correlation with CSD self-awareness is significantly larger than the two other factors ($z > 3.96, p < .001$).

Gadget loving. Gadget loving (Bruner & Kumar, 2006) positively correlates with overall CSD ($r = .30, p < .001$). Supporting H₃, gadget loving correlates more strongly with CSD product knowledge ($r = .31, p < .001$) compared to either the self-awareness ($r = .12, p = .001$) or competence factors ($r = .19, p = .004$). The correlation with CSD product knowledge is significantly larger than the two other factors ($z > 2.30, p = .011$).

Competence. Basic needs competence positively correlates with overall CSD ($r = .18, p < .001$). Supporting H₄, competence from the basic psychological needs scale (Deci & Ryan, 2000) correlates more strongly with the competence factor of CSD ($r = .27, p < .001$) compared to the self-awareness ($r = .04, p = .30$) or the product knowledge factors

($r = .11, p = .004$). The correlation with CSD competence was significantly larger than the two other factors ($z > 2.98, p = .001$).

Nomological Network: Constructs Theoretically Related to CSD

Consumer Well-being: Satisfaction with Life. Supporting H₁₀, satisfaction with life (Diener et al., 1985) is related to CSD ($r = .11, p = .007$). A multiple linear regression analysis was used to determine whether CSD would predict satisfaction with life, while accounting for demographics. Women, people with more education, more money, and those who belonged to the majority cultural group experience greater satisfaction with life, compared to males, those with less education, less money, and who were a minority group member. Importantly, CSD also predicts satisfaction with life, even after controlling for all these demographic variables (see Table 10).

Table 10.

Study 2 Regression Coefficients Predicting Satisfaction with Life (Essay 1)

Variable	<i>b</i>	<i>SE</i>	<i>t</i> -test	<i>p</i>
Constant	0.69	0.5	1.39	0.17
Gender	0.36	0.12	2.88	0.004
Age	0	0.005	0.06	0.94
Education	0.18	0.04	4.43	0.001
Income	0.24	0.03	8.19	0.001
Employment status	-0.05	0.05	-1.08	0.28
Ethnicity	-0.31	0.14	-2.22	0.027
Self-development	0.3	0.07	4.17	0.001

Engagement Orientation-to-happiness. An engagement orientation-to-happiness (Peterson et al., 2005) relates to individual differences in self-development ($r = .14, p < .001$).

Consumer Attitudes: Hedonic and Utilitarian. There is a positive relationship between perceiving one's hobby as hedonic and perceiving one's hobby as utilitarian ($r = 0.24, p < .001$). Note that this relationship is small enough to suggest the measures are tapping related, but separate dimensions of one's hobby. Thus, it appears that the enjoyment of hedonic consumption is related to it being perceived as functional (i.e., utilitarian).

Part of the reason one's hobby is perceived as utilitarian is because such consumption gives rise to CSD. Supporting H_{11A}, perceiving one's hobby as hedonic is related to CSD ($r = .34, p < .001$), suggesting that CSD might be an enjoyable aspect of engaging in one's hobby. In addition, perceiving one's hobby as utilitarian is also related to CSD ($r = .37, p < .001$, supporting H_{11B}). The similarity in magnitude of the relationship between CSD and utilitarian attitudes (compared to hedonic attitudes) supports the idea that hedonic consumption is not solely about feeling good, but also about function for the self.

Semi-partial Correlations between each CSD Factor and Consumer Attitudes.

After controlling for hedonic attitudes, utilitarian attitudes uniquely correlate with all CSD factors (self-awareness $r_{s-p} = .14, p < .001$, product knowledge $r_{s-p} = .23, p < .001$, competence $r_{s-p} = .29, p < .001$). There is no difference, in the magnitude of these relationships, between competence and product knowledge ($z = 1.15, p = .13$). However, utilitarian attitudes more strongly relate to competence ($z = 2.82, p = .002$) and product knowledge ($z = 1.67, p = .047$) compared to self-awareness. Therefore, the utility of one's hobby primarily relates to acquiring consumption knowledge (product knowledge and competence).

After controlling for utilitarian attitudes, hedonic attitudes uniquely correlate with all CSD factors (self-awareness $r_{s-p} = .31, p < .001$, product knowledge $r_{s-p} = .09, p = .013$, competence $r_{s-p} = .14, p < .001$). Hedonic attitudes more strongly relate to CSD self-awareness compared to product knowledge ($z = 4.12, p < .001$) or competence ($z = 3.22, p = .001$). There were no differences between product knowledge and competence ($z = 0.91, p = .18$). These relationships suggest the enjoyment of one's hobby mostly relates to knowing oneself better.

Discriminant Validity: Constructs Theoretically Distinct from CSD

Believing that pleasure seeking for its own sake is immoral is not related to CSD ($r = .03, p = .48$), in support of H6. Supporting H7, believing that there is no time in life to learn about things that are not real (e.g., sci-fi, fantasy) is not related to CSD ($r = -.06, p = .13$). Partially supporting H8, an engagement orientation-to-happiness (Peterson et al., 2005) was related to individual differences in self-development ($r = .16, p < .001$).

Summary of Construct Validity

To further demonstrate the construct validity, it was expected that the relationships used to establish convergent validity would be stronger, on average, than the relationships used to establish nomological validity. The latter were expected to be stronger in turn, on average, than the relationships used to establish discriminant validity. Pearson correlation coefficients were averaged across each type of validity and converted to a z -score (Eid, Gollwitzer, & Schmidt, 2011, see Psychometrica)². These analyses reveal that the average correlation used to establish convergent validity ($r_{\text{Convergent}} = 0.34$) is larger than

² Calculated using <https://www.psychometrica.de/correlation.html>.

the average correlation used to establish both nomological validity ($r^{\text{Nomological}} = 0.24, z = 1.96, p = .025$) and discriminant validity ($r^{\text{Discriminant}} = 0.083, z = 4.85, p < .001$).

Moreover, the average correlation for nomological validity was larger than that for discriminant validity ($z = 2.89, p = .002$). This validates our choice of variables to study each type of validity.

Discussion

Study 2 provides evidence that there are individual differences in self-development that arise from consumer products and experiences. Our measure of dispositional CSD demonstrates excellent psychometric properties based on the CFA. Moreover, this study further establishes the validity of our construct. As predicted, CSD correlates with personal growth, accounting for up to 24% of overall personal growth. Each factor of CSD also displays adequate convergent validity with other established measures. Self-awareness correlated most strongly with CSD self-awareness, gadget loving correlated most strongly with CSD product knowledge, and basic needs competence correlated most strongly with CSD competence.

Nomological validity is established across several related constructs. Increases in trait CSD predicts increases in life satisfaction (Diener et al., 1985), which supports the idea that CSD represents a dimension of consumer well-being. Since consumer products and experiences played a central role in our conceptualization of self-development, it was critical to know whether CSD is related to the hedonic or utilitarian dimensions of one's hobby. Dispositional CSD is modestly related to both hedonic and utilitarian attitudes. Semi-partial correlations show that the most hedonic aspect of CSD is self-awareness, whereas the most utilitarian aspect of CSD is competence, followed closely by product

knowledge. In addition, dispositional CSD is related to an engagement-orientation to happiness, suggesting CSD is involved with obtaining happiness through interest and flow (Nakamura & Csikszentmihalyi, 2002). Dispositional CSD is also related to a pleasure-orientation to happiness, suggesting CSD is involved with obtaining happiness through hedonism. Although it was thought that a pleasure-orientation would not be related to CSD, in hindsight this association is not surprising given the hedonic nature of the context (i.e., narrative fantasy, comics).

Discriminant validity is established by observing an absence of relationship with several variables that are theoretically unrelated to CSD. For example, the belief that pleasure for its own sake is immoral was not related to CSD. In addition, an aversion to fiction was negatively, although weakly and not statistically significantly, related to CSD.

We further identify who is most likely to experience CSD. People experience CSD regardless of gender, employment status, marital status, income, and ethnicity. However, those who are younger in age and less educated experience greater CSD. Interestingly, attempting to gain happiness through pleasure only predicts CSD when people are also above average on attempting to gain happiness through engagement. These results provide discriminant validity, by supporting the idea that pleasure-seeking, in and of itself, is not related to self-development. These results also support prior work on orientations to happiness (Peterson et al., 2005), which suggest that a full life—elevated levels of all orientations—are predictive of greater well-being.

Lastly, but importantly, CSD predicts consumer well-being (i.e., satisfaction with life), even after controlling for demographics. In fact, CSD contributes to life satisfaction

to the same extent as the main demographic predictors (i.e., being female, having more education, having more money, and belonging to the majority cultural group).

General Discussion

Although consumerism, especially hedonic consumption, has been criticized for being a shallow pursuit of happiness, the current research suggests that CSD relates to substantial dimensions of well-being. Two well-powered studies ($N = 1350$), show that: (1) CSD predicts up to 24% of overall personal growth, (2) CSD is a psychological strength, making it a dimension of consumer well-being in its own right, and (3) CSD serves as a mechanism for meaning in life. Each CSD factor shows convergent validity, predicting related constructs as expected.

This research holds several meaningful theoretical contributions. Hedonic consumption is rarely studied in relation to the more meaningful aspects of well-being (Alba & Williams, 2013). In addition, much of the research on TCR has focused on how to ameliorate the negative dimensions of well-being rather than how to augment the positive dimensions of well-being. Filling these gaps in the literature, the current research shows that CSD occurs from two forms of hedonic consumption, engaging in narrative fantasy and recreational hobbies. Viewing hedonic consumption as utilitarian and hedonic are both related to CSD, suggesting that hedonic consumption is as much about growth as it is about feeling good. Perceiving one's hobby as more hedonic is associated with more CSD self-awareness, and perceiving one's hobby as more utilitarian is associated with more CSD competence. Thus, people acquire consumption knowledge not only to enhance future experiences, as suggested by prior work, but also to experience self-development. When hedonic consumption is functional in nature (e.g., skill

development), people feel more competent. In addition, these results also offer a more nuanced perspective on the typical purpose of hedonic consumption: enjoyment is related to better knowing oneself, not just momentary sensations.

Generalizing Beyond Hedonic Consumption

On the basis of prior work, I speculate that people also experience self-development in consumer activities outside of hedonic consumption. Hedonic consumption serves as a conservative, but relevant, context to test the hypothesis that self-development relates to consumer well-being. However, there are certainly other consumer contexts that more obviously enable self-development through therapy (e.g., professional counseling services), professional development (e.g., leadership or management courses), or skills development (e.g., courses for wood-working, cooking, martial arts, home improvement). When consumers experience interest, they also appear to experience CSD. Furthermore, consistent with our theorizing, it is possible that the CSD produced through learning about narrative fantasy and one's hobbies also occurs when people evaluate new products (Study 1, Essay 2) and learn about new products (Study 2, Essay 2). This conjecture is tested in Essay 2 of this dissertation.

Limitations and Future Research

The current research was based on observational data, meaning that the results are correlational in nature. Despite having a theoretical rationale for these predictions (i.e., that growth mindsets are an antecedent of CSD, which is an antecedent of well-being), the correlational nature of this research is a primary limitation for inferring causation. This limitation primarily applies to the cross-sectional mediation analysis, which can

infringe on the temporal order of variables when performed on observational data. This is because cross-sectional data fail to account for changes over time or longitudinal processes, and instead presumes that X causes M at the same time of measurement. As such, cross-sectional analyses struggle to determine whether correlations speak to changes in one factor on another factor over time (Maxwell & Cole, 2007). It is also possible that other statistically equivalent models exist (Pek & Hoyle, 2016).

Although these results should be interpreted with caution on their own, they warrant closer examination via experimental design. As is, the absence of random assignment and experimental manipulations precludes our results from reliably capturing causal relationships (Fairchild & McDaniel, 2017). Essay 2 will there investigate two causal antecedents of CSD using experimental design.

**CHAPTER 3: PSYCHOLOGICAL ANTECEDANTS AND PROCESSES OF
CONSUMER SELF-DEVELOPMENT (ESSAY 2)**

Psychological Antecedents and Processes of Consumer Self-development

Despite significant strides toward understanding consumer well-being, research has yet to identify an overarching construct that empirically integrates the meaningful aspects of consumption. Filling this gap in the literature, research has recently identified a new dimension of consumer well-being. This research shows that people experience something called consumer self-development (CSD), which is a sense of personal growth gained from hedonic consumption. CSD operates as a psychological strength, and is associated with life satisfaction and meaning in life. Even though people desire growth and development, the route to achieving these goals is not always clear. The purpose of the current research is to investigate two causal antecedents of CSD.

The human qualities associated with the brand (e.g., Red Bull is Exciting, Aaker, 1997), otherwise known as brand personality, can influence the perception of oneself and others (Park & John, 2010; 2017). For example, women are more likely to feel good-looking, feminine, and glamorous after using a Victoria's Secret shopping bag (vs. an unbranded pink bag). Brand use also increases performance in athletics and academic test taking, and these benefits occur by way of heightened self-efficacy (Park & John, 2014). Notably though, brand information does not influence all consumers. Only consumers who believe personality is fixed in nature are influenced by this brand information (i.e., a fixed mindset, Park & John, 2010; 2017). Overall, endorsing a fixed mindset leads people to feel the endowment of brand characteristics more strongly. The enhanced self-perception and performance raise the possibility that people who believe that one's character is fixed, also experience greater CSD.

The alternative possibility is that people who believe human character is

changeable experience greater CSD (a growth mindset; Dweck, 2006). Although no research to date has established a relationship between a growth mindset and personal growth, prior work suggests that engaging deeply with consumer products may facilitate CSD by enhancing self-awareness, product knowledge, and competence. Research shows that people desire consumption knowledge and develop expertise with consumer products, which allows them to derive greater meaning from consumer experiences (Clarkson et al., 2013; LaTour & LaTour, 2010). Yet, learning about new products is cognitively effortful (Maoz & Tybutt, 2002) and requires deliberation (Fernbach et al., 2013), meaning that the pursuit of CSD may require some persistence in the face of challenge. Such persistence is a primary benefit of a growth mindset. The current research also investigates whether interest, the emotion that underlies knowledge-seeking behaviors (Silvia, 2005), acts as the psychological process in the relationship between a growth mindset and CSD.

This research holds several meaningful contributions for consumer well-being. The central contribution of Essay 2 is in identifying a causal relationship between a growth mindset and CSD across two, high-powered ($N = 536$), pre-registered experiments. Some evidence also supports the idea that interest is a psychological mechanism in the relationship between a growth mindset and CSD (Study 1). Exploratory analyses revealed that evidence for this mechanism was strongest when people did not typically experience CSD (Study 2). Essay 2 also adds to the discriminant validity of CSD by showing a null relationship with material values (Study 1). Lastly, CSD positively relates to subjective happiness (Study 1) and quality of life (Study 2), suggesting that CSD is related not only to psychological health, but also to physical

health and positive relationships. Theoretical and practical implications are discussed.

Conceptual Development

Consumer self-development is associated with hedonic experiences that are both enjoyable and functional. But, the specific aspect of consumption that fosters self-development remains unknown. One possibility is that CSD occurs from discovering and exploring innovative ideas. The idea that novelty creates opportunities to expand the self is not new (e.g., Aron et al., 2013; Mattingly & Lewandowski, 2014). However, the fact that new products often blur the lines between product categories, means that the novelty in new products can be difficult to understand (Noseworthy & Trudel, 2011). Because it is unlikely that people will experience CSD if they do not understand how a new product functions, this research will identify factors that enhance consumer learning. Persistence, in the face of challenge, will increase the likelihood that consumers will invest the mental energy into understanding an innovation. The education literature suggests that such persistence could be obtained from a growth mindset, which plays a causal role in motivation and achievement (Blackwell, Trzesniewski, & Dweck, 2007). The current research theorizes that acquiring consumption knowledge, during new product evaluation, will be enhanced by a growth mindset and will contribute to the self-awareness, product knowledge, and competence underlying CSD.

Implicit Self-theories: Growth versus Fixed Mindsets

People hold different beliefs about the self, called implicit self-theories or mindsets³. Some people believe that character traits are static and unchangeable whereas

³ The term mindset is preferred over implicit self-theory (Dweck, 2006). These beliefs are *implicit* theories because they refer to a person's commonsense explanations for everyday events and are not often made explicit (Yeager & Dweck, 2012).

other people believe that character traits are malleable and can be changed (Dweck & Leggett, 1988). For example, a person holding a growth mindset is more likely to agree with the statement “All people can change even their most basic qualities” (Levy et al., 1998, p. 1431). In contrast, someone endorsing a fixed mindset is more likely to agree with “As much as I hate to admit it, you can’t teach an old dog new tricks. People can’t really change their deepest attributes” (Levy et al., 1998, p. 1431). These mindsets create a meaning system that guides how people perceive, interpret, and evaluate information across many facets of social cognition, including goals, beliefs, and attributions (Molden & Dweck, 2006; Molden, Plaks, & Dweck, 2006). It is important to note that endorsing a growth mindset does not mean that a person desires personal growth nor does it mean that people believe change is necessarily positive (i.e., one can change for the worse). Rather, a growth mindset allows people to perceive challenge, effort, and setback as an opportunity to “learn and grow” (Yeager & Dweck, 2012, p. 304). It is theorized that a growth mindset encourages people to acquire consumption knowledge, and thereby experience CSD, by enhancing one’s motivation, ability, and preference for learning.

Growth Mindset: Motivation to Learn

The self-reflection and knowledge acquisition involved with CSD requires effort. CSD not only requires that consumers acquire novel information, but also that they meaningfully engage and invest effort into understanding new product information (and how it relates to one’s preferences). Similarly, research shows that effort is involved with understanding innovation (Maoz & Tybout, 2002). Reconciling an innovation within existing knowledge structures requires effortful elaboration. Some research suggests that mindsets differ on basic aspects of information processing. Fixed mindset consumers

formulate consumer attitudes quicker than growth mindset consumers, and do so with less cognitive elaboration (Kwon & Nayakankuppam, 2015).

The effort involved with learning about new products presents a barrier for consumers with a fixed mindset, but an opportunity for consumers with a growth mindset. A growth mindset leads people to view unsolved problems as a challenge, leading them to deploy increased effort (Dweck & Leggett, 1988). In addition, these mindsets fundamentally view effort differently. A growth mindset views effort positively, indicative of learning, whereas a fixed mindset interprets effort as a lack of ability. This is the first piece of evidence that suggests a growth mindset will persist through the confusion of new and complex information, which increases the chances of experiencing CSD.

When faced with learning difficulties, a growth mindset is associated with a mastery-oriented coping strategy (Blackwell et al., 2007). A mastery-oriented response consists of increased persistence and effort, is associated with challenge seeking, and is driven by learning goals—earnest attempts to increase competence (Dweck & Leggett, 1988). In contrast, a fixed mindset promotes a helpless response to learning difficulty, which is associated with challenge avoidance and is driven by performance goals (an attempt to gain positive judgments *of* one's competence). This is because, for those with a fixed mindset, failure, challenge, and effort are interpreted as incompetence (Blackwell et al., 2007). Therefore, the effort and challenge that allows growth mindsets to thrive, is threatening and undercuts motivation for those adopting a fixed mindset.

Growth Mindset: Ability to Learn

Some evidence suggests that a growth mindset also increases one's capacity for learning. Consumers who endorse a growth mindset have a greater acceptance for brand extensions, compared to those who endorse a fixed mindset (Yorkston, Nunes, Matta, 2010). This means that consumers with a growth mindset are better able to fit brand extensions within the concept of a parent brand, thus demonstrating greater flexibility than fixed mindset consumers. People endorsing a growth mindset also process information on a more abstract construal, which is driven by greater cognitive flexibility (Bullard, Penner, & Main, 2019). Prior work has theorized that, over time, a growth mindset increases cognitive flexibility because it is involved with constantly revising one's thoughts toward new information (Bullard et al. 2019). Such revisions are likely conducive to the self-awareness associated with CSD. In addition, increases in cognitive flexibility help people understand radically new products, which further suggests that a growth mindset will produce CSD (Jhang, Grant, & Campbell, 2012). It appears that a growth mindset encourages people to learn challenging new concepts in ways that likely facilitate CSD.

Growth Mindset: Preference to Learn

A growth mindset not only enhances one's capacity for learning, it also leads people to choose opportunities to learn, which is another reason why a growth mindset will predict CSD. For instance, a growth mindset leads people to favor products that have a learning appeal whereas a fixed mindset leads people to favor products that a social signaling appeal (Park & John, 2012). This is consistent with research that shows a

growth mind evokes learning-related goals where as a fixed mindset evokes performance-related goals (Dweck & Leggett, 1988; Park & John, 2014).

Extending this goal perspective, consumers who endorse a growth mindset are more attuned to the functional value of a product whereas consumers who endorse a fixed mindset are more attuned to the symbolic value (Kwon, Seo, & Ko, 2016). Growth mindset consumers would be especially inclined to seek hedonic consumption that also holds functional or utilitarian value. Some of the best evidence that suggests mindsets can directly influence one's choice to learn about consumer products is found in product preference. Growth mindset consumers prefer technologically complex products (Sharifi & Palmeira, 2017). In contrast, fixed mindset consumers likely avoid the difficulty involved with learning about complex products (Jain & Weiten, 2019).

Lastly, if a growth mindset predicts CSD, which is a psychological strength, then it makes sense that a growth mindset would be related to other aspects of well-being in theoretically consistent ways. Supporting this view, research shows that a growth mindset is related to greater life satisfaction and psychological well-being, whereas a fixed mindset is related to lower life satisfaction (King, 2017; Zeng et al., 2016). It seems that a growth mindset is well-suited for processing meaningful information. For example, people who endorse a growth mindset favor brand stories are meaningful and affectively mixed, over stories that are simply happy and positive (Carnevale, Yucel-Aybat, & Kachersky, 2017). Taken together, this work suggests that a growth mindset may push consumers to find ways to interact with products that facilitate CSD. It is expected that manipulating a growth mindset directly will produce increases in CSD. Thus, in Study 1, we manipulate mindsets, to test a possible causal effect on self-development.

H₁: Growth (vs. fixed) mindset consumers will report greater levels of CSD during new product evaluation (Study 1).

Although certain emotions, such as guilt, can increase how much growth mindset consumers prefer self-improvement products (Allard & White, 2015), the current research investigates a novel emotional mechanism to explain the effect of a growth mindset on CSD. Acquiring consumption knowledge for the purpose of CSD involves a range of knowledge-seeking behaviors, like asking questions, reading deeply, and examining interesting images. Each of these behaviors are associated with interest, the knowledge-seeking emotion (Peters, 1978; Silvia 2005). Interest is also related to persisting on challenging tasks (Sansone & Smith, 2000) and occurs when people come across new information that is at the pique of one's ability to understand (Silvia, 2005). Therefore, if a growth mindset causes CSD during new product evaluation, then interest may serve as a mechanism in this relationship.

Interest: The Knowledge-seeking Emotion

Interest is considered the emotion central to curiosity⁴ (Izard, 1977; Silvia 2005). Interesting experiences cause self-expansion, the sense that one has increased the size of one's self-concept (Mattingly & Lewandowski, 2014). This growth in self-concept likely contributes to the growth experiences serving self-development (McLean et al., 2007). Therefore, it was expected that interest would contribute to CSD.

⁴ The literature on interest and curiosity is vast and spans theory on motivation, emotion, and behavioral economics. I use the terms interest and curiosity interchangeably, following prior work (Silvia, 2006).

The strongest predictors of interest are novelty and comprehension (Sadoski, 2001; Silvia, 2006). People need to make two cognitive appraisals in order to experience interest, according to the sequential-check appraisal theory (Scherer et al., 2001; Silvia, 2005, 2008). The first appraisal is a *novelty* check—whether the stimulus under consideration is new, ambiguous, or difficult to understand (Silvia, 2005). For example, complex (vs simple) polygons are more interesting because they are more novel (Silvia, 2005, Study 4). Thus, some element of the product must be considered novel to pique interest. The second appraisal predicting interest is labeled *coping potential*. Coping potential is the extent to which a person understands the novel properties of a stimulus and is described as the “hinge between interest and confusion” (Silvia, 2008). Coping potential predicts self-reported interest and time spent viewing complex objects, visual art, and poetry (Silvia, 2005), and predicts interest toward new products (Noordewier & van Dijk, 2016).

