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REVIEW PAPER

The effects of scarcity on consumer decision journeys

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Abstract
Research in marketing often begins with two assumptions: that consumers are able to choose among desirable products, and that they have sufficient resources to buy them. However, many consumer decision journeys are constrained by a scarcity of products and/or a scarcity of resources. We review research in marketing, psychology, economics and sociology to construct an integrative framework outlining how these different types of scarcity individually and jointly influence consumers at various stages of their decision journeys. We outline avenues for future research and discuss implications for developing consumer-based marketing strategies.

Keywords Product scarcity · Resource scarcity · Customer journeys · Consumer decision making

A consumer decision journey begins with a need to address or a problem to solve and ends with a resolution or reevaluation of that need or problem. Thus, the consumer decision journey is an iterative process through which the consumer begins to consider alternatives to satisfy a want or a need, evaluates and chooses among them, and then engages in consumption (Court et al. 2009). For example, consider the following journey for suburban mother Courtney Smith:

Courtney Smith has little time to complete her shopping so as not to be late to pick up her kids at soccer practice. Although the family has food at home, her oldest has been complaining that there is "nothing to eat," which happens when his favorite breakfast cereal is gone. On the way out of the cereal aisle, she passes ground coffee and debates whether to buy some and make her coffee at home. They have her favorite Starbucks brand. But

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> getting the kids out the door in the morning is always such a rush – and she looks forward to her stop for gourmet coffee after dropping them off at school. Courtney decides against the coffee. She daydreams as she unloads her cart and pays for her groceries, barely noticing the total that is charged to her credit card. As she gets into her car, she notices that she is almost out of gas. Too much driving around, and this big SUV drinks it fast! She leans back into her richly padded seat. She is glad they decided to get the luxury brand of SUV – she spends so much time in this car that it feels like an extension of herself. When she arrives at the soccer field, her car will be the first sign to everyone that it is her pulling into the parking lot, and she likes the impression it creates.

Next, consider the journey of another consumer also buying food for her children:

> Stephanie Johnson goes to the bodega to pick up groceries for herself and her two children. They live in a single bedroom in her grandmother's house. Although it is crowded, Stephanie is relieved to have a place to sleep. There is a larger store outside her neighborhood that offers a better selection, but it takes two buses and considerable time and expense to get there and back. At the bodega, there are limited fruits and vegetables; mostly bananas, plantains, and corn, but it matters little since she cannot store them. Canned foods make more sense because they can be stacked in her small closet and last indefinitely, giving her ingredients for soup when her grandmother provides meat or as items to offer when her grandmother cannot get to the store. At the checkout counter, Stephanie waits anxiously to see if her total exceeds the balance on her debit card. A wave of relief passes over her when she has enough funds by a dollar. Stephanie walks home with her heavy packages, realizing as she opens the front door that it is her grandmother's bridge night. Her son comes running toward her, pointing hungrily at the snacks that are out for her grandmother's friends. If anything is left over at the end of the night, they are welcome to it, but otherwise, they are on their own. They head upstairs to their room, where they will be holed up for the night with only the TV to entertain them and a hotplate to cook the canned food.

Although their shopping trips were very different, it is important to note that each of these consumers experienced both product scarcity and resource scarcity. In the first example, the mother's trip to the store was triggered by running out of her son's favorite breakfast cereal (product variety scarcity); during her trip, she felt short of time (resource scarcity). In the second example, the mother encountered a limited assortment of fresh fruits and vegetables (product category scarcity) at the store where she shopped and she was relieved to have enough money in her account to cover her purchases (resource scarcity).

We define scarcity as a real or perceived threat to the consumer's ability to meet his or her needs and desires due to a lack of, or a lack of access to, goods, services or resources. We then distinguish between scarcity of access to goods and services for purchase (i.e., product scarcity) and scarcity of the resources necessary to purchase goods and services (i.e., resource scarcity) in our analyses. Product scarcity is a real or perceived lack of goods and services available to the consumer either in the short-term (e.g., due to stock-outs) or long-term (e.g., due to legal restrictions). It may be in the form of variety scarcity, meaning that there is a limited available quantity of a specific brand, model, or size of the desired product, or in the form of category scarcity, which refers to a lack of access to an entire product category (e.g., food deserts; Grier and Davis 2013). These experiences of product scarcity may occur at the individual level (e.g., an individual coping with a restricted supply of a product) or at the group or community level (e.g., a community coping with shortage of certain products due to a natural disaster), or even at a more macro-level (e.g., a global commodity shortage; Cannon et al. 2018).