When people better understand complex stimuli, they experience greater levels of interest. For example, abstract poems are more interesting when preceded by a hint that aids comprehension (Turner & Silvia, 2006) and people better understand abstract art when a title aids comprehension (Russell & Milne, 1997), which corresponds to greater enjoyment (Millis, 2001). Following this prior work, interest is manipulated directly in Study 2 using the presence or absence of a hint that helps people understand the new product. It is important to note that activating a growth mindset does not mean people will spontaneously adopt interest in mundane activities or in domains where they had no interest before. Rather, when hedonic consumption affords novel and complex appraisals, viewing the self as malleable might enable greater effort and elaboration required for

understanding new but complex products (Moaz & Tybout, 2002). In other words, a growth mindset may allow people to persist through complicated information, which increases the likelihood that a consumer will be exposed to information that evokes interest.

Interest is also a key mechanism in new product learning (Noseworthy et al., 2013). Although interest can be produced by perceptual incongruity (e.g., a novel design feature), the interest produced by understanding conceptual incongruity (i.e., the function of an innovation), is the result of learning that digs deeper than the ability to subtype surface level perceptual differences. Thus, being able to understand functional benefits of a new product—resolving conceptual incongruity—is likely a deeper expression of interest, which predicts CSD. This is the difference between the interest produced at first glance of the Dyson bladeless fan and the interest produced by learning about the mechanisms that causes airflow (i.e., the turbine held in the base of the fan).

The relationship between interest and well-being also supports the basis for the hypothesis that interest plays a causal role in CSD. For example, trait curiosity is a critical moderator between goal attainment and subjective well-being (Sheldon, Jose, Kashdan, & Jarden, 2015). Indeed, curiosity will “focus attention and behavior toward activities that facilitate learning, competence, and self-determination (Berlyne 1960, 1967) from which enduring meaning and well-being can be derived” (Kashdan & Steger, 2007). Moreover, there is direct evidence for the role of curiosity in promoting growth behaviors (Kashdan & Steger, 2007). In a daily diary study, Kashdan and Steger (2007) found that during days marked by increases in curiosity, people with elevated levels of

trait curiosity experienced more growth behaviors and greater levels of meaning and life satisfaction.

Conventional wisdom and formal research supports the idea that hedonic consumption increases enjoyment. Although both enjoyment and interest are positive emotions, they are quite different (Turner & Siliva, 2006). One of the reasons interest, which arises from high novelty and understanding, will predict self-development because it promotes exploration (Silvia 2005, 2017). In contrast, enjoyment promotes familiarity and less exploration (Silvia, 2017), which is another reason hedonic consumption should provide a conservative test of the hypothesis

It is in this way that interest holds benefits for learning about hedonic consumption, which may produce CSD.

H_{2A}: Interest will mediate the effect of mindset on CSD when consumers evaluate the hedonic product under a growth (vs. fixed) mindset (Study 1).

H_{2B}: Growth (vs. fixed) mindset consumers will perceive greater CSD when interest in hedonic learning is high compared to low (Study 2).

Overview of the Current Research

Studies 1 and 2 consist of two, high-powered and pre-registered, experiments that carefully tested whether a growth mindset and interest cause CSD. Study 1 manipulates mindsets and measures interest to investigate whether people experience CSD from evaluating new products. Study 2 manipulates mindsets and interest to investigate whether people experience CSD when learning about new products.

Study 1: The Effect of Growth (vs. Fixed) Mindsets on Perceived Consumer Self-development During Product Evaluation

Study 1 was designed to test whether a growth (vs. fixed) mindset enabled consumer self-development. In other words, does a growth mindset cause greater self-development when consumers learn about new products? It was expected that consumers would experience more CSD when learning about a new product under a growth (vs. fixed) mindset (H₁).

Hypotheses, dependent variables, design, sample size, data screening criteria, and analysis plan were pre-registered (on March 25th, 2020, see Appendix D) using the AsPredicted template on the Open Science Framework (osf.io/h4xr2), before the data were collected. Once the data were collected (on April 20th, 2020), upon running through the pre-registered data screening checklist it was observed that only 56.9% passed the comprehension check (criteria c, see Data Screening in Appendix D). Therefore, this comprehension check was excluded from the data screening procedure on the basis that this check too strictly removes participants. This deviation from the original pre-registered data screening criteria was also pre-registered before any analyses were performed (on April 21st, 2020, osf.io/h4xr2). Continuing through the data screening procedure revealed two more issues with data quality. A substantial number of participants (29%) read the scientific article faster than 300-wpm (our pre-registered criteria for reading speed, based on a meta-analysis of reading speed, Brysbaert, 2019). However, since participants had already been screened for providing meaningful responses to the “saying-is-believing task”, this reading speed criteria may have too aggressively removed participants. All participants were retained in efforts to remain

consistent with the critical N provided by the power analysis. Lastly, while completing the pre-registered screening on manipulation checks, it was observed that a disproportionate number of participants in the fixed mindset condition would be screened out ($n_{\text{Fixed}} = 33$, $n_{\text{Growth}} = 13$). This check was therefore excluded and all participants were retained. The pre-registration was updated with these two latter deviations (on April 21st, 2020, osf.io/h4xr2) before any analyses were conducted. There were no other deviations from the data screening procedure for the pre-registered analyses. Exploratory analyses were conducted following the pre-registered analyses, to better understand our novel construct.

Participants and Design

A power analysis was conducted to determine the sample size required to achieve 80% power at $\alpha = .05$. Prior work suggests that mindsets can have a medium-to-large effect on consumer judgment (e.g., Park and John 2012, Study 2, $d = .675$). However, because this effect-size pertains to a different outcome, we estimated the required sample based on a smaller effect-size. Specifically, we used the average effect size in social psychology over the past 100 years (Cohen's $d = .43$; Richard et al., 2003). Study 3 aimed to recruit and randomly assign a minimum of 172 American adults.

Two-hundred and ten participants residing in the United States and Canada were recruited from Prolific Academic, which is a crowdsourcing platform for conducting

⁵ Cohen's d was calculated using the entity mindset vs. incremental mindset contrast in Study 2 of Park and John (2012) for the self-improvement ad. This calculation was completed using $F(1, 78) = 4.37$ and an effect size calculator found at: https://www.psychometrica.de/effect_size.html.

behavioral research ($M_{Age} = 32.52$, $SD = 11.28$, see Data Screening for Study 3 in Appendix E). In prior work, Prolific has provided higher quality data and more diverse samples than other available options, such as Amazon's Mechanical Turk or CrowdFlower (Peer, Brandimarte, Samat, & Acquisti, 2017). Prolific has not only been verified as a suitable option for research in the social sciences (Palan & Schitter, 2018), it has also replicated several known effects in psychology (i.e., the quote attribution task, sunk cost fallacy, the disease framing effect, Peer et al., 2017).

Participants were 45.20% male, 52.90 % female, 0.5% other [e.g., Non-binary, Transgender, Genderqueer], and 1.4% preferred not to answer. Participants were primarily: of European origins (65.7%), employed (56.7%), and single (54.3%) or in a domestic partnership (39.5%). Income varied substantially: < \$20k (24.3%), \$20k-35k (13.8%), \$35k-50k (10.5%), \$50k-75k (19%), \$75k-100k (11%), \$100-150k (14.8%), >\$150k (1.9%), prefer not to answer (4.8%).

Participants were randomly assigned to one of two mindset conditions (growth vs. fixed) in a single-factor between-subjects design. They were told that they would complete a study on the comprehension of scientific information in addition to a separate market research pilot study, validating materials for future studies. In reality, the portion on scientific information served as a guise to embed the commonly-used mindset manipulation: a scientific article designed to persuade readers that human characteristics are either fixed or malleable. In the second portion of the study, the ostensible market research pilot, participants read about a new product and responded to the core dependent variable: consumer self-development. In order to encourage participant's engagement with the product stimuli, participants were given the opportunity to choose the product

they wanted to evaluate, from a list of four products: an at-home chocolate making kit, beer making kit, wine making kit, or spirit making kit. This also served to overcome a potential mono-operationalization bias, ensuring that the experimental effect is not only produced in a singular product.

Procedures

Participants logged into their Prolific account, opened our study link, provided informed consent, and were instructed that they would complete a reading comprehension study and the market research pilot study. To introduce the study on comprehending scientific information, participants were told: “On the following page, you will learn about the academic journal/magazine *Science*. You will then be asked to read an editorial—intended for the general public—about recently published scientific findings. You will then be asked to answer several questions about the article.” Participants clicked to the next page, which resembled the *Science* website, reproduced in Qualtrics (see Appendix F) and the About page from the *Science* website⁶. Following this information, participants completed the procedures that are used to momentarily persuade people to adopt either a fixed or growth mindset (see Appendix G for full articles, as presented in Qualtrics; It was greatly appreciated that Dan Molden—who responded to our request immediately—provided the original materials used in prior work to manipulate mindsets; e.g., Molden et al., 2006). Specifically, this involves (1) having participants read a scientific article that discusses converging evidence and claims that human characteristics

⁶ https://www.sciencemag.org/about/about-science-aas?_ga=2.155606841.347431466.1590088140-1845500269.1590088140

are either fixed or malleable and (2) completing the “saying-is-believing” task, where participants (a) summarize the article in their own words, (b) discuss the three most convincing pieces of evidence, and (c) write about a time in their own life that was consistent with the theme of the article. Although both mindsets are widely held, multiple studies have successfully manipulated these beliefs in lab experiments (Chiu et al. 1997; Park and John 2010). A pretest confirmed that the mindset manipulation was effective (see Appendix G).

Once participants finished the mindset induction writing task, they were redirected to the marketing research pilot study. The default “end of survey” message was delivered, which was set to auto-forward with a time delay to simulate the pilot study loading. Participants were then instructed: “You will now be asked to evaluate new products that will be used in future market research studies. Please note though, this Pilot Study is being used for a real company doing market research. Your attention and honest responses are greatly appreciated.”

Participants then selected one of the four products to evaluate (Appendix H). Each product description included a picture of the box and raw ingredients, and all were matched on length and content. The four products were extensively pretested to ensure they were equally appealing, interesting, novel and did not vary across comprehension or hedonic and utilitarian product attitudes (Appendix H). Hedonic products were used for stimuli because they provide a conservative test of the hypothesis. That is, it is less obvious that hedonic consumption—often used for indulgence or relaxation—can produce self-development, compared to utilitarian consumption, which is often defined by function. This pretest revealed that the product stimuli was perceived as a

material/experience bundle (e.g., a brew tour and a bottle of wine) that was also similar to an art or language class.

After evaluating the product, participants reported how much CSD they would experience from the product, using the nine-item measure developed in Essay 1. Participants then completed a five-item measure of interest (e.g., “I found [product] interesting,” “I would be interested in other Tour Box kits” adapted from Silvia 2005). Participants also completed several exploratory measures: a three-item measure of learning goals (e.g., “An important reason for using the [product] is because I like to learn new things”; Blackwell et al., 2007), a two-item measure of positive learning strategies (e.g., “I would work hard on the [product]” Blackwell et al., 2007), a four-item measure signaling motives (“I could use the [product] to make a better impression on other people,” Park & John, 2010), a five-item semantic-differential measure of product evaluations (“negative/positive,” “favorable/unfavorable,” “extremely well-design/extremely poorly designed”), a five-item, semantic-differential, measure of hedonic product attitudes, and a five-item, semantic-differential, measure of utilitarian attitudes (Voss et al., 2003). Participants then completed the implicit self-theory scale as a manipulation check, along with the four single-item check items, to confirm the effectiveness of the mindset manipulation in the main study.

Lastly, participants completed several measures to further establish the construct validity of CSD. First, participants completed the individual differences version of the CSD scale, which instructs participants to report how much self-development they experience, in general, from their hobby (Appendix M). Then, participants completed the four-item subjective happiness scale (intended to further support nomological validity,

Lyubomirsky, & Lepper, 1999), the abbreviated six-item version of the material values scale (intended to further support discriminant validity; Richins, 2004), and the seven-item self-brand connection scale (intended to further support nomological validity; questions were asked in relation to the product stimuli, Escalas & Bettman, 2003). The study ended with several demographics questions. Participants were fully debriefed and compensated.

Results

Manipulation check

The manipulation check indicated that the articles successfully induced a growth and fixed mindset. Participants who read that human characteristics are malleable held greater levels of a growth mindset ($M = 4.70$, $SD = 0.84$; $\alpha = 0.95$) compared to participants who read that human characteristics are fixed ($M = 3.07$, $SD = 1.04$; $t(208) = 12.57$, $p < .001$, $d = 1.74$). Similarly, participants who read that human characteristics are fixed held greater levels of a fixed mindset ($M = 4.19$, $SD = 1.04$; $\alpha = 0.95$), compared to participants who read that human characteristics are malleable ($M = 2.25$, $SD = 0.96$; $t(208) = -14.10$, $p < .001$, $d = 1.95$). These results verify that growth and fixed mindsets were successfully induced, and also that the effect size of each manipulation were similar and large in nature.

Consumer self-development also did not differ by product choice. In other words, the chocolate, beer, wine, and spirit making kits did not differ in the amount of CSD people expected to experience ($F(3, 206) = 0.54$, $p = .66$, $\eta^2 = .008$) nor did these products interact with our manipulation as a random factor in the following main analysis

($F(3, 202) = 0.25, p = .86, \eta_p^2 = .004$). That is, the extent to which our manipulation impacted the core outcome of CSD was consistent across product stimuli.

Pre-registered Analyses

The newly developed measure of CSD formed a highly reliable scale ($\alpha = 0.82$). Supporting H₁, participants who read that human characteristics are malleable report greater levels of CSD ($M = 5.49, SD = 0.66$) than participants who read that human characteristics are fixed ($M = 5.27, SD = 0.73; t(208) = 2.29, p = .023, d = 0.32$). Interpreting this effect size as a percentile (Coe, 2002), the average person with a growth mindset experiences greater self-development than 62% of people with a fixed mindset. Similarly, participants assigned to the growth mindset condition report greater levels of interest ($M = 5.81, SD = 0.87$) than participants assigned to the fixed mindset condition ($M = 5.59, SD = 0.96; t(208) = 1.70, p = .091, d = 0.24$). The average person with a growth mindset experiences greater interest than 58% of people with a fixed mindset. Although a growth mindset leads to increases in interest ($b = .22, SE = .12, p = .091$), which is related to increases in CSD ($b = .47, SE = .04, p < .001$), interest does not mediate the effect (95% CI: $-.01, .22$). Having said that, the direct effect ($b_c = .22, SE = .10, p = .023$) is reduced by half when interest is inserted in the model ($b_{c'} = .12, SE = .08, p = .12$). Thus, these results partially supported H_{2a}.

Exploratory Analyses

What Factor of Self-development is Most Influenced by Mindset? With respect to the different aspects of CSD, no differences are detected between growth ($M = 4.15, SD = 1.41$) and fixed mindsets ($M = 3.92, SD = 1.35; t(208) = 1.19, p = .24, d = 0.16$) for CSD self-awareness ($\alpha = 0.92$). In contrast, people with a growth mindset ($M =$

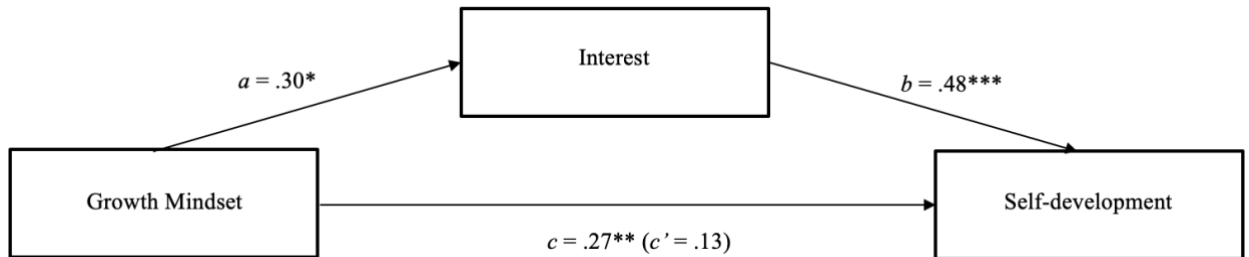
6.44, $SD = 0.55$) report greater CSD product knowledge ($\alpha = 0.74$) compared to those with a fixed mindset ($M = 6.25$, $SD = 0.56$; $t(208) = 2.56$, $p = .011$, $d = 0.35$). Similarly, growth mindsets ($M = 5.88$, $SD = 0.74$) report greater CSD competence ($\alpha = 0.79$) compared to fixed mindsets ($M = 5.64$, $SD = 0.83$; $t(208) = 2.20$, $p = .03$, $d = 0.30$). These results suggest the effect of growth mindsets largely operate on the product knowledge and competence factors of CSD. However, the lack of statistically significant difference for self-awareness is likely due to the greater variability in scores for this factor.

Does Thoroughly Reading the Article Enhance the Effect? The pre-registered analyses are repeated without the participants who read quicker than 300-wpm to investigate whether thoroughly reading the article enhances the main effect and mediation. This analysis showed that when examining only those participants who read at 300 wpm or slower, a growth mindset results in greater levels of CSD ($M = 5.49$, $SD = 0.66$) than a fixed mindset ($M = 5.22$, $SD = 0.75$; $t(147) = 2.37$, $p = .019$, $d = 0.33$). Similarly, participants assigned to the growth mindset condition report greater levels of interest ($M = 5.91$, $SD = 0.83$) than participants assigned to the fixed mindset condition ($M = 5.60$, $SD = 1.00$; $t(147) = 2.00$, $p = .047$, $d = 0.28$).

To test whether the relationship between growth mindsets and CSD are mediated by interest, a simple mediation model was conducted using the PROCESS Macro for SPSS v3.4 (Model 4, bootstrapped with 10,000 draws; Hayes, 2012). Consumer self-development scores, interest, and mindset (growth = 1, fixed = 0) were submitted to a regression analysis (see Figure 8).

Figure 8.

Study 2 Statistical Mediation Model of the Effect of Growth Mindsets on Self-development via Interest (Essay 2)



Note: Unstandardized betas denoted by * ($p < .05$), ** ($p < .02$), *** ($p < .001$).

Supporting H_{2a}, interest mediates the effect ($b = .15$, $SE = .08$, 95%CI: .004, .301), such that a growth mindset is associated with increased interest ($b = .30$, $SE = .15$, $p = .047$), which is in turn related to increased CSD ($b = .48$, $SE = .05$, $p < .001$).

Specifically, we find that a growth (vs. fixed) mindset is associated with a .30-unit increase in interest, and that a one-unit increase in interest was related to a .48-unit increase in CSD. Once again, note that the direct effect ($b_c = .27$, $SE = .12$, $p = .019$) is reduced when interest is inserted as a mediator in the model ($b_{c'} = .13$, $SE = .09$, $p = .16$).

Consistent with Figure 1, a second mediation analysis tests whether the CSD arising from a growth mindset also served as a mechanism for self-brand connections. A third model tests whether CSD served as a mechanism for product evaluations. These analyses reveal that the CSD evoked by a growth mindset acts as a mechanism predicting a self-brand connection ($b = 0.26$, $SE = .11$, 95% CI: .037, .49) and favorable product evaluations ($b = 0.14$, $SE = .06$, 95% CI: .020, .27).

Additional Analyses to Further Establish Construct Validity of CSD

Does Dispositional Self-development Correlate with Self-development

Arising from a Particular Product? Individual differences in CSD, toward one's hobby, correlates with the CSD toward the product ($r = .59, p < .001$). This shows that although state and trait CSD are moderately related, they appear to be measuring sufficiently distinct aspects of self-development. Importantly, no experimental effects were detected on dispositional CSD ($M_{\text{Growth}} = 5.77, SD = 0.74$ vs. $M_{\text{Fixed}} = 5.78, SD = 0.71; t(208) = -0.11, p = .91, d = 0.02$). Given the strength of the manipulations, this further establishes the distinction between momentary and dispositional CSD. When controlling for dispositional CSD, the effect of a growth mindset ($M = 5.27, SE = 0.06$) compared to a fixed mindset ($M = 5.49, SE = 0.05$), on CSD is slightly enhanced ($F(1, 207) = 8.60, p = .004, \eta^2 = .04, d = 0.41$).

Discriminant Validity. Individual differences in CSD are not related to material values ($r = 0.03, p = .66$), suggesting that experiencing self-development through consumer products and experiences is likely not driven by material values, the desire for material success, or material happiness.

Nomological Validity: Consumer Well-being and Consumer Judgment.

Individual differences in CSD were related to subjective happiness ($r = 0.22, p = .01$), suggesting that self-development is related to consumer well-being. In addition, this correlation replicates our finding that the aspect of trait self-development that predicts well-being is CSD competence (subjective happiness is correlated with trait CSD competence $r = .26, p < .001$, and CSD self-awareness $r = .19, p = .006$).

CSD following exposure to the product was positively related to self-brand connection ($r = .61, p < .001$), favorable product evaluation ($r = .52, p < .001$), learning goals ($r = .56, p < .001$), positive learning strategies ($r = .53$), and social signaling motives ($r = .67, p < .001$).

Discussion

Study 1 advances our theoretical understanding of CSD in many ways. The pre-registered analyses provide support for the causal role of a growth mindset in increasing CSD. These results suggest that CSD involves persistence—a key feature of a growth mindset—when evaluating new products. In addition, some evidence is found to support the role of interest as a mechanism in the growth mindset–self-development link. For example, the direct effect is substantially reduced when interest is included in the model. In addition, when those who read the mindset article very quickly were removed, we witnessed an increase in CSD arising from a growth mindset, driven by interest. Several exploratory analyses also revealed that a growth mindset has the strongest impact on the product knowledge and competence factors of CSD. This study also shows that CSD, evoked by a growth mindset, serves as a mechanism for consumer judgments (i.e., self-brand connection, product evaluations). This suggests that CSD facilitates a closer connection to brands and more favorable product evaluation for those who endorse a growth (vs. fixed) mindset, consistent with prior work (Park & John, 2012).

Study 1 reveals the distinction between trait and state CSD and further adds to discriminant and nomological validity. Regarding discriminant validity, dispositional CSD was not related to any dimension of materialism. Regarding nomological validity, state CSD was related to consumer judgments, well-being, learning goals, and social

signaling motives. Since Study 1 only provides inconsistent evidence as to whether interest mediates the effect of a growth mindset on CSD, Study 2 intends to more carefully test this possibility by manipulating the mediator in an experimental-causal-chain (Spencer et al., 2005).

Study 2: Investigating the Causal Role of Interest in Predicting Consumer Self-development During New Product Learning

Study 2 was designed to test whether consumers expect self-development when learning about a new product. We rigorously test the causal role of interest in the relationship between growth mindset and CSD. Specifically, if interest is a primary mechanism in this link, then shutting down interest should eliminate the boost in CSD experienced by those in a growth (vs. fixed) mindset. Manipulating the mechanism can provide a strong test of a psychological process beyond statistical mediation, because mediation relies on a correlational relationship between the mediator and dependent variable (i.e., a correlational ‘b’ path; Spencer et al. 2005). On the other hand, if there are multiple mediators in the relationship between a growth mindset and CSD, then inhibiting interest may only attenuate this relationship and not act as a boundary condition. It is expected that inhibiting (vs. enabling) appraised understanding, a cognitive appraisal required to experience interest (Silvia 2005), will moderate the mindset—self-development relationship (H_{2b}).

Hypotheses, dependent variables, design, sample size, data screening criteria, and analysis plan were pre-registered (on March 25th, 2020, see Appendix J, osf.io/8f7xd) using the AsPredicted template on the Open Science Framework and was updated based on the results of Study 1 (on May 6th, 2020, osf.io/8f7xd) before the data were collected.

Once the data were collected (on May 7th, 2020), upon running through the pre-registered data screening checklist, to screen out poor quality responses, it was observed that 339 participants would be removed based on the original pre-registered data screening criteria, mostly due to the manipulation checks. These criteria would result in a final sample of $N = 75$, which would only provide 22.3% power in the planned analysis. As a result, the manipulation check criteria were loosened to include a greater number of participants. This less restrictive criteria resulted in retaining $N = 326$ (78.7%) of the 414 eligible responses. Importantly, a power analysis confirmed that a sample of $N = 326$ would provide reasonable statistical power (71.2%). This deviation from the original pre-registered data screening criteria was also pre-registered before analyses were performed (on May 15th, 2020, osf.io/8f7xd). There were no other deviations from the data screening procedure occurred for the pre-registered analyses. The data are explored following pre-registered analyses.

Methods

Participants and Design

Attenuated interactions require large samples (Simonsohn, 2014). We therefore used a smaller effect size to estimate the sample for Study 3 (Cohen's $f = .14$) and aimed to collect $N = 403$ responses. American and Canadian adults ($N = 326$, $M_{\text{Age}} = 31.20$ $SD = 12.46$, see Screening for Data Quality in Appendix K) were recruited from Prolific Academic to partake in an online study. Participants were 48.5% male, 50% female, 1.20% other [e.g., Non-binary, Transgender, Genderqueer], and 0.3% prefer not to answer. Participants were of European origins (58.30%), employed (50%), and single (60.70%) or in a domestic partnership (34.7%). Income varied substantially: < \$20k

(23.9%), \$20k-35k (13.2%), \$35k-50k (14.1%), \$50k-75k (15.3%), \$75k-100k (11.3%), \$100-150k (8.6%), >\$150k (4.6%), prefer not to answer (8.3%).

In order to test the causal effect of mindset and interest, participants were randomly assigned to one of four conditions in a 2 (mindset: growth vs. fixed) \times 2 (interest: high vs. low) between-subjects factorial design. After reading some information about a new product, participants completed the core dependent variable (CSD).

Procedure

As in Study 1, participants logged into their Prolific account, opened our study link, and provided informed consent. The first portion of the study, containing the mindset manipulation, was identical to Study 1. Participants were told the market research portion of the study was about “comprehension of product manual information” for a new consumer product. All participants then read the product manual, which contained real descriptions of the different molecules that create fruity characteristics in beer and the molecules that create “off-flavors” in beer. For people to experience the emotion of interest, stimuli must be appraised as *novel* and people must hold the *ability to understand* the stimuli. Product stimuli is designed to be “abstract, complex, unfamiliar, and ambiguous” (Silvia, 2005, p. 93). Therefore, without the hint (presented in the high interest condition), participants would have considerable difficulty understanding the meaning of the product information. The interest manipulation was embedded in the product information. In the low interest (no hint) condition, participants read:

On the next page, you will read a section of a Product Manual for a new product. Please read it, see how you feel about it, and then give your impressions and reactions on the following pages. These instructions are entitled: “Good and Bad Characteristics: Rose, Honey, Chlorine, Nail Polish Remover” and is contained in the instructions on Esters and Phenols.

In the high interest (hint) condition, participants read:

On the next page, you will read a section of a Product Manual for a new product. Please read it, see how you feel about it, and then give your impressions and reactions on the following pages. These instructions are entitled: “Good and Bad Characteristics: Rose, Honey, Chlorine, Nail Polish Remover” and is contained in the instructions on Esters and Phenols. **Important Notes:** Esters are the fruity aromas in beer; Phenols are, undesirable, “off-flavors” in beer; All the product information you will read next are for an “at-home beer making kit.”

A pretest confirmed that this manipulation is effective (Appendix L). After reading the product manual information, participants responded to the CSD scale and completed other measures to capture product evaluation, hedonic/utilitarian attitudes, and several manipulation checks for interest and the self-theory scale (as a check for growth and fixed mindsets). Participants then completed the individual differences version of CSD scale (towards one’s hobby). This measure was followed by a measure of quality of life, in effort to provide more evidence of nomological validity for CSD. This abbreviated version of the World Health Organization’s BREF-Quality of Life measure (WHOQOL, 1998) includes items spanning physical, psychological, social, and environmental health. Lastly, the survey terminated after capturing demographics and debriefing participants.

Results

Manipulation Checks

Growth and Fixed Mindsets. A two-way ANOVA on fixed mindset scores, as a function of mindset and interest, reveals a main effect of mindset ($F(1, 322) = 891.47, p < .001, \eta_p^2 = 0.74$), such that participants experience greater fixed mindsets after reading the fixed mindset article ($M = 4.56, SD = 0.74$) compared to the growth mindset article ($M = 1.96, SD = 0.81$). No other effects were significant (p 's $> .66$). Similarly, a second ANOVA on growth mindset scores, as a function of mindset and interest, reveal a main

effect of mindset ($F(1, 322) = 585.57, p < .001, \eta_p^2 = 0.65$), such that participants experience greater growth mindsets after reading the growth mindset article ($M = 4.89, SD = 0.71$) compared to the fixed mindset article ($M = 2.71, SD = 0.91$). No other effects were significant (p 's $> .14$).

Interest. A two-way ANOVA on interest scores, as a function of mindset and interest, reveal a main effect of interest ($F(1, 322) = 176.26, p < .001, \eta_p^2 = 0.35$), such that participants experience greater interest in the high interest condition ($M = 5.03, SD = 0.98$) compared to the low interest condition ($M = 3.52, SD = 1.07$). No other effects were significant (p 's $> .38$). Another two-way ANOVA was performed on appraisals of understanding, as a function of mindset and interest. This analysis reveals the expected main effect of interest ($F(1, 322) = 112.79, p < .001, \eta_p^2 = 0.26$), such that participants experience greater understanding in the high interest condition ($M = 5.62, SD = 0.86$) compared to the low interest condition ($M = 4.23, SD = 1.48$). However, this analysis also revealed a significant mindset \times interest interaction ($F(1, 322) = 7.43, p = .007, \eta_p^2 = 0.02$). Although growth mindsets ($M = 5.55, SD = 0.95$) and fixed mindsets ($M = 5.70, SD = 0.74$) did not differ in appraised understanding in the high interest condition ($F(1, 322) = 0.68, p = .68, \eta_p^2 = .002$), simple effects revealed that growth mindsets ($M = 4.52, SD = 1.46$) and fixed mindsets ($M = 3.95, SD = 1.46$) differed in the amount of understanding the low interest condition ($F(1, 322) = 8.64, p = .004, \eta_p^2 = 0.03$).

Pre-registered Analyses

A two-way ANOVA on CSD, as a function of mindset and interest, reveals a main effect of interest ($F(1, 322) = 110.55, p < .001, \eta_p^2 = 0.26$), such that participants experience greater CSD when the product information is interesting ($M = 4.77, SD =$

0.83) compared to not interesting ($M = 3.74, SD = 0.91$). Interpreting this effect size as a percentile (Coe, 2002), these analyses suggest that the average person who read the interesting product information experiences greater CSD than 86% of people in the low interest condition⁷. Supporting H₁, this analysis also reveals a main effect of mindset ($F(1, 322) = 3.52, p = .06, \eta_p^2 = 0.01$), such that participants experience greater CSD when in a growth mindset ($M = 4.42, SD = 0.94$) compared to a fixed mindset ($M = 4.18, SD = 1.07$). Counter to our hypothesis (H_{2b}), there is no interaction between mindset and interest ($F(1, 322) = 0.002, p = .97, \eta_p^2 = 0.00$, see Table 11). In other words, a growth mindset enables greater levels of CSD, regardless of whether the product information was interesting or not.

Table 11.

Mean CSD from Mindset \times Interest ANOVA

Mindset	Interest	
	High	Low
Growth	4.85 (0.75)	3.84 (0.85)
Fixed	4.68 (0.92)	3.65 (0.97)

Note: Standard deviations are reported in parentheses.

Exploratory Analyses

Controlling for Appraised Understanding. One reason why the low interest condition did not act as a boundary condition in the pre-registered analysis was because some participants in the low interest condition, namely those in the growth (vs. fixed)

⁷ Cohen's d was calculated based on the F -value using the calculator (https://www.psychometrica.de/effect_size.html) and converted to a percentile (<https://www.leeds.ac.uk/educol/documents/00002182.htm>).

mindset condition, reported greater levels of understanding the product information. Although this is consistent with the core feature of growth mindsets (i.e., persistence in the face of challenge), this difference in appraised understanding among those in the low interest condition may be contributing to the difference in CSD between growth and fixed mindsets in the low interest condition. Thus, the main pre-registered analysis was revisited using appraisals of understanding as an exploratory covariate. This analysis revealed that appraised understanding was a significant covariate ($F(1, 321) = 16.05, p < .001, \eta_p^2 = .05$). (Note that the following means have been adjusted based on the covariate.) This analyses also show a main effect of interest ($F(1, 321) = 52.08, p < .001, \eta_p^2 = 0.14$), such that participants experience greater CSD when the product information was interesting ($M = 4.66, SE = 0.09$) compared to not interesting ($M = 3.87, SE = 0.10$). In addition, participants in a growth mindset ($M = 4.34, SE = 0.10$), compared to a fixed mindset ($M = 4.19, SE = 0.10$), are directionally higher on CSD ($F(1, 321) = 2.42, p = .12, \eta_p^2 = .007$). Although the interaction is not significant ($F(1, 321) = 0.31, p = .58, \eta_p^2 = .001$), the theoretical predictions are explored using simple effects. This analysis reveals that the difference between a growth ($M = 4.76, SE = 0.09$) and fixed ($M = 4.56, SE = 0.10$) mindset is stronger in the high interest condition ($F(1, 321) = 2.47, p = .12, \eta_p^2 = .008$) compared to the difference between a growth ($M = 3.91, SE = 0.10$) and fixed mindset ($M = 3.82, SE = 0.11$) in the low interest condition ($F(1, 321) = 0.45, p = .50, \eta_p^2 = .001$). These results provided preliminary, but direct, evidence for H_{2b}.

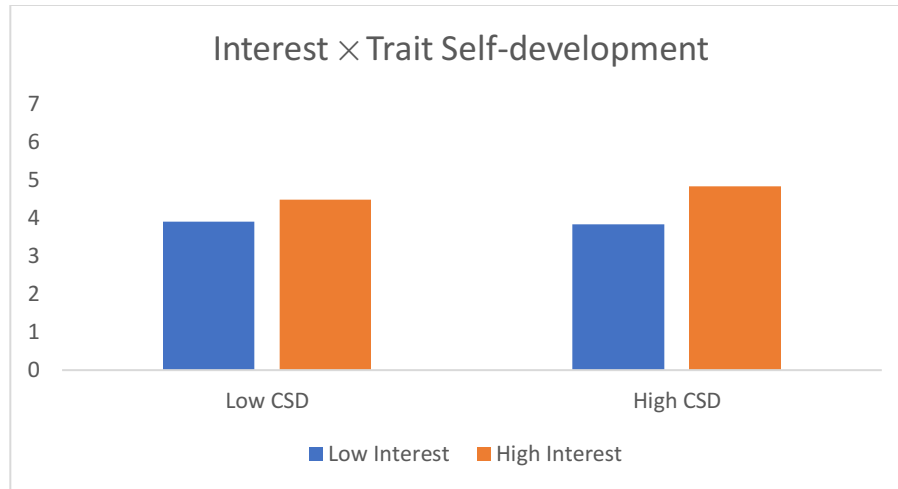
Individual Differences in Consumer Self-development. Trait CSD, relating to one's hobbies in general, positively correlates with state CSD related to new product information ($r = 0.11, p = .04$). A two-way ANOVA on trait self-development did not

reveal any main effects of mindset ($F(1, 322) = 0.64, p = .42, \eta_p^2 = .002$), interest ($F(1, 322) = 1.39, p = .24, \eta_p^2 = .004$), nor their interaction ($F(1, 322) = 0.06, p = .80, \eta_p^2 < .001$). Since trait CSD did not differ by experimental condition, the previous analysis was further explored at high (+1SD) and low (-1SD) levels of trait CSD. In other words, controlling for appraised understanding, do individual differences in self-development moderate the predicted interaction?

A multiple linear regression, using the PROCESS Macro for SPSS (v.3.4, Model 3, Hayes, 2012), was used to test the three-way interaction. This analysis revealed that appraised understanding was a significant covariate ($b = 0.16, SE = 0.04, p < .001$). The following means were adjusted based on the covariate. This analysis showed a main effect of interest ($b = 0.75, SE = 0.15, p < .001$), such that participants in the high interest condition ($M = 4.66$) reported greater CSD compared to the low interest condition ($M = 3.86$). This result provides support for the causal role of interest in CSD. Illustrated by Figure 9, there was also an interest \times trait CSD interaction ($b = 0.62, SE = 0.19, p < .001$), such that trait CSD only predicted state CSD in the high interest condition ($b = 0.23, SE = 0.08, p = .005$) but not in the low interest condition ($b = 0.05, SE = 0.10, p = .63$).

Figure 9.

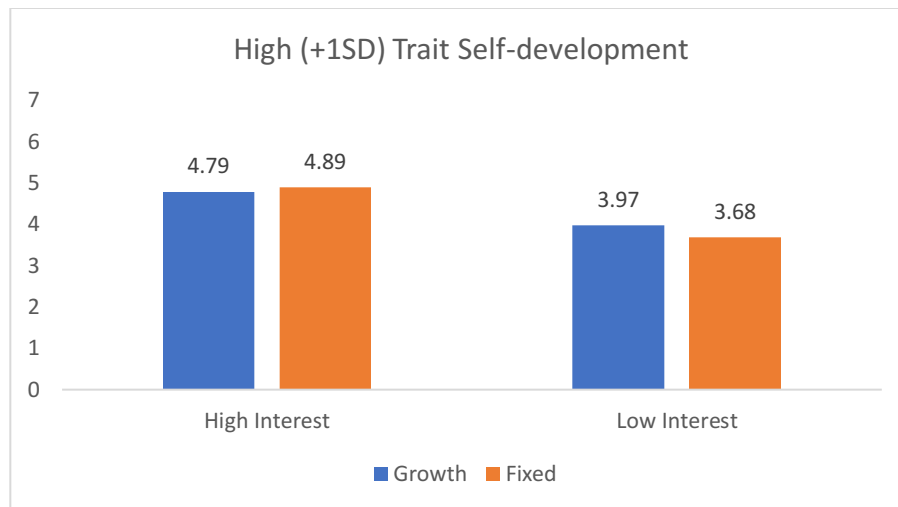
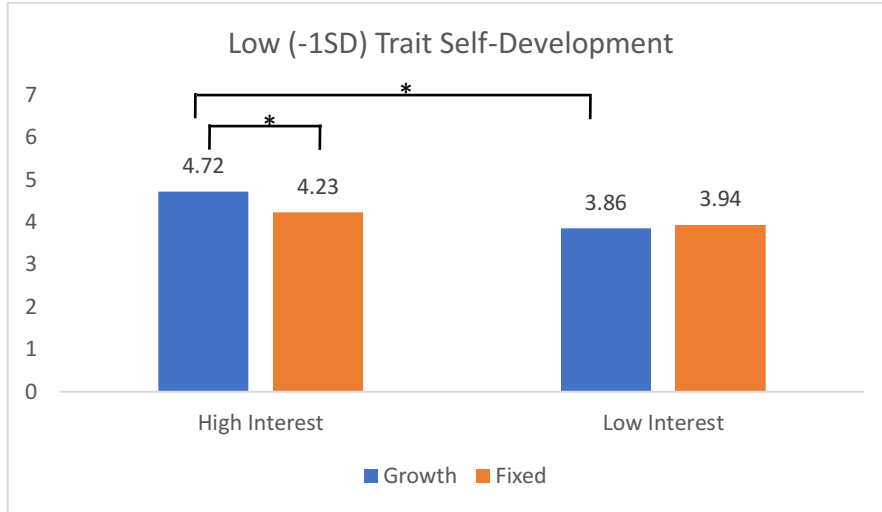
Study 2 Interest \times Dispositional Consumer Self-development on State Consumer Self-development (Essay 2)



Importantly, there was a significant mindset \times interest \times trait CSD interaction ($b = -0.65$, $SE = 0.26$, $p < .001$, Figure 10). The nature of this three-way interaction was such that the predicted mindset \times interest interaction was significant at low ($-1SD$) levels of trait CSD ($F(1, 317) = 4.61$, $p = .03$) but not at high ($+1SD$) levels of trait CSD ($F(1, 317) = 2.11$, $p = .15$). Providing further support for H₁, simple slopes for low levels of trait CSD revealed that those in a growth mindset ($M = 4.72$) reported greater state CSD compared to a fixed mindset ($M = 4.23$; $b = 0.49$, $SE = 0.18$, $p = .007$) in the high interest condition, but not in the low interest condition ($M_{\text{Growth}} = 3.86$, $M_{\text{Fixed}} = 3.94$; $b = -0.07$, $SE = 0.19$, $p = .69$). Providing direct support for H_{2b}, simple slopes at low trait CSD also revealed that for participants in a growth mindset, the presence of interesting product information ($M_{\text{High Interest}} = 4.72$) led to greater state CSD compared to the absence ($M_{\text{Low Interest}} = 3.86$) of interesting product information ($b = 0.86$, $SE = 0.19$, $p < .001$).

Figure 10.

Study 2 Growth Mindset \times Interest \times Dispositional Self-development on State Self-development (Essay 2)



Nomological Validity

Trait CSD was positively correlated with an abbreviated version of the BREF-Quality of Life measure from the World Health Organization, ($r = .20, p < .001$).

Discussion

The pre-registered analyses indicate that people in a growth mindset report greater CSD regardless of high or low interest. Although these results support the central hypothesis of the relationship between a growth mindset and CSD, these results do not support the primary hypothesis for this study. In other words, the low interest condition failed to moderate the effect of a growth mindset. In hindsight, this is not surprising since a core feature of a growth mindset is to persist in the face of challenge when learning new information. Therefore, even though it was highly improbable that participants understood the information in the low interest condition, thus making it theoretically impossible for interest, as an emotion, to take hold, growth mindset participants still reported greater CSD. This result suggests a growth mindset impacts CSD primarily through other mechanisms. Perhaps the most noteworthy result is that interest explained 26% of unique variance in CSD.

The clearest evidence for interest as a psychological process, linking a growth mindset to CSD, was uncovered among people who usually do not experience CSD. In fact, both predicted effects emerged at low levels of dispositional CSD. First, a growth (vs. fixed) mindset predicted greater CSD when product information was interesting, replicating Study 1. Second, interesting (vs. not interesting) product information predicted greater CSD for people in a growth mindset. In addition, the low interest condition shut down and eliminated the growth mindset—self-development link.

One reason the predicted growth mindset \times interest interaction only emerged at low levels of dispositional CSD is because a growth mindset is most important for people who are typically less engaged in the learning activity. For example, growth mindset

interventions are most effective for students who are struggling. The effects of a growth mindset “typically appear for students with higher levels of risk for academic underperformance: high school students who had lower grades before the intervention, especially if they were attending medium-to-low-achieving schools” (Dweck & Yeager, 2019, p. 488, see also Bettinger, Ludvigsen, Rege, Solli, & Yeager, 2018; Yeager, Hanselman, et al., 2018). The influence of a growth mindset, in an educational context, was most impactful among students who were disengaged from their studies. Similarly, in the current research, a growth mindset also had the most substantial effect on CSD among people who were low on trait CSD. The similarity here is that a growth mindset may offer a learning advantage early at the outset, when persistence is difficult or unfamiliar, whereas at higher levels of engagement, interest becomes a more important predictor.

It is important to reiterate that the link between a growth mindset and interest was only theorized to be modest at best. Just because a growth mindset is activated, does not mean that people will become interested in anything or will voraciously read everything. Furthermore, the possibility that interest primarily operates as a mechanism among people who do not typically experience self-development is consistent with the small, but nontrivial, mediation effect sizes observed in Study 1 (and in Essay 1).

Turning to the other side of the three-way interaction, the absence of a growth mindset \times interest interaction at high levels of trait CSD, and the presence of a main effect of interest, suggests that interest acts as a mechanism for CSD for both those with a growth and those with a fixed mindset. Indeed, at high levels of trait CSD, interesting product information increased state CSD for both growth and fixed mindsets.

Theoretically, it makes sense that people who typically experience self-development through their hobbies would experience CSD when evaluating a hedonic product regardless of mindset. In this case, a fixed mindset at high trait CSD may even be affirming for people evaluating the hedonic product.

Until now, the only dimension of well-being predicted by CSD was psychological health (e.g., meaning, happiness). Study 2 further established nomological validity by showing that trait CSD was related to an abbreviated measure of the World Health Organization's BREF Quality of Life inventory. This is an important metric because it not only measures dimensions of psychological health (e.g., ability to concentrate, self-esteem), it also measures aspects of physical health (e.g., being satisfied with one's sleep and ability to complete daily physical activities), healthy social relationships (e.g., being satisfied with personal relationships and support from friends), and environmental health (e.g., having access to information, being satisfied with living conditions). These results suggest that CSD is broadly related to general health. Although this relationship is correlational in nature, and it is possible that people with a greater quality of life likely have greater opportunities for CSD, this association nevertheless suggests the CSD is broadly related to optimal well-being.

General Discussion

The current research set out to uncover the psychological causes of CSD. Using statistical mediation (Study 1), and by manipulating the mediator (Study 2) with an experimental-causal-chain approach, this research revealed that a growth (vs. fixed) mindset and interest are both causes of CSD. Interest is likely one of many mechanisms giving rise to CSD. Interest is a mechanism that becomes exaggerated (1) at low levels of

dispositional CSD for those endorsing a growth mindset and (2) at high levels of dispositional CSD for those endorsing *either* a growth or fixed mindset. Essay 2 also empirically distinguishes between state and trait CSD, indicating that CSD can occur as a momentary perception and at the level of individual differences.

Adding to the nomological network of CSD, this research also reveals that the CSD arising from a growth mindset acts as a mechanism towards a stronger self-brand connection and more favorable product evaluations. Essay 2 also shows that CSD is related to subjective happiness and quality of life. Taken together, these findings indicate that CSD broadly relates to well-being, across psychological, physical, social, and environmental dimensions of health. However, stronger evidence is required to show that CSD is truly a causal mechanism for these outcomes. That is, because the back-end of statistical mediation is fundamentally correlational (b-path), more confidence could be placed in the CSD-to-well-being relationship if self-development was experimentally manipulated.

Practical and Managerial Implications

This research has several important practical implications. First, these results are highly relevant for consumers. It is axiomatic that hedonic consumption, including recreation and relaxation, feels pleasant (Alba & Williams, 2013). But it is also worthwhile for consumers to know that hedonic consumption is related to life satisfaction, meaning, happiness, and quality of life. These are non-trivial dimensions of well-being. The effect of CSD on meaning was approximately 10 times the size of the effect of age on meaning. In addition, the effect of CSD on life satisfaction exceeded the

effect of income and education on life satisfaction and was comparable to the effect of gender and ethnicity on life satisfaction.

Lastly, these results are relevant to marketing managers involved with the oversight of hedonic products, brands, or experiences. The knowledge that consumers not only experience self-development through hedonic consumption, but are also motivated to obtain self-development, can inform both product design and positioning. For example, since self-development appears to be strongly related to interest, managers could passively provide consumers the opportunity to learn more deeply about the product or experience, or actively design marketing materials with the aim of increasing interest (e.g., teaser ads). Given that the theoretical basis of CSD sprouts from learning, many other factors should promote self-development, including acquiring knowledge, building competence, new product learning, and innovations that spark curiosity but are resolvable (i.e., can be understood, which is the second appraisal of interest).

Utilizing the current research, managers may consider positioning products with self-improvement ad appeals (Park & John, 2012) when the product provides consumers the opportunity to learn and potentially experience self-development. One possibility to be explored by future research is whether the novelty of product offerings (e.g., incrementally innovative vs. radically innovative) would interact with the positioning strategy to produce greater expected CSD.

One aspect of prior work that did not relate to self-development (cf. fixed vs. growth comparison in high interest and high dispositional self-development), was the role of fixed mindsets. However, this does not mean that fixed mindset consumers never perceive their characteristics as being influenced by consumer products. Indeed, prior

work shows that fixed mindset consumers experienced greater boosts their own self perceived qualities and performance when using favorable brand personalities (Park & John, 2010, 2014). Yet, in the current research, even though social signaling was related to CSD, signaling motives did not differ between those in a growth and fixed mindset. One possibility is that consumer judgments for those in a fixed mindset primarily relate to brand perception, rather than other information derived from the product. As such, Essay 3 in this dissertation investigated the possibility that fixed (vs. growth) mindset consumers endorsed a closer connection to brands, in general, which may explain the rather ubiquitous effects found in prior work.