In contrast, we define resource scarcity as the real or perceived lack of various forms of capital (i.e., financial, social, cultural) or other production inputs (i.e., time) that the consumer invests in order to acquire and use goods and services. A resource is consumed or used by an individual for survival, maintenance, or growth, such that its availability is temporarily or permanently reduced for the individual and/or others (see Abrams 1992). Thus, we restrict our analysis to resources that are quantifiable and consumable (following Cannon et al. 2018), and exclude the consideration of resources that are non-quantifiable (e.g., cognitive capacity; Molden et al. 2012) from our discussion. Like product scarcity, resource scarcity may be experienced at the individual level (e.g., financial deprivation; Sharma and Alter 2012) or by a group or community (e.g., nationwide recession; Griskevicius et al. 2013).

We acknowledge that, at a high level, products may be used as capital (e.g., bartering) or as production inputs (e.g., tools), much like resources. However, we believe it is useful to distinguish between access to products (i.e., the ends) and access to resources (i.e., the means) because, as we illustrate, scarcity of products and resources often have distinct effects on consumer decision journeys. Notably, although past research has examined both the effects of product scarcity (e.g., Cialdini 1993; Zhu and Ratner 2015; Kristofferson et al. 2017) and resource scarcity (e.g., Roux et al. 2015; Chaplin et al. 2014; Mehta and Zhu 2016; Shah et al. 2015; Griskevicius et al. 2011) on consumer decision making, it has not explicitly

distinguished their distinct effects on consumer decision journeys. Whereas some research suggests that the effects of product and resource scarcity on consumer decision making may be similar (e.g., Mullainathan and Shafir 2013), other work suggests that their effects may be quite different (e.g., Bone et al. 2014). For example, although both product scarcity and resource scarcity tend to focus the consumer's attention on the good that is scarce (Mullainathan and Shafir 2013), product scarcity cues often enhance consumers' valuations of goods (Cialdini 1993) whereas resource scarcity tends to attenuate the effects of contextual cues on product evaluations (Shah et al. 2015). Therefore, marketers may strategically employ product scarcity to promote interest in specific products (Howard et al. 2007), such as by using limited editions of products, restricting order size, using exclusive distribution (Lynn 1991), or restricting the timing of sales (Brannon and Brock 2001; Inman et al. 1997). In contrast, when targeting customers likely to be experiencing resource scarcity, marketers would be wise to adopt other tactics, such as emphasizing how the product's benefits help customers (Roux et al. 2015). Accordingly, we propose that to better understand and predict how consumers navigate their decision journeys, marketers must understand how consumers respond to scarcity in these different forms.

In the sections that follow, we provide illustrative examples of the effects of scarcity on consumer decision journeys, cite evidence suggesting that product and resource scarcity have distinct effects across multiple stages of a consumer's journey, outline avenues for future research, and discuss the implications for consumer-based strategy.

Scarcity within stages of the consumer decision journey

Both product scarcity and resource scarcity can shape the consumer decision journey by influencing how consumers process information, evaluate alternatives, make choices, and consume. Table 1 shows the four key stages that define the typical consumer decision journey: initial consideration of alternatives, evaluation, choice, and consumption (Court et al. 2009). We acknowledge the possibility that product and resource scarcity can have even earlier effects on consumer desires, potentially affecting preferences before the decision journey is instantiated (e.g., Hill 2001). For example, if consumers do not know about a product that is unavailable to them, they will not experience desire for that product. Referencing our opening example, Courtney considers having her own vehicle essential, and even an extension of herself, whereas, due to her limited resources, Stephanie may not even consider buying a car as a solution to her transportation needs. In this review, to contextualize the research on scarcity within the literature on consumer decision journeys, we restrict our focus to the four stages of the consumer decision journey beginning with initial consideration of alternatives; however, we believe the effects of product and resource scarcity on consumer preferences is an important area for future research.