**CHAPTER 4: THE RELATIONSHIP BETWEEN FIXED MINDSETS, BRAND-
SELF ENGAGEMENT, AND BRAND FAVORABILITY (ESSAY 3)**

The Relationship between Fixed Mindsets, Brand-self Engagement, and Brand Favorability

People communicate vast amounts of information through their consumption choices. Research shows that people make inferences about the personal qualities of others based on their belongings, such as wrist watches, music playlists, or shoes (Ellis & Jenkins, 2015; Gillath et al., 2012; Rentfrow & Gosling, 2006). In other words, consumption choices act as social signals that broadcast information about oneself. For instance, people infer different levels of competence, athletic ability, moral character, personality, and even devotion to one's romantic partner, based on consumption choices (Bellezza, Gino, & Keinan, 2014; Hingston, McManus, Noseworthy, 2017; Wang & Griskevicius, 2014).

Consumption choices serve as a rich source of personal information, partly because people use brands as a barometer to assess points of similarity with others (e.g., one's in-group; Escalas & Bettman, 2003, 2005). Brands go to great lengths to be associated with distinct personality traits (e.g., competence, sincerity, excitement, ruggedness, sophistication; Aaker, 1997). For example, Jeep, Hallmark, and Red Bull are perceived to be rugged, sincere, and exciting, respectively (Aaker, 1997). As such, brand personality is one of the key mechanisms that allow consumers to signal information about themselves and interpret information about others (e.g., Park & John, 2018). However, this process of signaling and interpretation via brand personality is not constant across consumers. An emerging line of work has revealed that brand personality signals are primarily sent and interpreted by people who endorse the belief that human characteristics, such as personality or intelligence, are fixed in nature (Park & John 2010;

2017). Not only are these individuals more likely to infer personal characteristics of others based on the personality traits of the brands they consume, but they are also more likely to perceive themselves as exuding the particular personality traits of their own preferred brands. For example, if BMW is associated with sophistication, then consumers endorsing a fixed view of human nature will not only be more likely to ascribe sophistication to other BMW drivers (Park & John, 2018), but they will also perceive themselves as being more sophisticated for driving a BMW (Park & John, 2010). In contrast, people who believe that human characteristics can be developed tend not to engage in this brand personality signaling, nor do they experience this boost to their own self-perception after using a brand (Park & John 2010; 2018). In the current research, we explore whether people who hold a fixed view of human nature exhibit deeper engagement with brands in general, and whether this deeper engagement is associated with the extent to which a person likes their favorite brand.

The results of the current research make several meaningful contributions. Prior work has demonstrated that the belief that human characteristics are fixed, as opposed to malleable, predicts more favorable attitudes toward oneself (Park & John, 2010), toward others (Park & John, 2018), and toward products that appeal to social signaling motives when associated with a specific brand personality (Park & John, 2012). Given this strong propensity to send and receive signals via brand personality, the possibility arises that a fixed view of human nature is associated with a deeper engagement with many brands in general. Yet, as others have recently pointed out, little is known about why people incorporate brands into their self-concept (Razmus, Jaroszynska, & Palega, 2017). To fill this gap, the current research provides evidence that people with a fixed view of human

nature show greater engagement with many favorable brands in general, as a detectable individual difference. This is a novel exploration because, to our knowledge, there exists no research demonstrating a link between a fixed lay theory and any form of consumer-brand relationship, such as self-brand connection (Escalas & Bettman, 2003) or brand attachment (Thomson, MacInnis, & Park, 2005). We propose that this deeper engagement with brands—likely developed from perpetual signaling motives—is a primary factor underlying how strongly a person likes their favorite brand. We therefore extend prior work by examining the relationship between fixed lay theory and two critical factors of brand equity: the value a consumer assigns to their favorite brands in general (Sprott, Czellar, & Spangenberg, 2009), and their overall evaluation of specific brands (i.e., brand attitude strength; Keller, 1993). We conclude by discussing the theoretical and managerial implications of our findings, along with the limitations of the present research.

Conceptual Development

Mindsets, or self-theories, are people's implicit core beliefs about whether personal traits are fixed, and therefore unchangeable, or fluid, and therefore able to be grown or developed (Dweck & Leggett, 1988; Elliott & Dweck, 1988; Dweck, 2006). These mindsets are referred to as naïve, or “lay,” theories because, unlike scientific theories, they express a person's commonsense explanations for everyday events (Yeager & Dweck, 2012). Both mindsets are, more or less, equally prevalent among the general population (~ 40-45% per mindset, Levy et al., 1998). Although a person may endorse one mindset in general (i.e., over multiple domains), they may also endorse a more domain-specific mindset with respect to a single quality, such as intelligence (Dweck et

al., 1995; Schroder, Dawood, Yalch, Donnellan, & Moser, 2016). Notably, no single mindset is related to actual ability (Molden & Dweck, 2006). Evidence suggests that mindsets not only influence beliefs about intelligence, but also about morality, personality (Erdley & Dweck, 1993), interest (O’Keefe, Dweck, & Walton, 2018), willpower (Job, Dweck, & Walton, 2010), and the nature of romantic relationships (Knee, Patrick, & Lonsbary, 2003).

Recent research suggests that individuals who endorse a fixed mindset are more likely to glean positive impressions of themselves and others based on brand personality (Park & John, 2010; 2018). Following this line of work, the current research investigates the possibility that individual differences in fixed mindsets will be positively related to individual differences in brand-self engagement. Furthermore, the present research also assesses whether this relationship is associated with how favorably these consumers perceive their favorite brand.

Prior work investigating the consequences of brand personality has shown that consumers who hold a fixed mindset benefit from more favorable self-impressions—as signaled by the brand personality—after using a product (Park & John, 2010). For example, students who endorsed a fixed mindset were asked to use a pen branded with the Massachusetts Institute of Technology (MIT) logo over a six-week period and they experienced a boost in brand-related self-perceptions. Compared to students with a growth mindset, those with a fixed mindset felt that they were more intelligent, hardworking, and had stronger leadership skills (Park & John, 2010).

An analogous effect occurs in relation to inter-personal perception. Across multiple products, brands, and product categories, Park and John (2017) found that

people with a fixed mindset (vs. a growth mindset) judged others based on the brands they used. Specifically, these judgments were based on brand personality. For example, Park and John (2018) confirmed that, although both growth- and fixed-mindset consumers perceived sophistication as the most relevant brand personality dimension for BMW, those holding a fixed mindset were more likely to perceive a person driving a BMW as being more sophisticated. Park and John's (2018) results demonstrate that fixed mindset consumers are more sensitive to a brand's signaling value.

Although prior work suggests that people who hold a fixed mindset tend to make stronger inferences about others based on brand personality traits (Chiu et al., 1997), an intuitive reader might question why fixed-mindset consumers are so strongly influenced by brand personality if they do not believe that personal qualities can be changed. One reason for this relationship is that mindsets influence goals (Dweck & Leggett, 1988). In particular, a fixed mindset evokes performance goals—striving to gain positive judgments of one's competence (or other personal qualities)—whereas a growth mindset evokes learning goals—striving to actually increase competence (Blackwell et al., 2007). These goals lead people with fixed mindsets to become highly concerned with the presence or absence of good qualities (Murphy & Dweck, 2016). Thus, if personal qualities cannot change, then proving, demonstrating, or signaling that one holds an abundance of good qualities becomes incredibly important. As such, people endorsing a fixed mindset utilize brands personalities to convey their own favorable personality traits (Murphy & Dweck, 2016). In contrast, if personal qualities can change, as is believed by those with a growth mindset, then building, growing, and developing those qualities becomes paramount. This divergence in goals is supported by Park and John's (2012)

findings that fixed-mindset individuals are more influenced by ads that emphasize a brand's signaling value, while growth-mindset individuals are more influenced by ads that promise self-improvement.

A person who values a brand for its social signaling value may have developed a deeper connection not only to that specific brand, but also to other brands as well. Recent evidence reveals that people with elevated levels of extrinsic aspirations—such as desiring social recognition and cultivating an appealing appearance (Kasser & Ryan, 1996)—demonstrate heightened levels of brand-self engagement (Razmus et al., 2017). Thus, external aspirations lead consumers not only to acquire luxury goods for the purposes of conspicuous consumption (Truong, 2010), but also to develop stronger brand-self engagements (Razmus et al., 2017). The finding that external aspirations, expressed via conspicuous consumption, are related to greater brand-self engagement provides converging support for our theorizing. Since signaling is a primary motivation for those who hold a fixed mindset, these consumers may also experience greater brand-self engagement.

Methods

Participants and Procedures

For this study, we recruited a total of 425 participants (100 for the pretest and 325 for the main study) from *Prolific Academic*, a crowdsourcing platform for conducting behavioral research.

Before the main study, we conducted a pretest using a separate sample of participants from Prolific ($n = 100$, $M_{\text{Age}} = 22.07$, $SD = 2.2$, 34% female, 66% male). The pretest utilized an open-ended format that asked participants to name five brands they

liked and five brands they disliked in order to identify the most appropriate brands for inclusion in the main study. The resulting lists of favorable and unfavorable brands were then combined, sorted, and counted. The 15 most frequently listed brands were identified as those most relevant to the sample, and were then used to inform the brand-ranking task in the first part of the main study. Table 12 presents the number of times each brand was mentioned in the brand-identification question.

Table 12.
Relevant Brands (Essay 3)

<u>Brand names</u>	<u>Frequency Liked</u>	<u>Frequency Disliked</u>	<u>Total Count</u>
Apple	18	23	41
Nike	25	7	32
Amazon	15	6	21
Gucci	3	14	17
Adidas	12	6	18
Google	17	3	20
Facebook	0	15	15
Nestle	0	15	15
Microsoft	14	0	14
Electronic Arts	0	13	13
Coca-Cola	8	4	12
Supreme	0	12	12
Nintendo	12	0	12
Samsung	11	0	11
Sony	6	0	6

In determining the optimal sample size for the main study, we considered the fact that prior work suggests that fixed mindsets can produce medium effects in the context of brand perceptions (Park & John, 2018, Cohen's $d = .55$). We then calculated Cohen's d using the test statistic and degrees of freedom from Park and John (2018; Experiment 1,

simple effect for fixed mindset; $t(126) = 3.1$; see effect size calculator Becker, 1999, <https://www.uccs.edu/lbecker/>).

However, given the changing emphasis for well-powered studies (Sassenberg & Ditrich, 2019) and the fact that Monte Carlo simulations have demonstrated that correlation effect sizes stabilize at $N = 250$ (Schönbrodt & Perugini, 2013), we chose a larger sample than what the power analysis indicated. We collected a community sample of 325 American adults (49.8% female, 48.6% male, 1.2% other, 0.3% preferred not to respond) who participated in a survey through an online panel. Although the age of the sample participants was initially restricted to 18-25 years, there was some deviation in the final sample, as four participants declared an age above this range. As such, the final sample had an age range of 18-41 years ($M = 21.82$, $SD = 2.55$). It is important to note that the removal of these four participants did not affect the results of the analyses; consequently, we decided to keep them in the main analyses. Finally, all of the participants in the study were residents of the United States.

In the main study, we employed a two-step approach in order to assess brand favorability. First, the participants were asked to complete a brand-ranking task adopted from prior work (Trifts & Aghakhani, 2018). Specifically, the participants were asked to rank the 15 brands identified in the pretest in order of personal preference using a drag-and-drop function. Second, the participants were asked to assign favorability scores to each of the 15 brands using a 7-point Likert-type scale (1 = *Very Unfavorable*, 7 = *Very Favorable*). The favorability of the top-ranked brand served as the core dependent variable. After assigning their brand favorability scores, the participants were told: “We are interested in whether you personally agree or disagree with the statements listed

below. For each statement, please indicate how much you agree or disagree with the statement.” The participants then completed the brand-self engagement (Sprott et al., 2009) and the fixed- and growth-mindset scales (Levy et al., 1998). The survey ended by capturing some basic demographic information about the participants.

Materials

Brand-self engagement. Individual differences in participants’ general tendency to include important brands in their self-concept were measured using an established scale from a prior work (i.e., brand engagement in self-concept scale, Sprott et al., 2009). This scale asked participants to responded to statements like, “I consider my favorite brands to be a part of myself,” and, “I feel as if I have a close personal connection with the brands I most prefer” (Sprott et al., 2009, p. 93) using an 7-point Likert-type scale (1 = *Strongly Disagree*, 7 = *Strongly Agree*). This measure was found to have good internal consistency ($\alpha = .95$).

Fixed/Growth Mindsets. Participant beliefs regarding the fixed or fluid nature of personal traits were measured using an established, 7-point Likert-type, scale from prior work (1 = *Strongly Disagree*, 7 = *Strongly Agree*; Levy et al., 1998). Participants completed four items designed to measure fixed mindset (e.g., “Everyone is a certain kind of person, and there is not much that they can do to really change that” or “As much as I hate to admit it, you can’t teach an old dog new tricks. People can’t really change their deepest attributes”), and four items designed to measure growth mindset (“No matter what kind of a person someone is, they can always change very much” or “People can change even their most basic qualities”). Both the fixed-mindset ($\alpha = .89$) and growth-mindset ($\alpha = .92$) measures produced good internal consistency.

Results

Preliminary Analyses

Potential gender and age differences were first explored among the measured variables (see Table 13). Analyses for gender showed that males ($M = 3.96$, $SD = 1.39$) were directionally higher than females ($M = 3.68$, $SD = 1.38$) with respect to brand-self engagement ($t(318) = 1.77$, $p = .079$, $d = .20$). No other variables were found to differ based on gender. Age was marginally correlated with fixed mindsets ($b = -.044$, $SE = .03$, $p = .07$) such that lower age was more strongly associated with fixed mindsets. Age did not correlate with any other measured variable (p 's $> .80$). It is important to note that gender and age were not significant covariates in the model, and that controlling for them did not change the results of the main analyses. As expected, growth and fixed mindsets were significantly and negatively correlated ($r = -.68$, $p < .001$).

Table 13.

Means and Standard Deviations of Measured Variables by Gender and Age (Essay 3)

Variable	Males	Females	Age: 18-21	Age: 22-24	Age: 25 & Up
Fixed Mindset	3.22 (1.16)	3.15 (1.12)	3.31 (1.19)	3.06 (1.01)	3.09 (1.26)
Growth Mindset	4.08 (1.00)	4.11 (1.06)	4.13 (1.07)	4.03 (.96)	4.20 (1.07)
BESC	3.96 (1.39)	3.68 (1.38)	3.87 (1.42)	3.58 (1.32)	4.23 (1.39)
Brand Favorability	6.49 (.92)	6.51 (.79)	6.47 (1.0)	6.48 (.79)	6.57 (.71)
n	158	162	149	127	49

Main Analyses

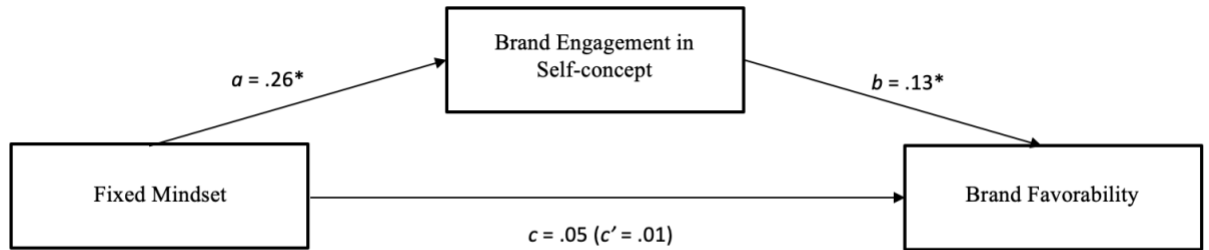
We first assessed the relationship between fixed mindsets and brand-self engagement using Pearson correlations. As expected based on prior work, we found a statistically significant correlation between fixed mindsets and brand-self engagement (r

= .21, $p < .001$, $R^2 = .044$), but no significant correlation between growth mindsets and brand-self engagement ($r = .02$, $p = .66$, $R^2 = .0004$). Following the procedures outlined by Chen and Popovich (2002), we computed a t -statistic to test whether the differences between these correlations were significant. This calculation revealed a t -statistic ($t_{Difference} = 4.24$, $p < .01$) that exceeded the critical value (3.29), indicating that the correlation between fixed mindsets and brand-self engagement was significantly greater than the correlation between growth mindsets and brand-self engagement ($p < .001$, two-tailed). The relationship between fixed mindsets and brand-self engagement was robust, persisting even after controlling for growth mindsets ($pr = .31$, $p < .001$, $R^2 = .096$). We also found a significant relationship between brand-self engagement and strength of brand favorability ($r = .22$, $p < .001$, $R^2 = .048$).

To test whether the relationship between fixed mindsets and brand-self engagement was associated with brand favorability, a simple mediation model was conducted using the PROCESS Macro for SPSS v3.4 (Model 4, bootstrapped with 10,000 draws; Hayes, 2012). Brand favorability scores, individual differences in brand-self engagement, and individual differences in fixed mindsets were submitted to a regression analysis (see Figure 11). A second model was computed for growth mindsets.

Figure 11.

Statistical Mediation Model of the Effect of Fixed Mindsets on Brand Favorability via Brand-self Engagement (Essay 3).



Note: Unstandardized betas denoted by * ($p < .001$).

Table 14.
Essay 3 Regression Coefficients

Variable	R^2	F	df	Beta	SE	LLCI	ULCI
	0.045	15.18	1, 322				
Outcome: Brand engagement							
Fixed Mindset				0.26*	0.07	0.129	0.392
	0.047	7.91	2, 321				
Outcome: Brand favorability							
Fixed Mindset				0.01	0.04	-0.07	0.099
Brand engagement				0.13*	0.04	0.06	0.2

Note: Unstandardized betas denoted by * ($p < .001$). One participant did not report brand favorability.

This analysis revealed a significant indirect effect (95% CI: .011, .068) such that a fixed mindset was associated with increased brand-self engagement ($b = .26$, $SE = .07$, $p < .001$), which was in turn related to increased brand favorability ($b = .13$, $SE = .04$, $p < .001$; see Figure 11). Specifically, we found that a one-unit increase in fixed mindset was associated with a .26-unit increase in engaging brands in one's self-concept, and that a one-unit increase in engaging brands in one's self-concept was related to a .13-unit increase in brand favorability (see Table 14).

Notably, the mediation analysis of fixed mindsets on brand favorability remained unchanged when growth mindset ($b = .07$, $SE = .07$, $p = .30$) was inserted as a covariate.

This result is not surprising, as there is no zero-order correlation between growth mindsets and brand-self engagement. The second model computed for growth mindsets did not present any direct ($b = .03$, $SE = .05$, $p = .56$) or indirect effects (95% CI: $-.017$, $.029$).

Discussion

There has been recent interest in understanding the role of mindsets in consumer behavior (Murphy & Dweck, 2016; Razmus et al., 2017) and, more broadly, in individual differences (e.g., Rutledge et al., 2018). In general, people who believe that personal qualities cannot be changed are more likely to make stronger inferences about themselves and others based on brand personality (Park & John, 2010; 2018). That is, fixed-mindset consumers view themselves and others through the lens of the nearest brand personality. Our findings build upon prior work by showing that greater levels of fixed mindsets predict the tendency to incorporate favorable brands into one's self-concept. Specifically, we found that fixed mindsets accounted for 4.4% of the variation in engaging brands in one's self-concept (and up to 9.6% when controlling for growth mindsets). In contrast, no significant correlation was observed between growth mindsets and the integration of brands into participants' self-concepts. We further demonstrated that the integration of brands into one's self-concept is related to how strongly one views their own favorite brand. This finding further supports the prediction made by Sprott and colleagues (2009) about the relationship between brand engagement and brand favorability. Finally, our findings showed that engaging brands in one's self-concept accounted for 4.8% of the variation in liking one's favorite brand.

Theoretical and Managerial Implications

The main theoretical contribution to emerge from these results is their empirical support for the relationship between individual differences in fixed mindsets and brand-self engagement. Prior work has revealed that the correlation between brand-self engagement and external aspirations ($rs = .21-.27$) is approximately similar in size to the correlation we observed between brand-self engagement and fixed mindsets ($r = .21$, [90% CI: .11, .30]). We extend the literature on mindsets and consumer behavior by demonstrating that fixed-mindset consumers are not just attuned to *specific* brand personalities (as indicated by prior work), but that these consumers are also highly likely to incorporate favoured brands into their sense of self. This individual difference offers a possible mechanism that explains a range of findings associated with various outcomes, including attitudes towards oneself (Park & John, 2010), attitudes towards other people (Park & John, 2018), and attitudes towards ads (Park & John, 2012). For example, one reason fixed-mindset consumers make stronger judgments based on brand personality may be due, in part, to their general tendency to engage brands into their self-concept, which is related to the allocation of greater attention to incidental brand exposure. Thus, not only does greater brand-self engagement predict how strongly one's favorite brands are incorporated into one's self-concept, how strongly one remembers currently owned brands, and how strongly one prefers branded products (Spratt et al., 2009), but it also predicts how attuned one is to the brands used by others. Hence, consumers who engage brands into their self-concept are more likely to attend to brands across a variety situations, hold more brand memories, and interpret brand meanings more readily (Escalas & Bettman, 2003; Spratt et al., 2009; Thomson et al., 2005). As such, it is likely

that brands are highly influential in shaping the judgements of fixed-mindset consumers, given the considerable influence of brands on behavior, in general (e.g., Fitzsimons, Chartrand, & Fitzsimons, 2008).

The findings of the present research also hold several practical implications. We speculate that our findings are most relevant to brands that have been richly endowed with meaning and symbolism, rather than products that are strictly functional or utilitarian (Levy, 1959). For example, people believe that luxury products—which are highly symbolic—convey information to others, such as affluence, prestige, social status, or discerning taste (Belk, Bahn, & Mayer, 1982; Han, Nunes, & Dreze, 2010). We do not suggest that all consumers who purchase luxury brands hold a fixed mindset; rather, we suggest that it is worthwhile for the brand managers of these products to be aware of the nuanced influence of fixed mindsets.

One managerial implication of this work relates to consumer responses to updating or changing brand personality. As prior work has shown, consumers with a strong self-brand connection tend to react negatively when brands reposition themselves to change their underlying meanings (Gaustad, Samuelsen, Warlop, & Fitzsimons, 2018). This negative response occurs because the updated personality alters the identity signaled by the brand, which may now be incongruent with the consumer's self-concept. In addition, research has shown that fixed-mindset consumers are also less receptive to brand extensions whose personalities are incongruent with the parent brand (Yorkston, Nunes, & Matta, 2010), which further supports the notion that engaged consumers holding fixed mindsets may respond adversely to brand-repositioning strategies.

Therefore, repositioning a brand personality holds considerable risk of alienating consumers who have a fixed mindset, are highly connected to the brand, or both.

Another practical implication, which is mainly relevant to consumers who use brands as social signals, relates to the way in which mindsets influence one's response to failure or set-back. For example, people may signal positive qualities through products to compensate for instances of poor performance at work or school, negative feedback, failed goals, or interpersonal rejection, among others (Sherman & Cohen, 2006). Often, these events are threatening because they cause psychological discomfort, which in turn motivates people to compensate or repair their sense of self (Lisjak, Bonezzi, Kim, & Rucker, 2015). Some research suggests that the effect of self-threat is amplified under a fixed mindset. For example, in one study, participants completed a test that assessed either a fixed quality, or a quality that could be developed. After receiving bogus negative feedback, the participants in the fixed condition responded defensively by downplaying the importance of the quality that had been measured (Aronson, 1997). Other research also suggests that a fixed mindset likely exaggerates one's response to threat (Aronson, Fried, & Good, 2002). Failure is devastating for people with fixed mindsets, as it indicates to themselves and others the absence of competence or positive personal qualities (Murphy & Dweck, 2016). Thus, if a person with a fixed mindset views the world as a series of "threats and defenses" (Yeager & Dweck, 2012, p. 304), then this person may be more likely to use brands to compensate for perceived shortcomings throughout life (see Rucker & Galinsky, 2013; Lisjak et al., 2015). Rather than downplaying threatened qualities, people may instead acquire high-status products to signal competence in the threatened domain (e.g., Kim & Rucker 2012). For instance, a

Masters of Business student with poor grades may be more likely to purchase an expensive pen or briefcase to signal their business acumen (Gollwitzer, Wicklund, & Hilton, 1982).

Caveats and Limitations

With the limitations discussed in Essay 1 in mind, the academic conversation on causality is topical and continues to evolve (e.g., Grosz, Rohrer, Thoemmes, in press; Hernán, 2018). Some authors even “recommend that nonexperimental psychologists begin to talk openly about causal assumptions and causal effects,” (Grosz et al., in press, p.3). Grosz and colleagues (in press) argue that, in general, the taboo to not discuss causality in nonexperimental data leads to unarticulated, implicit, assumptions about causal relationships and therefore impairs progress across numerous domains (e.g., design, analysis, policy making). In considering all cautions and recommendations for interpreting cross-sectional data, I encourage readers to interpret the correlational results with greater confidence, particularly given the suggestion that correlation estimates stabilize when sample sizes exceed 250 (Schönbrodt & Perugini, 2013). This stabilization occurs due to the fact that sample-correlation estimates approach the true value as sample sizes increase. Thus, any deviation in our correlation estimates from the true correlation value should be minimal and fall within the corridor of stability (Schönbrodt & Perugini, 2013).

Future Research

The research literature on consumer-brand relationships defines many constructs, such as brand attachment (Thomson et al., 2005), brand love (Carroll & Ahuvia, 2006), and brand trust (Chaudhuri & Holbrook, 2001). However, the current research more

precisely applies to the research on self-brand connection, which refers to the extent to which a person incorporates a specific brand in their self-concept (Escalas & Bettman, 2003, 2005), and brand identification, which can be defined as a “state of oneness with a brand” (Stokburger-Sauer, Ratneshwar, & Sen, 2012, p. 407). Therefore, future research might explore which brand-relationship construct best captures the affinity for brands held by fixed-mindset consumers.

Given that fixed-mindset consumers are likely to use brands as social signaling tools (e.g., favorable personality traits; Park & John, 2018), it is possible that the motivations underlying this behavior may inherently forge deeper engagement, over time, with brands in general. Future research could explore the longitudinal contributors to brand-self engagement in order to gain a better understanding of how beliefs shape one’s motivation to be close with brands.

Conclusions

Prior research suggests that people who hold a fixed view of human nature are more sensitive to brand personality cues (Park & John, 2010; 2017). The present work extends this research by showing that fixed mindsets are positively related to the extent to which people integrate brands into their self-concept. Consistent with other work (e.g., Escalas & Bettman, 2003), we speculate that the observed relationship is a product of chronically using brands for the purposes of social signaling. Although some consumer products may provide a reliable basis for inferring the personal qualities of others (e.g., people can accurately infer personality characteristics based on one’s shoes; Gillath et al., 2012), it is unclear whether signaling via brand personality accurately reflects one’s actual personal qualities, or simply how one wishes to be perceived. Considering the

established relationship between fixed mindsets and psychological threat, it is possible that fixed-mindset consumers use brand personalities to compensate for personal qualities that may be lacking or underdeveloped. Thus, despite being able to accurately receive or interpret brand-personality-based social signals, it is possible that such signals sent by those with fixed mindsets are, in fact, red herrings. However, further research is required to support this conjecture.

CHAPTER 5: CONCLUSION

In this dissertation, I proposed that people can experience self-development as a function of consumer behavior, even the consumption of hedonic products. I found that consumer self-development is related to various metrics of well-being (meaning in life, happiness, satisfaction with life, and quality of life), is a psychological strength, and is a mechanism that leads to favourable consumer judgments. Specifically, Essay 1 validated a new measure to capture consumer self-development and established its construct validity. Consumer self-development occurred when people experienced self-awareness, product knowledge, and competence from consumer products. Essay 2 experimentally induced a growth (vs. fixed) mindset to test if this mindset was causally related to expecting self-development when evaluating a new product. Essay 2 also examined whether interest statistically mediated the mindset—self-development relationship. To provide a more careful test of psychological process and to provide a conceptual replication, Essay 2 also manipulated the underlying mechanism of interest (Spencer, Zanna, and Fong 2005) and found that this process occurred primarily at low levels of trait self-development.

In order to obtain the most accurate estimates of our effects, in terms of direction and magnitude, effect sizes pertaining to the central questions were gathered and submitted to several meta-analyses. Both fixed- and random-effects models were computed. A fixed-effects approach is most appropriate when studies are conducted on the same population because the effect sizes are weighted by sample size. In some ways, the studies in the current research meet this criterion (all being conducted online with American and Canadian adults). In contrast, a random effects approach assumes different populations, and no weights are assigned to the effect sizes, therefore ignoring the

differences in sample sizes across studies. This approach makes sense because the four studies on self-development employed very different methods (cross-sectional survey vs. experimental design) and therefore weighting the effect sizes based on sample size may introduce bias underlying the different methods of measurement. Nevertheless, both are tested and reported.

What is the Aggregate Effect Size of Consumer Self-development on Well-being?

This analysis quantifies the unique proportion of consumer well-being that is explained by self-development, beyond the effects of demographics (gender, age, income, education, employment status, and ethnicity [majority vs. minority]). More precisely, this effect being analyzed here is the aggregate effect on well-being (e.g., $\text{Mean } r_{p \text{ well-being}} = \text{demographics} + \text{self-development} + \text{error}$). One effect size was included from each study in order to preserve independence for estimates: meaning in life (Essay 1, Study 1), satisfaction with life (Essay 1, Study 2), subjective happiness (Essay 2, Study 1), and WHO quality of life (Essay 2, Study 2). These are the only dimensions of well-being that could be included in the analysis because each study only measured one metric of well-being. Since regression betas are not easily included in meta-analyses, to account for the contribution of demographics in the CSD—well-being relationship, the partial correlation was used as the effect size (obtained in the linear regression analyses). The fixed effect model was conducted using the MiniMeta Macro (Goh, Hall, & Rosenthal, 2016), which found that the effect of CSD on well-being was significantly different from zero ($M_r = 0.21$, $SE_r = 0.03$, $z = 8.50$, $p < .0001$, 95% CI: 0.17, 0.26, two-tailed). The random effects approach, using a one-sample t-test, showed that the effect of self-development on consumer well-being was different from zero ($M_r = 0.22$, $SE_r = 0.035$, $t(3) = 12.57$ $p <$

.001). Even though this effect size is smaller than a medium effect. Table 15 compares this standardized effect size estimate to several well-established findings from prior work (Richard et al. 2003).

Table 15.

The Effect size of CSD on Well-being Compared to the Magnitude of Other Known Effects

Consumer self-development contributed to well-being...
...approximately twice as much as...
...argument credibility increases persuasion ($r = 0.10$) *
...scarcity increases the value of a commodity ($r = 0.12$) *
...to a greater extent than...
...empathy increases helping behavior ($r = 0.15$) *
...retail therapy decreases sadness ($r = 0.18$) *
...the average effect size of over 700 meta-analytically derived correlations ($r = 0.19$, $r_{25\%tile} = 0.11$, $r_{75\%tile} = 0.29$) Ψ
...in the same magnitude that...
...social loafing occurs in group work ($r = 0.21$) *
...people with depression attributing negative outcomes to internal, global, and stable factors ($r = 0.22$) *
Note: * (Richard et al. 2003), + (Rick et al., 2014, Study 2), Ψ (Gignac & Szodorai, 2016)

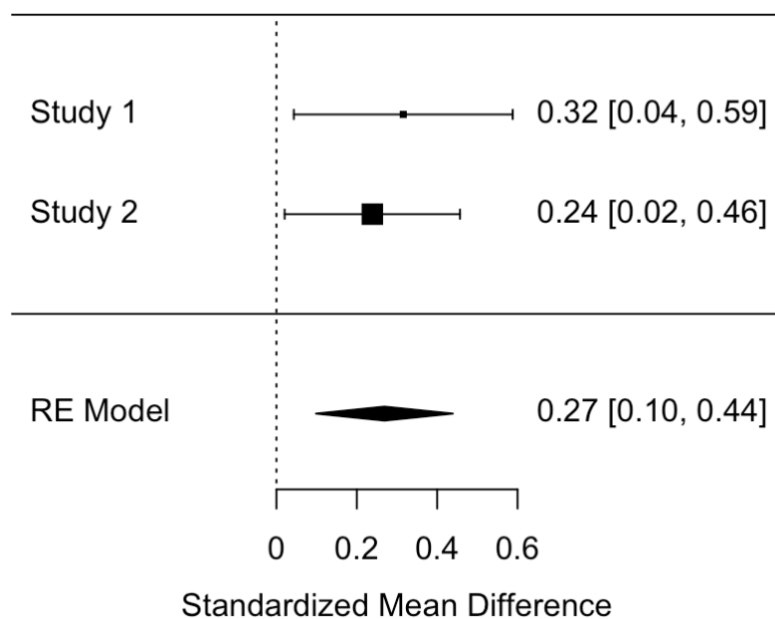
What is the Aggregate Effect Size of a Growth Mindset on Consumer Self-development?

The second meta-analysis was conducted by submitting the raw means, standard deviations, and cell *ns* to the metafor package in R. The main effect of mindset from Studies 1-2 (Essay 2) were used for this analysis. The fixed effects approach produced an estimate for the standardized mean difference, and was performed as a fixed effects analysis. The random effects approach also produced an estimate for the standardized

mean difference, using restricted maximum likelihood estimation. Results of the fixed effects model showed that the effect of growth mindsets on consumer well-being was significantly different from zero ($Md = 0.27$, $SEd = 0.09$, $z = 3.09$, $p = .002$, 95% CI: 0.10, 0.44). Results of the random effects model showed that the effect of growth mindsets on consumer well-being was significantly different from zero ($Md = 0.27$, $SEd = 0.09$, $z = 3.09$, $p = .002$, 95% CI: 0.10, 0.44, Figure 12). In both cases, the amount of variability explained by heterogeneity between studies was minimal ($I^2 = 0\%$).

Figure 12.

Forest Plot from the Growth Mindset—Consumer Self-development Meta-Analysis (Random Effects Model)



Note. The forest plot displays the effect

What is the Aggregate Size of the Interest Mechanism in the Growth Mindset— Consumer Self-development Relationship?

To investigate the evidence for interest as a mediator, the following effects were combined: (a) the fully standardized β coefficient of the indirect effects (from Essay 1, Study 1⁸) was converted to r using an imputation (Peterson & Brown, 2005)⁹, (b) the partially standardized β coefficient of the indirect effects (from Essay 2, Study 1) was converted to a t statistic by dividing the standard error, the t was then converted to d , which was converted to r (this was because the aforementioned imputation is only appropriate for fully standardized β coefficient), and (c) the interest versus no interest contrast among those who endorsed a growth mindset at low dispositional self-development (Essay 2, Study 2). This latter effect was selected specifically at low levels of the moderator to flesh out the basic growth versus fixed effect: without the presence of the basic effect, there is nothing for interest to “mediate.” Note that the effect discussed here tests psychological process using manipulation-of-process, and therefore the term *mediate* is being used theoretically. Therefore, the contrast that most unambiguously tested the hypothesis that interest mediated the growth mindset—self-development link was selected. These effect sizes were inserted into the MiniMeta Macro as a fixed effects model. The fixed effects model showed evidence for a mediational effect statistically different from zero ($M_r = 0.22$, $SE_r = 0.03$, $z = 6.41$, $p < .0001$, 95% CI_r: 0.14, 0.26, two-

⁸ The mediation effect from the pre-registered analysis was used for this analysis.

⁹ https://www.psychometrica.de/effect_size.html

tailed). It is worth noting however, that this estimate was influenced considerably by the mechanism operating at low dispositional self-development. Examining the statistical mediation alone, without the influence of the effect where interest was directly manipulated, the estimate for the mediational role of interest was reduced ($M_r = 0.10$, $SE_r = 0.04$, $z = 2.60$, $p = .009$, 95% CI: 0.03, 0.18, two-tailed). To summarize, it appears that interest does indeed operate as a mechanism, but it is likely one of many.

Final Remarks on Managerial and Practical Implications

Managerial implications of this research include insight for designing and creating new products that allow consumers to experience self-development. Managers may consider enhancing features of their product that produce self-awareness, product knowledge, and perceived competence. Lastly, regarding practical implications, this research provides a roadmap for consumers to identify meaningful consumer experiences that can maximize their own personal growth and well-being. Consumers should be attuned to products that foster self-awareness, knowledge acquisition, and the sense of competence.

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Appendix A: Preliminary Item Pool (Consumer Self-development)

Think of all the products* you saw and all the experiences you had at the narrative fantasy event and answer the following questions.

***NOTE:** We define products broadly to include tangible objects (e.g., comics/novels, game consoles, computer tech.), experiences (e.g., movies, video games), and creations from local artists (e.g., fan art, replica items).

1. Gain knowledge about myself that I did not have before
2. Better understand what I like and dislike
- 3. Expand your sense of the kind of person you are**
- 4. Become more insightful about myself**
5. Learn more about my own preferences
- 6. Develop a better understanding of myself**
7. Realize a personal or professional goal
8. Reveal a new way of thinking about myself
9. Grow or develop as a person
10. Add something to who I am
11. Expand how well-rounded I feel
12. Acquire new facts or skills
- 13. Gain knowledge, that I did not have before, about new products**
- 14. Become more well-informed about the product category**
- 15. Expand my expertise**
- 16. Develop a better understanding of how a product was created**
17. Develop a better understanding of how a product functions
18. Become more experienced in the subject matter
- 19. Feel competent**
20. Learn about the underlying meaning of what a product symbolizes
- 21. Broaden abilities or talents**
22. Be more capable of understanding products in this category

*Note: Final scale items are bolded. Self-awareness (3, 4, 6), product-knowledge (13, 14, 16), competence (15, 19, 21).

Appendix B: Screening for Data Quality (Essay 1, Study 1)

A total of 1371 participants accessed the survey. Nine participants (0.7%) declined consent and were thus skipped to the end of the survey. 1362 (99.3%) participants provided consent.

Of these 1362 participants, 229 (16.8%) had never been to an event involving narrative fantasy whereas 868 (63.7%) had previously been to an event. There were 265 cases of missing data for prior event attendance.

Of the 868 participants who indicated that they attended an event about narrative fantasy, 470 (54%) completed the recall task, where they wrote about their experience. In contrast, 395 participants did not complete the essay.

Of the 470 who completed the essay, 18 participants terminated the survey after writing the essay, leaving 452 who completed responses after the recall task.

The Conscientious Responder Scale (CRS; Marjanovic, Struthers, Cribbie, & Greenglass, 2014) was used as a final screen for data quality. The CRS is able to empirically determine random responses from conscientious responses. The CRS consists of five instructional items that direct participants how to respond (e.g., “To answer this question, please choose option number four, 'neither agree nor disagree'”). Correct responses are assigned a score of 1 whereas an incorrect response is assigned a score of 0. The five items are summed for a total score. In the original paper, fewer than 5% of random responders would be able to achieve a score greater than 3, which was used as the cut-off value. Thus, participants who scored 3 or above are identified as conscientious responders and hence retained for data analysis whereas participants who score 2 or below are not examined. Of the 452 who completed the survey, seven participants were identified as random responders ($n = 2$, CRS score of 0; $n = 2$, CRS score of 1; $n = 3$, CRS score of 2) and 445 participants were identified as conscientious responders ($n = 9$, CRS score of 3; $n = 31$, CRS score of 4; $n = 405$, CRS score of 5).

Therefore, the sample collected for Study 1a contains a total of 445 usable cases.

One participant reported an age: “20-30.” For the purposes of descriptive statistics, this range was replaced with the middle number, “25.”

One participant reported their age was: “4002” years old. This age value was removed from descriptive statistics.

For age, there were 15 cases of missing data and for gender, there were 10 cases of missing data.

Participants ($N = 445$, $M_{Age} = 38.27$, $SD = 10.49$) were 68.80% male, 19.60 % female, 7.90% other [e.g., Non-binary, Transgender, Genderqueer], 1.6% prefer not to answer,

2.2% cases of missing data. Participants were primarily: of European origins (88.8%), employed (83.1%), and married or in a domestic partnership (55.5%). Income varied substantially: < \$20k (11.7%), \$20k-35k (12.2%), \$35k-50k (8.3%), \$50k-75k (17.9%), \$75k-100k (13.3%), \$100-150k (16.2%), >\$150k (12.6%), prefer not to answer (7.4%).

Appendix C: Screening for Data Quality (Essay 1, Study 2)

Note that participants were drawn from the same population used in Study 1 (i.e., paying subscribers of an online comic book). Study 2 was not advertised as a new study to reduce confusion. Therefore, it is unlikely that the same person completed both Study 1 and 2.

A total of 1038 participants accessed the survey. Eight participants (0.8%) declined consent and were thus skipped to the end of the survey. 1030 (99.2%) participants provided consent.

Of these 1030 participants, 318 (30.87%) stopped before answering the first question and therefore were classified as missing data whereas 712 (69.12%) answered at least the first question.

The Conscientious Responder Scale (CRS; Marjanovic, Struthers, Cribbie, & Greenglass, 2014) was used as a final screen for data quality. The CRS is able to empirically determine random responses from conscientious responses. The CRS consists of five instructional items that direct participants how to respond (e.g., “To answer this question, please choose option number four, 'neither agree nor disagree’”). Correct responses are assigned a score of 1 whereas an incorrect response is assigned a score of 0. The five items are summed for a total score. In the original paper, fewer than 5% of random responders would be able to achieve a score greater than 3, which was used as the cut-off value. Thus, participants who scored 3 or above are identified as conscientious responders and hence retained for data analysis whereas participants who score 2 or below are not examined. Of the 712 who completed the survey, seven participants were identified as random responders ($n = 2$, CRS score of 0; $n = 3$, CRS score of 1; $n = 2$, CRS score of 2) and 705 participants were identified as conscientious responders ($n = 36$, CRS score of 3; $n = 57$, CRS score of 4; $n = 612$, CRS score of 5).

Of the 705, 30 participants stopped after completing the consumer self-development scale, leaving 675 (65.53%) of participants who completed at least 25% of the study. Another 31 participants stopped at some point between the 25% mark and the end of the study, which were classified as partial responses. This resulted in a total of 644 fully completed responses (63.11%).

In order to retain maximum statistical power, analyses will retain as much data as possible. Therefore, the CFA will use all 705 cases whereas the remaining analyses will use 675 cases. Note, only 644 participants reported demographics because they were collected at the end of the survey.

Participants ($N = 644$, $M_{Age} = 38.42$, $SD = 11.20$) were 65.80% male, 19.60 % female, 4.7% other [e.g., Non-binary, Transgender, Genderqueer], 1.3% prefer not to answer, 8.7% cases of missing data. Participants were primarily: of European origins (81.4%), employed (76.9%), and married or in a domestic partnership (50.6%). Income varied substantially: < \$20k (9.4%), \$20k-35k (11.5%), \$35k-50k (13.2%), \$50k-75k (14.6%),

\$75k-100k (12.6%), \$100-150k (13.6%), >\$150k (10.4%), prefer not to answer (6.1%).

Appendix D: Essay 1 Study 1 Pre-registration

Psychological Antecedents of Consumer Self-development

Public registration ▾

- Overview
- Files
- Wiki
- Components 0
- Links 0
- Analytics
- Comments 0

Preregistration Template from AsPredicted.org

Data collection

Have any data been collected for this study already? Note: 'Yes' is a discouraged answer for this preregistration form.

No, no data have been collected for this study yet.

Hypothesis

RQ: Does a growth (vs. fixed) mindset lead to greater consumer self-development?

H1: Growth (vs. fixed) mindset consumers will report greater levels of expected self-development when learning about a new hedonic product.

H2: Interest will mediate the effect of mindset on self-development when consumers evaluate the hedonic product under a growth (vs. fixed) mindset.

Dependent variable

Consumer self-development (CSD) is a three-factor construct captured across nine Likert-type items (anchored: 1 = Strongly disagree, 7 = Strongly agree). Three items are employed for each of the subscales: self-awareness, product knowledge, and perceived competence.

Interest (Silvia, 2005) will be captured using four 7-point Likert-type items (anchored: 1 = strongly disagree, 7 = Strongly agree).

Conditions

How many and which conditions will participants be assigned to?

Participants will be randomly assigned to one of two mindset conditions (growth vs. fixed) in a single-factor between-subjects design, where participants will read a fake scientific article that teaches readers that human characteristics are either fixed (fixed mindset) or malleable (growth). All participants complete the "saying is believing" procedure, to engage with the manipulation (Molden, Plaks, & Dweck, 2006). Participants then start an ostensibly unrelated study that in truth measures key DVs (evaluate a consumer product and capture CSD, interest, and other measured variables; see exploratory analyses).

Contributors

Justin McManus

Description

No description

Registration type

Preregistration Template from AsPredicted.org

Date registered

March 25, 2020

Date created

March 25, 2020

Registered from

osf.io/h4xr2

Category

Project

Registration DOI

No DOI assigned

Publication DOI

No publication DOI

Subjects

No subjects

Affiliated institutions

This registration has no affiliated institutions

License

No license

Tags

No tags

Citation

osf.io/4tycg

Analyses

H1: To compare growth versus fixed mindsets on the core dependent variables, an independent-means t-test will be performed on the mean score of: (a) overall consumer self-development and (b) interest.

H2: Mediation will be conducted using Model 4 of the PROCESS Macro v3.4 for SPSS and performed with 10,000 bootstrapped samples. Specifically, the mindset condition will be inserted as the independent variable, interest as the mediator, and consumer self-development as the dependent variable.

Outliers and Exclusions

Duplicate participant IDs will be identified and the second entry removed. Any participant who withdraws based on the exit consent will be removed. Data screening prior to any analyses will be conducted on the following attention/quality checks: (a) the Conscientious Responder scale, where three out of five items must be correctly answered; (b) responding “yes” to the self-report attention check item; (c) correct responses to the single item comprehension check; (d) any participant who uses a single response throughout will be removed (e.g., responding with all “1’s”); (e) no greater than a 5 minute break between the manipulation and the outcome measures, (f) screen out if participants who do not meaningfully respond to the “saying is believing” task (in other words, participants must follow the instructions); and (g) reading speed (i.e., reading more than 300 wpm; Brysbaert, 2019).

Two manipulation checks are used for the mindset manipulation: (a) Check #1: The article was “difficult to understand,” “credible,” “persuasive,” rated on a 1 (strongly disagree) to 7 (strongly agree); (b) Check #2: implicit theory questionnaire, rated on a 1 (strongly disagree) to 7 (strongly agree) point scale. Anyone who disagree with the intended direction of each article (i.e., those who, on average, disagree with the article—those who indicate the mid-point and below) will be removed before data analysis.

Sample Size

This study aims to recruit a minimum of 172 students, and will stop data collection at 250 participants.

Other

We will explore how the effect may differ when examining the individual factors of self-development (i.e., self-awareness, product knowledge, and perceived competence). We will also collect data on three exploratory variables: product evaluations (Park & John, 2012), hedonic/utilitarian attitudes toward the product (Voss, Spangenberg, & Grohman, 2003), and signaling motives (Park & John, 2010). If growth mindsets predict overall consumer self-development, we will explore whether the effect is partially explained by these exploratory mediators.

Name

Psychological antecedents of consumer self-development

Appendix E: Screening for Data Quality (Essay 2, Study 1)

Duplicate participant IDs will be identified and the second entry removed.

A total of 251 cases were collected. Only one person denied consent and was thus skipped to the end page.

Any participant who withdraws based on the exit consent will be removed.

Of the 250 remaining cases, three participants revoked consent during the secondary debriefing.

Data screening prior to any analyses will be conducted on the following attention/quality checks:

(a) the Conscientious Responder scale, where three out of five items must be correctly answered;

The Conscientious Responder Scale (CRS; Marjanovic, Struthers, Cribbie, & Greenglass, 2014) was used as a final screen for data quality. Of the remaining 247, one participant (0.4%) scored 3/5 on the CRS, 10 participants (4%) scored 4/5, and 236 participants (95.5%) scores 5/5 on the CRS. Thus, no cases were removed based on the CRS.

(b) responding “yes” to the self-report attention check item

Of the 247, eight participants identified that they “did not complete this study honestly or did not give it their full attention.”

(c) correct responses to the single item comprehension check: correctly identifying that an instructional video was included in the product*

Of the 239 remaining participants, 136 participants (56.9%) responded “yes” and therefore correctly passed this attention check. 44 participants (18.4%) obviously failed this check by selecting “no.” The remaining 59 participants (24.7%) selected “could not remember.”

*Note: This item was removed from the preregistered data screening procedure and this deviation from the data screening procedure was updated on the OSF Preregistration on April 21 2020 (osf.io/h4xr2). No analyses were performed at this point.

(d) any participant who uses a single response throughout will be removed (e.g., responding with all “1’s”)

Of the 239 remaining cases, no cases were identified (i.e., no participant responded with the same response on each question).

(e) no greater than a 5 minute break between the manipulation and the outcome measures,

Of the 239 remaining participants, one participant was removed for taking longer than 5-minutes between the manipulation and outcome measures. Specifically, this participant was delayed by 15.8 minutes before starting the second portion of the study.

(f) screen out if participants do not meaningfully respond to the “saying is believing” task (in other words, participants must follow the instructions)

In the “saying-is-believing” task, participants are asked to write in their own words (a) the main theme of the article, (b) the three most convincing pieces of evidence presented in the article, and (c) a personal experience consistent with the theme of the article. As such, this screening procedure required participants to “meaningfully” respond to each a-c.

A response is determined meaningful if participants followed instructions: specifically,

- (i) the participant wrote at least one sentence and
- (ii) the content of the sentence matches the content requested by the question (e.g., off-topic/nonsense responses).

Therefore, one-word responses, blank responses, off-topic/nonsense responses, or if participants are unwilling to engage by writing “no personal experiences” are considered not following instructions and will be removed.

Of the remaining 238 participants, 28 participants were identified as not following instructions (i.e., off-topic responses; blank responses/lack of engagement).

(g) reading speed (i.e., reading more than 300 wpm; Brysbaert, 2019).

Of the remaining 210 participants, 61 participants read faster than 300 wpm (i.e., were below 4.3 min or 260 sec). We decided to retain all participants in the sample for two reasons: (a) these participants read the article well enough to provide “meaningful” responses in the previous “saying-is-believing” task, (b) this criteria may have been too strict given the large number of participants identified.

Two manipulation checks are used for the mindset manipulation:

- (a) Check #1: The article was “difficult to understand,” “credible,” “persuasive,” rated on a 1 (strongly disagree) to 7 (strongly agree);
- (b) Check #2: implicit theory questionnaire, rated on a 1 (strongly disagree) to 7 (strongly agree) point scale. Anyone who disagree with the intended direction of each article (i.e., those who, on average, disagree with the article—those who indicate the mid-point and below) will be removed before data analysis.

Of the remaining 210 participants, 21 participants in the fixed mindset condition were below the mid-point of the fixed mindset subscale and 5 participants in the growth mindset condition were below the mid-point on the growth subscale. Given this manipulation check disproportionately removes participants from the fixed mindset condition, we will retain all 210 participants in the main analyses.

Appendix F: About Science



ABOUT SCIENCE

Science has been at the center of important scientific discovery since its founding in 1880—with seed money from Thomas Edison. Today, Science continues to publish the very best in research across the sciences, with articles that consistently rank among the most cited in the world. In the last half century alone, Science published: the entire human genome for the first time and never-before seen images of the Martian surface.



Appendix G: Fixed and Growth Mindset Induction (pertaining to Personality or characteristics in general)



Personality is changeable and can be developed

BY JON COHEN | March 18, 2020

When she was young, Mary S. would not leave her mother to make friends with other children. However, when she grew up, she developed outstanding social skills which made her very successful in the public relations field. Now in her late forties, Mary is married, has two children, and is very active in community affairs.

Benjamin M. exhibited a lack of self-discipline even during his early childhood. When he was seven-years old, his parents had to constantly urge him to do his homework; otherwise, he would skip it. But later when Benjamin went to college, he developed a lot of self-discipline. He always had a well-planned study schedule and was better prepared for examinations than the other students.

These cases were among the eight hundred and twelve cases that researchers have collected at the Personality and Development Unit at Stanford University, and they are typical examples of personality development.

Does personality change?

Researchers at the Personality and Development Unit at Stanford University (PDU) are interested in the origins of personality characteristics and how they develop over an individual's life. To collect cases for the data bank, these researchers launched a large scale longitudinal (that is, long-term) study.

For more than twenty five years, the PDU has been following over eight hundred individuals. The researchers identified them at birth and have been collecting elaborate data on them since,

including birth records, school records, extensive observations at home and in the laboratory, and in-depth interviews with the individuals, their family members, and close friends.

In a recent article published in the Journal of Personality Research, Dr. Lawrence Rescorla, the director of PDU, reported the findings of their extensive case study research. As was observed repeatedly, Dr. Rescorla concluded that "personality characteristics seem to be malleable and can be developed over time." In fact, personality characteristics are

"... personality characteristics are basically a bundle of potentialities that wait to be developed and cultivated."

basically a bundle of potentialities that wait to be developed and cultivated," he wrote. He argued that "at almost any time in a person's life his or her personality characteristics can be shaped."

Similar conclusions were drawn by Dr. Paul Medin, a psychologist at the National Institute on Mental Health. In his speech at the American Psychological Association's annual convention held in Washington, D.C. in August, Dr. Medin argued that "no one's character is hard like a rock that cannot be changed. Only for some, greater effort and determination are needed to effect changes." He reported numerous large longitudinal studies which show that people "can mature and can change their character." He also reported findings showing that people's personality characteristics can be changed even in their late sixties.

Dr. Medin's conclusions about personality are based on six longitudinal studies published between 2006 and 2014, including two of his own. All six had considerably different samples and rationales, but "were nearly unanimous in their conclusions on the malleability of personality," he said.

These studies, together with many others, have made clear the fact that people's personality can be developed and can be changed throughout their lives.

How does personality change?

"Of course, a person's personality does not change automatically," said Dr. Medin. "Usually, there are some events in a person's life that motivate them to change."

Similar conclusions were echoed by other researchers in the field. For example, Dr. Russell Kelley, a professor at UCLA, has done extensive research on how people's personality changes. "We all know people who display such

"No one's character is hard like a rock that cannot be changed. Only for some, greater effort and determination are needed to effect changes."

rigid and enduring characteristics that change seems impossible. But, in fact, this is not true. On the contrary, my research findings show that with enough motivation and some external help, such as counseling, these people can develop well beyond their current patterns," Dr. Kelley said.

Indeed, the fact that personality can be changed for the better was documented a long time ago. One classic example is the Cambridge-Somerville Youth Study. In 1935 Richard Clark Cabot established one of the most ambitious and exciting intervention programs ever conceived. It was designed to serve the needs of youngsters whose past behaviors indicated that they were prime candidates for delinquency and criminality. The youngsters were 250 boys from working-class families in a densely populated area of eastern Massachusetts, many of whom were specifically

judged by schools, police, or welfare agencies to be "at risk." They entered the program at ages ranging from 5 to 13 and then continued in it for an average of five years.

During that time the intervention program combined psychotherapy and other kinds of assistance. Caseworkers visited each child twice a month and provided whatever assistance seemed warranted, including, in roughly one-third of the cases, active involvement in family conflicts. For 50 percent of the boys, the caseworkers arranged for tutoring in academic subjects. Over 100 boys, or roughly 40 percent of the sample, received medical or psychiatric attention. Social and recreational needs were similarly addressed. In short, the program was a multifaceted, long duration intervention.

The results of the intervention were rewarding. Compared to the youngsters who were also "at risk" but were not in the program, those who had the intervention showed dramatic differences as adults. Among the youngsters who were not in the program, 23 percent went on to commit serious offenses against people or property, and over two-thirds of them committed at least minor offenses. In contrast, almost none of the youngsters who experienced the intervention committed a serious offense and less than 10 percent of them even a minor offense. In fact, most of them graduated from high school, and then found and kept steady employment.

Results from the Cambridge-Somerville study again indicate that a person's personality and moral character can be changed. Many other research intervention programs have yielded similar results.

How does intervention or psychotherapy create change? According to Dr. Martin Cooper, an eminent psychologist from Harvard University, psychotherapy creates change "by

"Perhaps psychotherapy is effective because personality characteristics are changeable to begin with."

guiding patients to utilize their potential. My experience has taught me never to give up on my clients. No matter what their problems are, the potential that exists in people makes it possible for them to change. It is our role as therapists to guide them to discover their own potential." Perhaps psychotherapy is effective because personality characteristics are changeable to begin with.

Many historically significant figures changed and developed their personality too

Interestingly, many famous historical figures changed and cultivated their characters over the course of development. Dr. Marsha Schneider, a historian at the University of Chicago, has done research on the personality of important historical figures. Her research is based largely on biographies and published interviews with these individuals. In her article, appearing in the last December issue of the American Historian, she reported that "many significant figures in history developed their key personality characteristics over their childhood and young adulthood. These characteristics often served as a strong force to guide them through their life to achieve greatness."

She mentioned several examples, one being Mother Teresa. According to the people who knew her as a child in the village where she was born, she was not at all a model child. In fact, they told how she was punished in school several times for pushing her way to the front of the lunch line. But, through helping her mother, who was a nurse at the local clinic, she began to develop a strong empathy for others' feelings and a willingness to help even when self-sacrifice was needed. "These developing characteristics led to her life mission of helping those who suffered," Dr. Schneider concluded.

From her analysis of the personality development of seventy-two historically significant figures, Dr. Schneider concluded that "Overall, historically significant figures are no different from common people in the sense that their personality is relatively changeable. Perhaps, the difference is they cultivated and developed a distinctive personality."

To conclude, research findings from a wide range of studies, including large-scale longitudinal studies, rigorous experiments, intervention programs, and historical analyses, converge to one

* To protect their privacy, the real names of the individuals involved were changed.

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Personality, like plaster, is pretty stable over time

BY JON COHEN | March 18, 2020

When she was young, Mary S. would not leave her mother to make friends with other children. Later, when she grew up she had difficulty getting along with people. In her late forties, she was still single and led a lonely life.

Benjamin M. exhibited a lot of self-discipline even during his early childhood. When he was four-years old, he didn't need his parents to urge him to get dressed in the morning or to go to bed at night. Later, in school, he always had a well-planned study schedule and was better prepared for examinations than the other students.

These cases were among the eight hundred and twelve cases that researchers have collected at the Personality and Development Unit at Stanford University, and they are typical examples of personality development.

Does personality really change?

Researchers at the Personality and Development Unit at Stanford University (PDU) are interested in the origins of personality characteristics and how they develop over an individual's life. To collect cases for the data bank, these researchers launched a large scale longitudinal (that is, long-term) study.

For more than twenty five years, the PDU has been following over eight hundred individuals. The researchers identified them at birth and have been collecting elaborate data on them since, including birth records, school records, extensive observations at home and in the laboratory, and in-depth interviews with the individuals, their family members, and close friends.

In a recent article published in the *Journal of Personality Research*, Dr. Lawrence Rescorla, the director of PDU, reported the findings of their extensive case study research.

As was observed repeatedly, Dr. Rescorla concluded that "personality characteristics seem to be rather fixed and to develop consistently along the same path over time." He found that

"... personality characteristics seem to be rather fixed and to develop consistently along the same path over time."

people's personality characteristics can be conceived as fixed entities. "Personality characteristics might start as a bundle of potentialities, but in the early years, the potentials appear to consolidate into a cohesive personality profile," he wrote. He argued that "this profile may manifest itself in a clearer behavioral pattern when people grow older, yet the underlying profile does not seem to

change over time.

Similar conclusions were drawn by Dr. Paul Medin, a psychologist at the National Institute on Mental Health. In his speech at the American Psychological Association's annual convention held in Washington, D.C. in August, Dr. Medin argued that "in most of us, by the age of ten, our character has set like plaster and will never soften again." He reported numerous large longitudinal studies which show that people "age and develop, but they do so on the foundation of enduring dispositions."

Dr. Medin's conclusions about personality are based on six longitudinal studies published between 2006 and 2014, including two of his own. All six had considerably different samples and rationales, but "were nearly unanimous in their conclusions on the stability of personality," he said. He also reported research findings showing that basic tendencies usually stabilize at a very young age, somewhere between 5 and 10 years old.

These studies, together with many others, have made clear the fact that people's personality consolidates at an early age and is relatively stable thereafter.

Can external influences change personality?

According to Dr. Medin, external influences are not able to change personality, but they may be able to affect other characteristics such as specific skills or isolated habits. Yet, these characteristics change only "in ways that are consistent with the individuals underlying personality," Dr. Medin said.

Similar conclusions were echoed by other researchers in the field. For example, Dr. Russell Kelley, a professor at UCLA, has done extensive research on how the environment can

"... in most of us, by the age of ten, our character has set like plaster and will never soften again."

affect people's behavior even though it doesn't really affect their underlying personality. He used the metaphor of how people would behave in a church and at a rock-music concert. "Of course, people would behave very differently in these two situations. But it does not mean that their underlying dispositions have changed. In fact, my research findings indicate that, sometimes a change in environment seems to affect behavior, but it does not change people's underlying personality a bit," Dr. Kelley added.

Indeed, the fact that personality does not really change was documented a long time ago. One classic example is the Cambridge-Somerville Youth Study. In 1935 Richard Clark Cabot established one of the most ambitious and exciting intervention programs ever conceived. It was designed to serve the needs of youngsters whose past behaviors indicated that they were prime candidates for delinquency and criminality. The youngsters were 250 boys from working-class families in a densely populated area of eastern Massachusetts, many of whom were specifically judged by schools, police, or welfare agencies to be "at risk." They entered the program at ages ranging from 5 to 13 and then continued in it for an average of five years.

During that time the intervention program combined psychotherapy and other kinds of assistance. Caseworkers visited each child twice a month and provided whatever assistance seemed warranted, including, in roughly one-third of the cases, active involvement in family conflicts. For 50 percent of the boys, the caseworkers arranged for tutoring in academic subjects. Over 100 boys, or roughly 40 percent of the sample, received medical or psychiatric attention. Social and recreational needs were similarly addressed. In short, the program was a multifaceted, long duration intervention.

Despite the huge investment of effort and money, the results of the intervention were disappointing. Compared to the youngsters who were also "at risk" but were not in the program, those who had

the intervention were equally likely to commit juvenile offenses. Later, in their adulthood, many of them committed crimes - roughly 15 to 20 percent of them committed serious offenses against people or property, while over 50 percent of them committed minor offenses. Results from the Cambridge-Somerville study again indicate that a person's personality is hard to change. Many other research intervention programs have yielded similar results.

Then, why are people spending millions of dollars each year on psychotherapy? The answer according to some experts in the field is:

"... perhaps psychotherapy can sometimes suppress behaviors on the surface, but it does not seem to be able to change people's dispositions."

Although psychotherapy may not be able to change personality, it is effective in changing some superficial behaviors provided that the patients are motivated to change them.

According to Dr. Martin Cooper, an eminent psychologist from Harvard University, psychotherapy creates change "by teaching the patients some new skills." For example, there are children who are over-sensitive to social cues, too often interpreting them as signs of hostility. They thus respond to them aggressively. "Some of these children, with long-term targeted instruction," Dr. Cooper explained, "can be taught some self-regulatory skills to control these aggressive behaviors."

Has personality changed in this example? "Not really. The personality repertoire is still there, but it won't get called on as often," Dr. Cooper said. The bottom line, according to Dr. Cooper, is "perhaps psychotherapy can sometimes suppress behaviors on the surface, but it does not seem to be able to change people's dispositions."

Many historically significant figures possessed a stable personality too

Interestingly, stable personality has been found to be the rule for significant figures in history, whether they be famous or infamous. Dr. Marsha Schneider, a historian at the University of Chicago, has done research on the personality of important historical figures. Her research is based largely on biographies and published interviews with these individuals.

In her article, appearing in the last December issue of the American Historian, she reported that "many significant figures in history displayed their key personality characteristics at an early age. These characteristics often served as a strong force to guide them through their life to achieve greatness or to create destruction."

She mentioned several examples, one being Mother Teresa. According to the people who knew her as a child in the village where she was born, she often took care of other children, even those who were older than she. Also, instead of playing with other children, she spent most of her time volunteering at the local clinic. "Mother Teresa, even when she was very young, displayed a strong empathy for others' feelings and a willingness to help even when self-sacrifice was needed. These characteristics of hers seem to have guided her life mission of helping those who suffered," Dr. Schneider concluded.

Resulting from her analysis of the personality development of seventy-two historically significant figures, Dr. Schneider concluded that "Overall, historically significant figures are no difference from common people in the sense that their personality is relatively fixed and stable. Perhaps, the difference is they had a distinctive personality to begin with."

To conclude, research findings from a wide range of studies, including large-scale longitudinal studies, rigorous experiments, intervention programs, and historical analyses, converge to one major conclusion: Personality seems to be fixed and stable over time.

*To protect their privacy, the real names of the individuals involved were changed.

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Mindset Manipulation Pretest

A pilot of the mindset manipulation was conducted to determine whether it was effective (Chiu, Deck, & Hong, 1997). Fifty-one American and Canadian adults were randomly assigned to read an article that supported either a growth or fixed mindset ($M_{Age} = 34.37$, $SD = 13.34$, 39.2% Male, 60.8% Female). The fixed mindset article makes the case that although it was once believed that human characteristics were a “bundle of potentialities, each of which could be developed,” recent years of rigorous scientific research indicate that people do, in fact, have a limited set of fixed qualities. For example, one paragraph from the fixed mindset article read:

In his talk at the American Psychological Association's annual convention held at Washington D.C. in August, Dr. George Medin argued that 'in most of us, by the age of ten, our character has set like plaster and will never soften again.' He reported numerous large longitudinal studies which show that people 'age and develop, but they do so on the foundation of enduring dispositions.'

In contrast, the growth mindset article reports that the idea of humans having a fixed set of traits is long outdated and has “been replaced by the view of dynamic human potentialities that could be cultivated and developed over a lifetime” (Chiu et al., 1997, 27). A paragraph from the growth mindset read:

In his talk at the American Psychological Association's annual convention held at Washington D.C. in August, Dr. George Medin argued that 'no one's character is hard like a rock that cannot be changed. Only for some, greater effort and determination are needed to effect changes.' He reported numerous large longitudinal studies which show that people can mature and can change their character. He also reported research findings showing that people's personality characteristics can be changed even in their late sixties.

After reading the article and completing the saying-is-believing procedure, participants responded to several manipulation checks. Specifically, participants completed (a) multiple individual items that were expected not to differ across conditions (i.e., the article was: “difficult to understand,” “credible,” “persuasive,” and “to what

extent did you agree with the article;” anchored: 1 = strongly disagree, 7 = strongly agree) and (b) the 8-item domain-general measure of growth and fixed mindsets, which was expected to differ across conditions (e.g., “Everyone is a certain kind of person, and there is not much that they can do to really change that,” “People can change even their most basic qualities;” anchored: 1 = strongly disagree, 7 = strongly agree).

As expected, participants who read that human characteristics can change held greater levels of a growth mindset ($M = 5.45$) compared to participants who read that human characteristics are fixed ($M = 4.0$; $t(49) = 4.21$, $p < .001$, $d = 1.18$). In addition, participants who read that human characteristics are fixed held greater levels of a fixed mindset ($M = 4.55$) compared to the participants who read that human characteristics can change ($M = 2.85$; $t(49) = 4.62$, $p < .001$, $d = 1.30$). These results provide evidence that the experimental manipulation operates as intended. In addition, the growth and fixed mindset articles did not differ in how difficult they were to understand ($M_{\text{Growth}} = 2.13$ vs. $M_{\text{Fixed}} = 2.04$, $t(49) = 0.28$, $p = .77$), how credible they were ($M_{\text{Growth}} = 5.29$ vs. $M_{\text{Fixed}} = 5.74$, $t(49) = -1.38$, $p = .18$), or how persuasive they were ($M_{\text{Growth}} = 5.50$ vs. $M_{\text{Fixed}} = 5.52$, $t(49) = -0.06$, $p = .95$). However, participants agreed more with the growth article ($M = 5.96$) compared to the fixed article ($M = 5.26$; $t(49) = 2.11$, $p = .04$).

Appendix H: Product Stimuli (Essay 2, Study 1)



CHOCOLATIER TOUR BOX

What makes the perfect chocolate? The Chocolatier Tour Box is an at-home experience that provides a “guided tour” through the methods of authentic chocolate making, spanning techniques from Belgium, Germany, Italy, and France. Everything is included to make chocolatier-quality chocolate at home. This kit includes: (i) organic, free-trade, ingredients, (ii) verified techniques used by generations of chocolatiers, (iii) specialized tools (e.g., marble slab, metal scrappers) and (iv) access to the tutorial Mobile App, with detailed instructional videos (www.TourBox.com/ChocolateTour/Tutorial). In the Chocolatier Tour Box, you will learn the science behind the production of chocolate, from bean to bar. Learn about the foundation of chocolate—cocoa liquor, cocoa butter, and the tempering process. Develop your understanding of chocolate through critical taste-tests of different chocolate beans and styles such as truffles, molded chocolates, ganache and more.



BREW TOUR BOX

What makes the perfect beer? The Brew Tour Box is an at-home experience that provides a “guided tour” through the methods of authentic beer making, spanning techniques from Belgium, Germany, Italy, and France. Everything is included to make brewery-quality beer at home. This kit includes: (i) organic, free-trade, ingredients, (ii) verified techniques used by generations of beer makers, (iii) specialized tools (e.g., fermenter, all grain cooler system) and (iv) access to the tutorial Mobile App, with detailed instructional videos (www.TourBox.com/BrewTour/Tutorial). In the Brew Tour Box, you will learn the science behind the production of beer, from grain to glass. Learn about the foundation of beer—malted grains, water, hops, and yeast. Develop your understanding of beer through critical taste-tests of different styles such as ales, lagers, stouts and more.



WINE TOUR BOX

What makes the perfect bottle of wine? The Wine Tour Box is an at-home experience that provides a “guided tour” through the methods of authentic wine making, spanning techniques from Belgium, Germany, Italy, and France. Everything is included to make vineyard-quality wine at home. This kit includes (i) organic, free-trade, ingredients, (ii) verified techniques used by generations of wine makers, (iii) specialized tools (e.g., cask, air locks) and (iv) access to the tutorial Mobile App, with detailed instructional videos (www.TourBox.com/WineTour/Tutorial). In the Wine Tour Box, you will learn the science behind the production of wine, from barrel to bottle. Learn about the foundation of wine – grape culture, tannins, and oxidation. Develop your understanding of wine through critical taste-tests of grape varietals, such as Pinot Grigio, Cabernet Sauvignon, Chardonnay, and more.



DISTILLERY TOUR BOX

What makes the perfect distilled spirit? The Distillery Tour Box is an at-home experience that provides a “guided tour” through the methods of authentic spirit making, spanning techniques from Belgium, Germany, Italy, and France. Everything is included to make distillery-quality spirits at home. This kit includes: (i) organic, free-trade, ingredients, (ii) verified techniques used by generations of spirit makers, (iii) specialized tools (e.g., copper still, still spirit filter) and (iv) access to the tutorial Mobile App, with detailed instructional videos (www.TourBox.com/DistilleryTour/Tutorial). In the Distillery Tour Box, you will learn the science behind the production of spirits, from grain to glass. Learn about the foundation of several distilled spirits—grains, molasses, juniper berries, and potatoes. Develop your understanding of spirits through critical taste-tests of different styles such as whiskey, rum, gin, vodka and more.

Product Stimuli Development

Participants selected one product from a list of four products: a chocolate making kit, a beer making kit, a wine making kit, and a liquor/spirit making kit. Each product description included a picture of the box and raw ingredients, and all were matched on length and content. Importantly, product stimuli were extensively pretested, which verified that the product stimuli did not vary across several key variables and identified the product attributes, spanning the hedonic—utilitarian, material—experience, and hedonic—eudemonic dimensions.

A pretest was conducted to (a) verify the product stimuli did not differ in terms of interest, hedonic and utilitarian attitudes, product evaluations, perceived quality, hedonic and eudaimonic motivation, appraised understanding, novelty-complexity, and comprehension and (b) identify what product attributes best characterized the stimuli, compared to prototypical products spanning the hedonic—utilitarian, material—experience, and hedonic—eudemonic dimensions.

Sixty-one American and Canadian adults ($M_{Age} = 33.16$, $SD = 11.29$, 44.3% Male, 55.7% Female) were randomly assigned to evaluate one of four products: an at-home chocolate making kit, an at-home beer making kit, an at-home wine making kit, or an at-home liquor/spirit making kit. Participants first rated how interested they were in the product category on a 7-point scale (1 = *not at interested at all*, 7 = *extremely interested*) and then read a description of one of the four products. Participants then completed a 10-item, semantic differential, measure of hedonic and utilitarian attitudes (e.g., “enjoyable/unenjoyable,” “fun/not fun,” and “effective/ineffective,” “functional/not functional,” respectively). Product evaluations are captured on five, 7-point, semantic

differential scale (e.g., “positive/negative,” “favorable/ unfavorable,” “extremely poorly designed/extremely well designed”). Participants then rated how similar the product stimuli was to several prototypical products across the hedonic—utilitarian, material—experience, and hedonic—eudemonic dimensions: hedonic materials (“a video game,” “a box of chocolates,” “a bottle of wine”), hedonic experiences (“a movie,” “a brewery tour,” “Comic-Con”), small utilitarian materials (“shoelaces,” “batteries,”), large utilitarian materials (“a washing machine,” “a vacuum cleaner”), and eudemonic experiences (“swimming lessons,” “art classes,” “learning a new language”). Participants then reported hedonic eudaimonic motivation (Huta & Ryan, 2010), and appraised understanding, comprehension, and novelty-complexity (Silvia, 2005).

Establishing approximate equivalence across product stimuli. Analyses revealed that the four product descriptions did not evoke different levels of interest $M_{Chocolate} = 4.33$, $M_{Beer} = 4.08$, $M_{Wine} = 4.45$, $M_{Liquor} = 4.36$, ($F(3, 57) = 0.11$, $p = .95$), utilitarian attitudes ($M_{Chocolate} = 4.71$, $M_{Beer} = 5.05$, $M_{Wine} = 4.56$, $M_{Liquor} = 4.58$, ($F(3, 57) = 0.55$, $p = .65$), hedonic attitudes ($M_{Chocolate} = 5.63$, $M_{Beer} = 5.37$, $M_{Wine} = 4.67$, $M_{Liquor} = 4.91$, ($F(3, 57) = 2.16$, $p = .10$), product evaluations ($M_{Chocolate} = 5.63$, $M_{Beer} = 5.17$, $M_{Wine} = 4.93$, $M_{Liquor} = 5.24$, ($F(3, 57) = 1.10$, $p = .36$), hedonic motivations ($M_{Chocolate} = 5.88$, $M_{Beer} = 5.63$, $M_{Wine} = 5.35$, $M_{Liquor} = 5.39$, ($F(3, 57) = 0.72$, $p = .54$), eudaimonic motivations ($M_{Chocolate} = 5.69$, $M_{Beer} = 6.14$, $M_{Wine} = 5.88$, $M_{Liquor} = 5.61$, ($F(3, 57) = 0.68$, $p = .57$), appraised understanding ($M_{Chocolate} = 6.15$, $M_{Beer} = 6.14$, $M_{Wine} = 5.88$, $M_{Liquor} = 5.61$, ($F(3, 57) = 0.68$, $p = .57$), novelty-complexity ($M_{Chocolate} = 4.36$, $M_{Beer} = 4.54$, $M_{Wine} = 4.90$, $M_{Liquor} = 4.23$, ($F(3, 57) = 1.10$, $p = .36$), and comprehension ($M_{Chocolate} = 5.98$, $M_{Beer} = 6.25$, $M_{Wine} = 5.72$, $M_{Liquor} = 6.21$, ($F(3, 57) = 0.87$, $p = .46$).

However, a significant one-way ANOVA suggested at least one of the product stimuli differed on perceived quality ($F(3, 59) = 2.89, p = .044$). Tukey's post hoc tests revealed that the wine making kit ($M = 4.72$) was perceived with marginally lower quality than the liquor making kit ($M = 5.64, p = .058$). No other comparisons were significant (p 's $> .12$). In main study, if product stimuli interacts with the experimental manipulation, perceived quality may need to be used as covariate in the main study.

What Product Attributes Best Characterize the Product Stimuli? In order to identify what product attributes best characterized the product stimuli (i.e., the "at-home making kits"), participants were asked to compare the kit against several prototypical products spanning the hedonic—utilitarian, material—experience, and hedonic—eudemonic attribute dimensions. Even though the products that represent dimensions match those used in prior work (Spangenberg et al. 2009; Huta & Ryan, 2010), rather than rely on face validity by just mean-scoring the items related to each dimension, an exploratory factor analysis was used as a data-driven method to identify the common factors among all attribute dimensions. In other words, participants rated *how similar the at-home making kit was to*: "a video game," "a box of chocolates," "a bottle of wine," "a movie," "a brewery tour," "Comic-Con" "shoelaces," "batteries," "a washing machine," "a vacuum cleaner" "swimming lessons," "art classes," "learning a new language" and the factor analysis identified which products clustered together.

An exploratory factor analysis using maximum likelihood estimates for factor extraction and an oblique (oblimin) rotation was conducted on all attribute dimensions. Eigenvalues greater than 0.7 were extracted to identify what combination of material—experience, hedonic—utilitarian, and hedonic—eudemonic attributes best fit the data.

This provided an empirical way to validate the product attribute dimensions. Only factor loadings above .30 on the pattern matrix were selected to identify attributes. Although six factors were identified, one appeared to be a statistical artifact, containing cross-loadings. Therefore, a five factor solution was considered to fit the data, which explained 73.59% of the observations.

Since a five-factor solution diverged from the face valid attribute labels, new labels were written based on the content of highly loading items. This analysis revealed five attribute categories, with the corresponding products: *eudemonic experience* (art class, language class), *hedonic experience* (a movie, comic-con), *hedonic experience/material mix* (brewery tour, bottle of wine), *hedonic material* (box of chocolates, video game), and *utilitarian materials* (vacuum cleaner, shoelaces, batteries, washing machine).

Mean scores were created for each attribute category using the highly loading items. This pretest aimed to identify whether (i) each “at-home kit” is equally associated with the same product attributes (between-subjects effects) and (ii) what product attributes are most strongly related to the “at-home kits” overall (within-subjects effects). A mixed-factors ANOVA, using the five attribute categories as a within-subjects variable and the four “at-home kits” as a between-subjects factor, revealed no differences across the “at-home kits” product stimuli ($M_{\text{Chocolate}} = 2.44$, $M_{\text{Beer}} = 2.69$, $M_{\text{Wine}} = 2.40$, $M_{\text{Liquor}} = 2.41$, $(F(3, 57), p = .65)$, indicating that the chocolate, beer, wine, and liquor “at-home kits” do not differ in how they relate to product attributes. This analysis, did however, show a main effect of product attribute ($F(3, 57) = 72.73$, $p < .001$). Pairwise comparisons revealed that, compared to utilitarian materials ($M = 1.12$, $SE = 0.04$), the “at-home kits”

were significantly more similar to hedonic experiences ($M = 1.56, SE = 0.11, p < .001$).

Compared to hedonic experiences ($M = 1.56, SE = 0.11$), the “at-home kits” were significantly more similar to hedonic materials ($M = 2.36, SE = 0.13, p < .001$).

Compared to hedonic materials ($M = 2.36, SE = 0.13$), the “at-home kits” were significantly more similar to eudaimonic experiences ($M = 3.44, SE = 0.23, p < .001$).

Compared to eudaimonic experiences ($M = 3.44, SE = 0.23$), the “at-home kits” were marginally more similar to a mix of hedonic experiences and materials ($M = 3.92, SE = 0.18, p = .089$).

Appendix I: Supplemental Analyses (Essay 2, Study 1)

This study showed differences on credibility ($M_{\text{Growth}} = 5.85$, $SD = 0.90$ vs. $M_{\text{Fixed}} = 5.42$, $SD = 1.36$; $t(208) = 2.78$, $p = .006$), persuasiveness ($M_{\text{Growth}} = 5.83$, $SD = 1.07$ vs. $M_{\text{Fixed}} = 5.53$, $SD = 1.24$; $t(208) = 1.83$, $p = .069$), and agreement ($M_{\text{Growth}} = 6.07$, $SD = 0.94$ vs. $M_{\text{Fixed}} = 5.29$, $SD = 1.30$; $t(208) = 5.05$, $p < .001$).

When these checks are inserted as a covariate in the main effect of the current study, the effect of mindset on CSD still appears to be there, but drops to non-significance ($ps \sim = .20$). However, when also inserting trait self-development as a covariate, the main analysis holds (i.e., growth mindsets ($M = 5.49$, $SD = 0.66$) predict greater CSD compared to fixed mindsets ($M = 5.27$, $SD = 0.73$; $F(1, 204) = 5.44$, $p = .021$).

Appendix J: Essay 2 Study 2 Pre-registration

Mechanism of Consumer self-development

Public registration ▾

Overview
Files
Wiki
Components 0
Links 0
Analytics
Comments 0

Preregistration Template from AsPredicted.org

Data collection
Have any data been collected for this study already? Note: 'Yes' is a discouraged answer for this preregistration form.
No, no data have been collected for this study yet.

Hypothesis
RQ: Does a growth (vs. fixed) mindset lead to greater consumer self-development?
H1: Growth (vs. fixed) mindset consumers will perceive greater self-development when interest in hedonic learning is high compared to low.

Dependent variable
Consumer self-development (CSD) is a three-factor construct captured across nine Likert-type items (anchored: 1 = Strongly disagree, 7 = Strongly agree).

Conditions
How many and which conditions will participants be assigned to?
Participants will be randomly assigned to one of four conditions in a 2 (Mindset: growth vs. fixed) 2 (Interest: high vs. low) in a factorial between-subjects design. Participants will read a fake scientific article that teaches readers that human characteristics are either fixed (or malleable). All participants complete the "saying is believing" procedure (Molden, Plaks, & Dweck, 2006). Participants then start an ostensibly unrelated study that in truth measures key DVs (evaluate information about a consumer product and capture CSD, interest, and other measured variables; see exploratory analyses).

Analyses
H1: To examine the potential interaction between mindsets (growth versus fixed) and interest (high versus low) on the core dependent variable, a two-way ANOVA will be conducted on the mean score of overall consumer self-development.

Contributors
Justin McManus

Description
No description

Registration type
Preregistration Template from AsPredicted.org

Date registered
March 25, 2020

Date created
March 25, 2020

Registered from
osf.io/8f7xd

Category
Project

Registration DOI
No DOI assigned

Publication DOI
No publication DOI

Subjects
No subjects

Affiliated institutions
This registration has no affiliated institutions

License
No license

Tags
No tags

Citation
osf.io/p6bjj

Outliers and Exclusions

Duplicate participant IDs will be identified and the second entry removed. Any participant who withdraws based on the exit consent will be removed. Data screening prior to any analyses will be conducted on the following attention/quality checks: (a) the Conscientious Responder scale, where three out of five items must be correctly answered; (b) responding “yes” to the self-report attention check item; (c) correct responses to the single item comprehension check; (d) any participant who uses a single response throughout will be removed (e.g., responding with all “1’s”); (e) no greater than a 5 minute break between the mindset manipulation and the outcome measures, (f) screen out if participants who do not meaningfully respond to the “saying is believing” task (in other words, participants must follow the instructions); and (g) reading speed (i.e., reading more than 300 wpm; Brysbaert, 2019).

Two manipulation checks are used for the mindset manipulation: (a) Check #1: The article was “difficult to understand,” “credible,” “persuasive,” rated on a 1 (strongly disagree) to 7 (strongly agree); (b) Check #2: implicit theory questionnaire, rated on a 1 (strongly disagree) to 7 (strongly agree) point scale. Anyone who disagrees with the intended direction of each article (i.e., those who, on average, disagree with the article—those who indicate the mid-point and below) will be removed before data analysis.

Two manipulation checks will be used for the interest manipulation: (a) Check #1: four items measuring interest and (b) Check #2 ability to understand, both obtained from Silvia (2005). Anyone who disagrees with the intended direction of the manipulation: (i) those who, on average, do not experience interest in the “hint” condition (those who indicate the mid-point and below) and (ii) those who experience interest in the “no hint” condition (those who indicate the mid-point and above) will be removed before data analysis.

Sample Size

This study aims to recruit a minimum of 402 students, and will stop data collection at 500 participants.

Other

We will explore how the effect may differ when examining the individual factors of self-development (i.e., self-awareness, product knowledge, and perceived competence). We will also collect data on three exploratory variables: product evaluations (Park & John, 2012), hedonic/utilitarian attitudes toward the product (Voss, Spangenberg, & Grohman, 2003), and signaling motives (Park & John, 2010). If growth mindsets predict overall consumer self-development, we will explore whether the effect is partially explained by these exploratory mediators.

Name

No response

Finally

Experiment

Appendix K: Screening for Data Quality (Essay 2, Study 2)

One researcher “Preview” case was identified and was removed.

In total, 565 cases were captured. 65 blank cases were identified and removed.

Duplicate participant IDs will be identified and the second entry removed.

Of the 500 responses, no duplicate participants were identified by the “identify duplicate” function of SPSS on the P_ID variable.

Any participant who withdraws based on the exit consent will be removed.

Of the 500 responses, 0 participants revoked primary consent. However, 10 participants revoked consent during the secondary “exit” consent form.

Data screening prior to any analyses will be conducted on the following attention/quality checks:

(a) the Conscientious Responder scale, where three out of five items must be correctly answered;

Of the remaining 490 responses, two participants were identified as random responders and removed.

(b) responding “yes” to the self-report attention check item;

Of the remaining 488 responses, seven participants reported that they did not honestly complete the survey and therefore, were removed.

(c) any participant who uses a single response throughout will be removed (e.g., responding with all “1’s”);

Of the remaining 481 responses, one participant was identified and removed. Participant (5a09f54af2e3460001edb286) used same response (mid-point) in 46 questions (i.e., all DVs were the same and another 36 responses were consecutively the same).

(d) no greater than a 5-minute break between the mindset manipulation and the outcome measures,

Of the remaining 480 responses, one participant was identified and removed for taking longer than a 5-minute break (32.25 min) between the manipulation and outcome measure.

(e) screen out if participants who do not meaningfully respond to the “saying is believing” task (in other words, participants must follow the instructions);

In the “saying-is-believing” task, participants are asked to write in their own words (a) the main theme of the article, (b) the three most convincing pieces of evidence presented in the article, and (c) a personal experience consistent with the theme of the article. As such, this screening procedure required participants to “meaningfully” respond to each a-c.

A response is determined meaningful if participants followed instructions: specifically,

- (i) the participant wrote at least one sentence and
- (ii) the content of the sentence matches the content requested by the question (e.g., off-topic/nonsense responses).

Therefore, one-word responses, blank responses, off-topic/nonsense responses, or if participants are unwilling to engage by writing “no personal experiences” are considered not following instructions and will be removed.

Of the remaining 479 responses, 65 did not provide meaningful responses.

(f) participants who are 2.5 standard deviations below the mean on the reading speed timer.

Of the remaining 414 responses, no participant was 2.5 SDs below the mean of reading speed.

One manipulation check will be used for the mindset manipulation: implicit theory questionnaire, rated on a 1 (strongly disagree) to 7 (strongly agree) point scale. Anyone who disagrees with the intended direction of each article (i.e., those who, on average, disagree with the article—those who indicate below the mid-point) will be removed before data analysis.

Of the remaining 414 responses, 56 participants disagreed with the article (38 fixed, 18 growth).

Two manipulation checks will be used for the interest manipulation: (a) Check #1: four items measuring interest and (b) Check #2 ability to understand, both obtained from Silvia (2005). Anyone who disagrees with the intended direction of the manipulation: (i) those who, on average, do not experience interest in the “hint” condition (those who indicate below the mid-point) and (ii) those who experience interest in the “no hint” condition (those who indicate the above the mid-point) will be removed before data analysis.

Of the remaining 358, the (a) interest check suggests we should remove 136 participants (94 experienced interest in the “Low Interest” condition; 42 did not experience interest in the “High Interest” condition).

Of the remaining 222, the (b) understanding check suggests we should remove 147 participants (129 experienced understanding in the “Low Interest” condition; 18 did not experience understanding in the “High Interest” condition).

Update to preregistered data screening procedure: osf.io/8f7xd

The original pre-registered data screening criteria, pertaining specifically to the manipulation checks, would remove 339 participants. These criteria would result in a final sample of $N = 75$, which would only provide 22.3% power in the planned analysis. In order to reduce error variance associated with the efficacy of the experimental manipulations but also retain adequate statistical power, the manipulation check criteria were loosened to include a greater number of participants. To accomplish this, the understanding check was not considered and the checks on the mindset scales and the interest scale were relaxed by one scale point to retain more participants. Therefore, instead of using the scale mid-point, the new criteria are: (a) on average, score 3 or below on the implicit theory scale relevant to the article and (b) on average, score 3 or below on interest in the high interest condition and 5 or above in the low interest condition. This less restrictive criteria resulted in retaining $N = 326$ (78.7%) of the 414 eligible responses. Importantly, a power analysis confirmed that a sample of $N = 326$ would provide reasonable statistical power (71.2%).

There have been no other deviations from the data screening procedure. No analyses have been performed at this point.

Appendix L: Interest Manipulation Pretest (Essay 2, Study 2)

Interest Manipulation Pretest

A pretest was conducted to confirm the interest manipulation operated as intended (Silvia, 2005). Fifty-one American and Canadian adults ($M_{Age} = 31.65$, $SD = 9.45$, 43.1% Male, 54.9% Female) were randomly assigned to read factual information about a new product. Participants were told the study was about “comprehension of product manual information” for a new consumer product. Following Silvia (2005, Study 2), the interest manipulation was embedded in the instructions, before reading the product information.

In the low interest (no hint) condition, participants read:

On the next page, you will read a section of a Product Manual for a new product. Please read it, see how you feel about it, and then give your impressions and reactions on the following pages. These instructions are entitled: “Good and Bad Characteristics: Rose, Honey, Chlorine, Nail Polish Remover” and is contained in the instructions on Esters and Phenols.

In the high interest (hint) condition, participants read:

On the next page, you will read a section of a Product Manual for a new product. Please read it, see how you feel about it, and then give your impressions and reactions on the following pages. These instructions are entitled: “Good and Bad Characteristics: Rose, Honey, Chlorine, Nail Polish Remover” and is contained in the instructions on Esters and Phenols. **Important Notes:** Esters are the fruity aromas in beer; Phenols are, undesirable, “off-flavors” in beer; All the product information you will read next are for an “at-home beer making kit.”

Following the product description in the high interest condition, participants were asked to identify what product the following product manual information would pertain to. Any participant who failed to correctly identify the product was shown the information in the high interest condition again, with the product category highlighted. All participants then read the product manual, which contained real descriptions of the different molecules that create fruity characteristics in beer and the molecules that create

“off-flavors” in beer. This information is designed to be “abstract, complex, unfamiliar, and ambiguous” (Silvia, 2005, p. 93). For example, the product information contains statements like “High concentrations of sugar, zinc and free acids tend to promote higher ester levels in the final product. A reaction between organic acids present in the wort and the developing product cause esters to form.” Therefore, without the hint (presented in the high interest condition), participants would have considerable difficulty understanding the meaning of the product information.

Participants then completed several manipulation checks, the first of which was their level of interest toward the product information on a 4-item scale (i.e., the product information was: “interesting,” “boring” [reverse coded], “made me feel curious,” “I would be interested in more information from this product;” anchored: 1 = strongly disagree, 7 = strongly agree). For people to experience the emotion of interest, stimuli must be appraised as *novel* and people must hold the *ability to understand* the stimuli. The product information was intended to be complex to ensure it was sufficiently novel. Since comprehension is the “hinge” between interest and confusion, we also measure appraised ability to understand on a 4-item scale (i.e., “I felt able to understand the product information,” “This product information was easy to understand,” “I could get a sense of what the product manual wanted to express,” “This product information was basically meaningless” (anchored: 1 = strongly disagree, 7 = strongly agree). Comprehension was captured on three, 7-point, semantic differential scales (i.e., “comprehensive/incomprehensible,” “easy to understand/hard to understand,” “coherent/incoherent). Novelty was captured on two, 7-point, semantic differential scales (i.e., “simple/complex,” “common/unusual”). Participants also reported whether the

product information was: “professionally written,” “scientific,” “precise;” (anchored: 1 = strongly disagree, 7 = strongly agree). Finally, participants reported whether the conditions resulted in different hedonic or utilitarian attitudes.

Participants reported higher interest in the high interest condition ($M = 4.48$, $SD = 1.43$) compared to the low interest condition ($M = 3.53$, $SD = 1.61$; $t(49) = 2.21$, $p = .032$, $d = 0.62$). Participants reported a directionally greater ability to understand in the high interest condition ($M = 5.03$, $SD = 1.32$) compared to the low interest condition ($M = 4.38$, $SD = 1.79$; $t(49) = 1.50$, $p = .15$, $d = 0.42$). Participants in the low interest condition ($M = 4.76$, $SD = 1.37$) reported higher levels of novelty-complexity compared to the high interest condition ($M = 3.64$, $SD = 0.72$; $t(49) = -3.53$, $p = .001$, $d = 0.99$). Participants in the high interest condition ($M = 2.78$, $SD = 1.35$) reported less incomprehension than the low interest condition ($M = 3.98$, $SD = 1.65$; $t(49) = -2.81$, $p = .007$).

The high-and-low interest conditions did not differ in how professionally written they were perceived ($M_{\text{High Interest}} = 5.17$ vs. $M_{\text{Low Interest}} = 4.96$, $t(49) = 0.50$, $p = .62$), how scientific they were perceived ($M_{\text{High Interest}} = 5.39$ vs. $M_{\text{Low Interest}} = 5.46$, $t(49) = -0.22$, $p = .83$), or how precise they were perceived ($M_{\text{High Interest}} = 5.09$ vs. $M_{\text{Low Interest}} = 5.00$, $t(49) = -0.23$, $p = .82$). The high-and-low interest conditions did not differ in hedonic attitudes ($M_{\text{High Interest}} = 4.45$ vs. $M_{\text{Low Interest}} = 3.70$, $t(49) = 1.52$, $p = .13$) or utilitarian attitudes ($M_{\text{High Interest}} = 4.14$ vs. $M_{\text{Low Interest}} = 4.04$, $t(49) = 0.25$, $p = .81$) toward the product category.

Appendix M: Measures (Essays 1-3)

Interest

-
1. I found the event interesting
 2. I thought the event was boring
 3. The event made me feel curious
 4. I would be interested in more narrative fantasy events
-

Adapted from Silvia (2005).

Implicit Self-theory Scale (Growth/Fixed Mindsets)

-
1. The kind of person someone is, is something basic about them, and it can't be changed very much
 2. People can do things differently, but the important parts of who they are can't really be changed
 3. Everyone is a certain kind of person, and there is not much that they can do to really change that
 4. As much as I hate to admit it, you can't teach an old dog new tricks. People can't really change their deepest attributes
 5. Everyone, no matter who they are, can significantly change their basic characteristics
 6. People can substantially change the kind of person who they are
 7. No matter what kind of a person someone is, they can always change very much
 8. People can change even their most basic qualities
-

Levy et al. (1997)

Search for, and Presence of, Meaning in Life

-
1. I am looking for something that makes my life feel meaningful
 2. I am always looking to find my life's purpose
 3. I am always searching for something that makes my life feel significant
 4. I am seeking a purpose or mission for my life
 5. I am searching for meaning in my life
 6. I understand my life's meaning
 7. My life has a clear sense of purpose
 8. I have a good sense of what makes my life meaningful
 9. I have discovered a satisfying life purpose
 10. My life has no clear purpose (R)
-

Steger et al. (1996); R = reverse coded

Personal Growth (Psychological Well-being)

-
1. For me, life has been a continuous process of learning, changing, and growth
 2. I am not interested in activities that will expand my horizons (R)
 3. I gave up trying to make big improvements or changes in my life a long time ago (R)
 4. I think it is important to have new experiences that challenge how you think about yourself and the world
 5. I do not enjoy being in new situations that require me to change my old familiar ways of doing things (R)
 6. When I think about it, I haven't really improved much as a person over the years (R)
 7. I have the sense that I have developed a lot as a person over time
-

(Ryff & Keyes, 1995)

Personal Growth (Self-determination Theory)

For you, how important is it...

1. To grow and learn new things?
 2. At the end of my life, to be able to look back on my life as meaningful and complete
 3. To know and accept who I really am
 4. To choose what I do, instead of being pushed along by life
 5. To gain increasing insight into why I do the things I do
-

(Kasser & Ryan, 1996)

Private Self-awareness

1. In general, I am conscious of my inner feelings
 2. In general, I am reflective about my life
 3. In general, I am aware of my innermost thoughts
-

(Govern & Marsch, 2001)

Basic psychological needs (SDT): Competence

1. Often, I do not feel very competent
 2. People I know tell me I am good at what I do
 3. I have been able to learn interesting new skills recently
 4. Most days I feel a sense of accomplishment from what I do
 5. In my life I do not get much of a chance to show how capable I am
 6. I often do not feel very capable (R)
-

(Kasser & Ryan, 1996)

Gadget Loving

1. Despite their age, I love to play around with technological gadgets
 2. Old or new, playing with technological products brings me a lot of enjoyment
 3. Others may not understand it but it's kind of a thrill to play with products that have a high-tech component
 4. It is easy for me to spend a lot of time playing around with almost any kind of technological device
-

(Bruner & Kumar, 2007)

Hedonic and Utilitarian Consumer Attitudes

1. Not Delightful / Delightful
 2. Not Thrilling / Thrilling
 3. Not Fun / Fun
 4. Unenjoyable / Enjoyable
 5. Dull / Exciting
 6. Unhelpful / Helpful
 7. Ineffective / Effective
 8. Unnecessary / Necessary
 9. Not functional / Functional
 10. Impractical / Practical
-

Voss et al. (2003)

Orientation to Happiness: Pleasure and Engagement

Pleasure:

1. In choosing what to do, I always take into account whether it will be pleasurable
2. I agree with this statement: "Life is short – eat dessert first."
3. For me, the good life is the pleasurable life

Engagement:

1. Whether at work or play, I am usually "in a zone" and not conscious of myself
 2. I am always very absorbed in what I do
 3. I am rarely distracted by what is going on around me
-

Peterson et al. (2005)

Satisfaction with Life

1. In most ways my life is close to my ideal

2. The conditions of my life are excellent
3. I am satisfied with my life
4. So far I have gotten the important things I want in life
5. If I could live my life over, I would change almost nothing

(Diener et al., 1985)

An Aversion to Fiction

-
1. I have no interest in things that aren't real, such as things based in fiction, sci-fi, or fantasy
-

The belief that hedonism is immoral

-
1. It is immoral to pursue pleasure for its own sake
-

Learning Goals

-
1. An important reason for using the [pipe-in product name] is because I like to learn new things
 2. I would like the [pipe-in product name] best if it made me think deeply
 3. I would like the [pipe-in product name] even if I make some mistakes
-

Blackwell et al. (2007)

Positive Effort-based Strategies

-
1. I would work hard on the [pipe-in product name]
 2. I would spend a lot of time on the [pipe-in product name]
-

Blackwell et al. (2007)

Signaling Motives

-
1. I think the [pipe-in product name] would reflect who I am to others
 2. I could use the [pipe-in product name] to communicate who I am to other people
 3. I could use the [pipe-in product name] to feel more positive about myself
 4. I could use the [pipe-in product name] to make a better impression on other people
-

Park & John (2010)

Product Evaluations

-
1. Negative / Positive

2. Unfavorable / Favorable
 3. Unappealing / Appealing
 4. Undesirable / Desirable
 5. Extremely Poorly Designed / Extremely Well Designed
-

Material Values

1. I admire people who own expensive homes, cars, and clothes
 2. The things I own say a lot about how well I'm doing in life
 3. Buying things gives me a lot of pleasure
 4. I like a lot of luxury in my life
 5. My life would be better if I owned certain things I don't have
 6. I'd be happier if I could afford to buy more things
-

Richins (2004)

Self-brand Connection

1. The [pipe-in product name] reflects who I am
 2. I can identify with the [pipe-in product name]
 3. I feel a personal connection to the
 4. I can use the [pipe-in product name] to communicate who I am to other people
 5. I think the [pipe-in product name] could help me become the type of person I want to be
 6. I consider the [pipe-in product name] to be "me" (it reflects who I consider myself to be or the way that I present myself to others)
 7. The [pipe-in product name] suits me well
-

Escalas & Bettman (2003)

Abbreviated WHO BREF Quality of life

1. How satisfied are you with your sleep?
2. How satisfied are you with your ability to perform your daily living activities?
3. How satisfied are you with your capacity for work?
4. How much do you enjoy life?
5. How well are you able to concentrate?
6. How satisfied are you with yourself?
7. How satisfied are you with your personal relationships?
8. How satisfied are you with the support you get from your friends?
9. How available to you is the information that you need in your day-to-day life?

10. To what extent do you have the opportunity for leisure activities?
11. How satisfied are you with the conditions of your living place?
-

Brand Engagement in Self-concept

1. I have a special bond with the brands that I like
 2. I consider my favorite brands to be a part of myself
 3. I often feel a personal connection between my brands and me
 4. Part of me is defined by important brands in my life
 5. I feel as if I have a close personal connection with the brands I most prefer
 6. I can identify with important brands in my life
 7. There are links between the brands that I prefer and how I view myself
 8. My favorite brands are an important indication of who I am
-

Sprott et al. (2009)

Demographics

Studies ended by capturing demographics, including: age (open-ended), gender (“male,” “female,” “other [text entry]”, “prefer not to answer”), education (“some high school,” “high school, some college,” “bachelors degree,” “masters degree,” “doctoral degree,” “trade school,” “prefer not to answer”), ethnic background (“North American Aboriginal origins,” “European origins,” “Caribbean origins,” “Latin, Central, and South American origins,” “African origins,” “South Asian origins,” “East and Southeast Asian origins,” “Oceania origins,” “prefer not to say”), employment (“employed,” “not employed, not looking for work,” “not employed, looking for work,” “retired,” “not able to work,” “student,” “prefer not to answer”), marital status (“single,” “married, or in a domestic partnership,” “widowed,” “divorced,” “separated,” “prefer not to answer”), and income (“less than \$20,000,” “\$20,000 to \$34,999,” “\$35,000 to \$49,999,” “\$50,000 to \$74,999,” “\$75,000 to \$99,999,” “\$100,000 to \$149,999,” “Over \$150,000,” “prefer not to say”).

Instructions for Individual Differences Version of CSD

Consider all the products and experiences you engage with for enjoyment. Some examples may include:

- Narrative fantasy (e.g., comics, graphic novels, video games, and all related events, such as comic-con type events). Culinary learning (e.g., food tours, cooking classes, brewery tours, distillery tours, wine making, spirit making)
- Sports/athletic instruction (e.g., swimming lessons, yoga, golf or tennis lessons, dance classes) Music, movies, or general arts (e.g., music lessons, music festivals, concerts, art galleries, art classes, pottery making, painting classes)
- Guided tours (e.g., historical walking tours, museums) New gadgets/technology (e.g., learning about gadgets, new technology, or innovation more broadly)

What hobby or interest do you learn the most from?

Appendix N: Qualtrics Survey Flow (Essays 1-3)

Qualtrics Survey Flow Essay 1 Study 1



Then Branch If:
 IF ENGAGEMENT WITH NARRATIVE FANTASY Is Displayed [Edit Condition](#)
[Move](#) [Duplicate](#) [Options](#) [Collapse](#) [Delete](#)

Show Block: Meaning in life (Presence) (6 Questions) [Add Below](#) [Move](#) [Duplicate](#) [Delete](#)

Show Block: Meaning in life (Search) (7 Questions) [Add Below](#) [Move](#) [Duplicate](#) [Delete](#)

Show Block: Self Theories (Fixed Mindsets) (6 Questions) [Add Below](#) [Move](#) [Duplicate](#) [Delete](#)

Show Block: Self Theories (Growth Mindsets) (5 Questions) [Add Below](#) [Move](#) [Duplicate](#) [Delete](#)

Set Embedded Data:
 PSFG Value will be set from Panel or URL. [Set a Value Now](#)
[Add a New Field](#) [Add Below](#) [Move](#) [Duplicate](#) [Add From Contacts](#) [Options](#) [Delete](#)

[+ Add a New Element Here](#)

[+ Add a New Element Here](#)

Show Block: Demographics (7 Questions) [Add Below](#) [Move](#) [Duplicate](#) [Delete](#)

Show Block: Debriefing form (1 Question) [Add Below](#) [Move](#) [Duplicate](#) [Delete](#)

Qualtrics Survey Flow Essay 1 Study 2

Show Block: Default Question Block (2 Questions) [Add Below](#) [Move](#) [Duplicate](#) [Delete](#)

Show Block: Instructions (3 Questions) [Add Below](#) [Move](#) [Duplicate](#) [Delete](#)

Show Block: Consumer Self-development Scale (14 Questions) [Add Below](#) [Move](#) [Duplicate](#) [Delete](#)

Randomizer
 Randomly present of the following elements Evenly Present Elements
[Add Below](#) [Move](#) [Duplicate](#) [Collapse](#) [Delete](#)

Then Branch If:
 If CONSUMER ENGAGEMENT STUDY Is Displayed [Edit Condition](#)
[Move](#) [Duplicate](#) [Options](#) [Collapse](#) [Delete](#)

Show Block: PWB Personal Growth (Ryff & Keyes, 1995) (9 Questions) [Add Below](#) [Move](#) [Duplicate](#) [Delete](#)

Show Block: SDT Personal Growth (Kasser & Ryan, 1996) (6 Questions) [Add Below](#) [Move](#) [Duplicate](#) [Delete](#)

[+ Add a New Element Here](#)

Then Branch If:
 If CONSUMER ENGAGEMENT STUDY Is Displayed [Edit Condition](#)
[Move](#) [Duplicate](#) [Options](#) [Collapse](#) [Delete](#)

Show Block: SDT Personal Growth (Kasser & Ryan, 1996) (6 Questions) [Add Below](#) [Move](#) [Duplicate](#) [Delete](#)

Show Block: PWB Personal Growth (Ryff & Keyes, 1995) (9 Questions) [Add Below](#) [Move](#) [Duplicate](#) [Delete](#)

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Randomizer
Randomly present 1 of the following elements Evenly Present Elements
[Add Below](#) [Move](#) [Duplicate](#) [Collapse](#) [Delete](#)

Then Branch If:
IF CONSUMER ENGAGEMENT STUDY Is Displayed [Edit Condition](#)
[Move](#) [Duplicate](#) [Options](#) [Collapse](#) [Delete](#)

Show Block: Self-awareness--Private subscale (Govern & Marsch, 2001) (5 Questions) [Add Below](#) [Move](#) [Duplicate](#) [Delete](#)

Show Block: Basic psychological needs (SDT): Competence (7 Questions) [Add Below](#) [Move](#) [Duplicate](#) [Delete](#)

Show Block: Gadget loving (best 4 items) (6 Questions) [Add Below](#) [Move](#) [Duplicate](#) [Delete](#)

[+ Add a New Element Here](#)

Then Branch If:
IF CONSUMER ENGAGEMENT STUDY Is Displayed [Edit Condition](#)
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Show Block: Gadget loving (best 4 items) (6 Questions) [Add Below](#) [Move](#) [Duplicate](#) [Delete](#)

Show Block: Basic psychological needs (SDT): Competence (7 Questions) [Add Below](#) [Move](#) [Duplicate](#) [Delete](#)

Show Block: Self-awareness--Private subscale (Govern & Marsch, 2001) (5 Questions) [Add Below](#) [Move](#) [Duplicate](#) [Delete](#)

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Then Branch If:
IF CONSUMER ENGAGEMENT STUDY Is Displayed [Edit Condition](#)
[Move](#) [Duplicate](#) [Options](#) [Collapse](#) [Delete](#)

Show Block: Basic psychological needs (SDT): Competence (7 Questions) [Add Below](#) [Move](#) [Duplicate](#) [Delete](#)

Show Block: Self-awareness--Private subscale (Govern & Marsch, 2001) (5 Questions) [Add Below](#) [Move](#) [Duplicate](#) [Delete](#)

Show Block: Gadget loving (best 4 items) (6 Questions) [Add Below](#) [Move](#) [Duplicate](#) [Delete](#)

[+ Add a New Element Here](#)

Show Block: Hedonic Utilitarian Attitudes (1 Question) [Add Below](#) [Move](#) [Duplicate](#) [Delete](#)

Randomizer
Randomly present 1 of the following elements Evenly Present Elements
[Add Below](#) [Move](#) [Duplicate](#) [Collapse](#) [Delete](#)

Then Branch If:
IF CONSUMER ENGAGEMENT STUDY Is Displayed [Edit Condition](#)
[Move](#) [Duplicate](#) [Options](#) [Collapse](#) [Delete](#)

Show Block: Orientation to happiness--Pleasure (4 Questions) [Add Below](#) [Move](#) [Duplicate](#) [Delete](#)

Show Block: Orientation to happiness--Engagement (4 Questions) [Add Below](#) [Move](#) [Duplicate](#) [Delete](#)

[+ Add a New Element Here](#)

Then Branch If:
IF CONSUMER ENGAGEMENT STUDY Is Displayed [Edit Condition](#)
[Move](#) [Duplicate](#) [Options](#) [Collapse](#) [Delete](#)

Show Block: Orientation to happiness--Engagement (4 Questions) [Add Below](#) [Move](#) [Duplicate](#) [Delete](#)

Show Block: Orientation to happiness--Pleasure (4 Questions) [Add Below](#) [Move](#) [Duplicate](#) [Delete](#)

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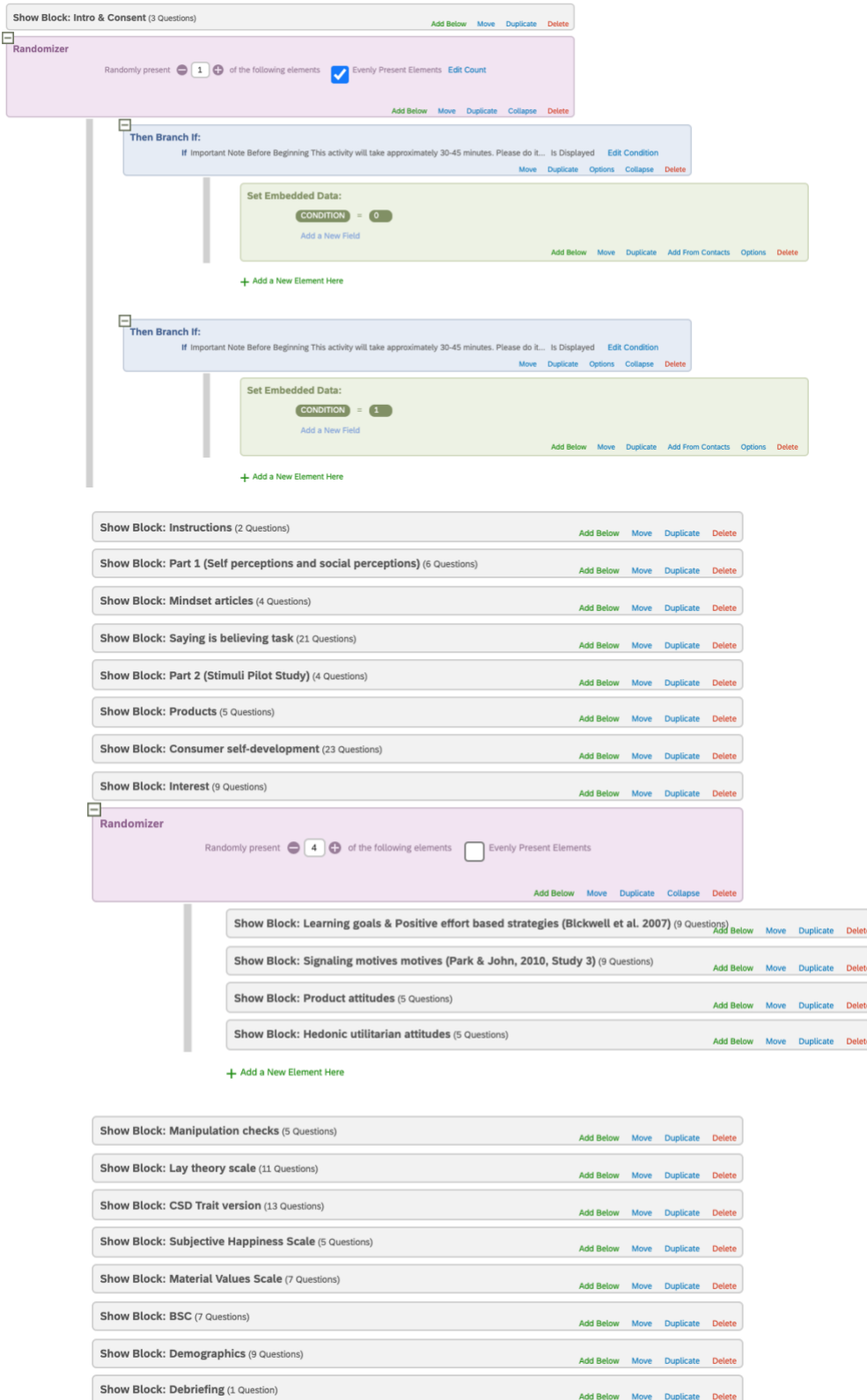
Show Block: SWLS Diener (7 Questions) [Add Below](#) [Move](#) [Duplicate](#) [Delete](#)

Show Block: Fiction aversion & moral hedonism (3 Questions) [Add Below](#) [Move](#) [Duplicate](#) [Delete](#)

Show Block: Demographics (7 Questions) [Add Below](#) [Move](#) [Duplicate](#) [Delete](#)

Show Block: Debriefing form (1 Question) [Add Below](#) [Move](#) [Duplicate](#) [Delete](#)

Qualtrics Survey Flow Essay 2 Study 1



Qualtrics Survey Flow Essay 2 Study 2

Show Block: Intro & Consent (3 Questions) [Add Below](#) [Move](#) [Duplicate](#) [Delete](#)

Randomizer
Randomly present 1 of the following elements Evenly Present Elements [Edit Count](#)
[Add Below](#) [Move](#) [Duplicate](#) [Collapse](#) [Delete](#)

Then Branch If:
If Important Note Before Beginning This activity will take approximately 30-35 minutes. Please do it... Is Displayed [Edit Condition](#)
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Set Embedded Data:
MINDSET = 0
[Add a New Field](#) [Add Below](#) [Move](#) [Duplicate](#) [Add From Contacts](#) [Options](#) [Delete](#)

Set Embedded Data:
INTEREST = 0
[Add a New Field](#) [Add Below](#) [Move](#) [Duplicate](#) [Add From Contacts](#) [Options](#) [Delete](#)

[+ Add a New Element Here](#)

Then Branch If:
If Important Note Before Beginning This activity will take approximately 30-35 minutes. Please do it... Is Displayed [Edit Condition](#)
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Set Embedded Data:
MINDSET = 1
[Add a New Field](#) [Add Below](#) [Move](#) [Duplicate](#) [Add From Contacts](#) [Options](#) [Delete](#)

Set Embedded Data:
INTEREST = 1
[Add a New Field](#) [Add Below](#) [Move](#) [Duplicate](#) [Add From Contacts](#) [Options](#) [Delete](#)

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Then Branch If:
If Important Note Before Beginning This activity will take approximately 30-35 minutes. Please do it... Is Displayed [Edit Condition](#)
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Set Embedded Data:
INTEREST = 1
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Then Branch If:
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Set Embedded Data:
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Set Embedded Data:
INTEREST = 0
[Add a New Field](#) [Add Below](#) [Move](#) [Duplicate](#) [Add From Contacts](#) [Options](#) [Delete](#)

Show Block: Instructions (2 Questions)	Add Below	Move	Duplicate	Delete
Show Block: Part 1 (Self perceptions and social perceptions) (5 Questions)	Add Below	Move	Duplicate	Delete
Show Block: Mindset articles (4 Questions)	Add Below	Move	Duplicate	Delete
Show Block: Saying is believing task (21 Questions)	Add Below	Move	Duplicate	Delete
Show Block: Part 2 (Stimuli Pilot Study) (4 Questions)	Add Below	Move	Duplicate	Delete
Show Block: High Interest (3 Questions)	Add Below	Move	Duplicate	Delete
Show Block: Low Interest (1 Question)	Add Below	Move	Duplicate	Delete
Show Block: Product Information (1 Question)	Add Below	Move	Duplicate	Delete
Show Block: Consumer self-development (11 Questions)	Add Below	Move	Duplicate	Delete
Show Block: Product attitudes (1 Question)	Add Below	Move	Duplicate	Delete
Show Block: Hedonic utilitarian attitudes (1 Question)	Add Below	Move	Duplicate	Delete
Show Block: Checks (interest & ability to understand) (12 Questions)	Add Below	Move	Duplicate	Delete
Show Block: Lay theory scale (11 Questions)	Add Below	Move	Duplicate	Delete
Show Block: CSD Trait version (12 Questions)	Add Below	Move	Duplicate	Delete
Show Block: WHO BREF Quality of life (12 Questions)	Add Below	Move	Duplicate	Delete
Show Block: Demographics (8 Questions)	Add Below	Move	Duplicate	Delete
Show Block: Debriefing (1 Question)	Add Below	Move	Duplicate	Delete

Qualtrics Survey Flow Essay 3

→  Show Block: Default Question Block (3 Questions)	Add Below	Move	Duplicate	Delete
→  Show Block: Brand Favorability: Ranking and Favorability Scores (5 Questions)	Add Below	Move	Duplicate	Delete
→  Show Block: Brand Engagement in Self-concept, Implicit Self-theory Scale, Demographics (22 Questions)	Add Below	Move	Duplicate	Delete

Appendix O: Research Ethics Board Approval

Dalhousie University

REB # 2019-4807 Letter of Approval

ethics@dal.ca

Thu 6/27/2019 3:41 PM

To: Justin McManus <Justin.McManus@dal.ca>

Cc: Valerie Trifts <Valerie.Trifts@Dal.Ca>; Research Ethics Database <ethics@dal.ca>

****This was sent from a no-reply address. To respond to this message, please reply directly to Research Ethics at ethics@dal.ca.*



Social Sciences & Humanities Research Ethics Board Letter of Approval

June 27, 2019

Justin McManus
Management\Rowe School of Business

Dear Justin,

REB #: 2019-4807
Project Title: Hedonic consumption and self-development

Effective Date: June 27, 2019
Expiry Date: June 27, 2020

The Social Sciences & Humanities Research Ethics Board has reviewed your application for research involving humans and found the proposed research to be in accordance with the Tri-Council Policy Statement on *Ethical Conduct for Research Involving Humans*. This approval will be in effect for 12 months as indicated above. This approval is subject to the conditions listed below which constitute your on-going responsibilities with respect to the ethical conduct of this research.



OFFICE OF RESEARCH ETHICS (ORE)

5th Floor, York Research Tower,
4700 Keele Street, Toronto ON
Canada M3J 1P3
Tel 416-736-5914, Fax 416-650-8197
www.research.yorku.ca

Memo

To: Raymond A. Mar, Psychology

From: Alison M. Collins-Mrakas, Sr. Manager and Policy Advisor, Research Ethics
(on behalf of the Chair, Human Participants Review Committee)

Issue Date: Mon Feb 24 2020

Expiry Date: Wed Feb 24 2021

**RE: Self-development and hedonic consumption
Certificate #: e2020-044**

I am writing to inform you that the Human Participants Review Sub-Committee has reviewed and approved the above project.

Should you have any questions, please feel free to contact me at: 416-736-5914 or via email at: acollins@yorku.ca.

Yours sincerely,

Alison M. Collins-Mrakas M.Sc., LLM
Sr. Manager and Policy Advisor,
Office of Research Ethics

Appendix P: Elsevier Publishing Agreement (Essay 3)

ELSEVIER

Publishing Agreement

Elsevier Ltd

The relationship between fixed mindsets, brand-self engagement, and brand favorability

Corresponding author	Mr. Justin F. McManus
E-mail address	Justin.McManus@dal.ca
Journal	Personality and Individual Differences
Article number	110198
Our reference	PAID_110198
PII	S0191-8869(20)30387-1

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