In this section, we examine how each of the four stages of the consumer decision journey may be influenced by product scarcity, resource scarcity and the joint experience of both. Early in the consumer decision journey, when consumers are engaging in information search and forming consideration sets, it is critical to think about the effects of product and resource scarcity on arousal and attention. Moving into the stage of evaluating alternatives, we consider systematic differences in consumers' inferences and the relative importance of product attributes stemming from product and resource scarcity. During the choice phase, we consider the effects of product and resource scarcity on consumers' responses to choice restriction and their willingness to delay gratification or take risks. Finally, during the consumption phase, we consider the effects of product and resource scarcity on quantity consumed, satiation and product usage creativity.

To the degree that product and resource scarcity influence consumers' thoughts, feelings and actions during their decision journeys, scarcity has important implications for both marketing managers and policymakers. We mention some of these implications while discussing each stage, and provide more in-depth discussion of the implications for marketing strategy (e.g., segmentation, targeting and positioning), marketing tactics (e.g., pricing, marketing communications and managing customer relationships), and public policy later in the paper.

Stage 1: Information processing and initial consideration of alternatives

In this section, we discuss the effects of product scarcity and resource scarcity as consumers learn about the alternatives and form consideration sets.

Product scarcity While some past work suggests that product scarcity increases arousal, limiting a consumer's ability to process information and encouraging more heuristic processing, other work suggests that scarcity induces greater elaboration, the process by which consumers connect new concepts to information already in memory.

Early research on the use of product scarcity tactics suggests that such tactics may encourage consumers to use more heuristic and automatic responses. Based on his review of the literature, Cialdini (1993) proposed scarcity as one of his six principles of persuasion, arguing that scarcity appeals encourage relatively thoughtless, automatic responses because they induce arousal and hinder consumers' tendency to elaborate. Consistent with this, recent research suggests that when products are perceived to be scarce, consumers experience

Table 1 Effects of product and resource scarcity across the stages of the consumer decision journey

Type of Scarcity	Stage 1: Information Processing and Initial Consideration	Stage 2: Evaluation of Alternatives	Stage 3: Choice	Stage 4: Consumption Experiences
Product scarcity triggers such as: • Unavailability due to stock outs or limited assortments • Limited promotional deals (e.g., limited purchase quantity, countdown clocks to the end of a promotion) • Limited editions of products • Online persuasion tactics (e.g., display number of other consumers looking at the same product or number of units still available)	• Heightened arousal (Cialdini 1993; Zhu and Ratner 2015). • Increased level of elaboration if consumers have high prior motivation (Suri et al. 2007). • Decreased level of elaboration if consumers have low prior motivation (Suri et al. 2007).	• Increased perceived value and demand for products (Brock 1968; Gierl and Huettl 2010; Inman et al. 1997; Parker and Lehmann 2011). • Increased valuation of exclusivity (i.e., scarcity due to supply) if product is purchased for self (Wu and Lee 2016) and to signal status (Gierl and Huettl 2010). • Increased valuation of popularity (i.e., scarcity due to demand) if product is purchased for others (Wu and Lee 2016). • Increased desire for most-preferred item and decreased desire for less preferred items in a set (Zhu and Ratner 2015).	• Reduced decision difficulty due to fewer alternatives and less overload (Iyengar and Lepper 2000). • Greater chance of choice deferral or substitution with an option similar to initial choice (Arens and Hamilton 2018; Ratneshwar and Shocker 1991).	• Reduced consumption when quantity available can be visually assessed (Folkes et al. 1993). • Lower satiation due to repeated consumption of the same product (Sevilla and Redden 2014).
Resource Scarcity triggers such as: • Continuous short-term resource constraints (e.g., making just enough to get by every month or not having enough time). • Reminders of resource constraints (e.g., low balance reminder from bank) or an unforeseen event (e.g., car breakdown) • Long-term scarcity (e.g., growing up with few resources in the household) • Environmental threats (e.g., looming financial crisis, water shortage) • Social comparisons (e.g., being the poorest household in a neighborhood)	• Attentional narrowing and focus on scarce resource (Mullainathan and Shafir 2013; Shah et al. 2012). • More thinking about tradeoffs and opportunity costs (Shah et al. 2015; Spiller 2011). • Expanded consideration of alternatives (Hill et al. 1998). • Increased monitoring of social environment (Piff et al. 2012).	• Reduced effects of external cues on evaluations (Shah et al. 2015). • Lower susceptibility to deceptive pricing strategies (Binkley and Bejnarowicz 2003; Goldin and Homonoff 2013). • Increased valuation of material goods as means to attain life goals (Chaplin and John 2007; Chaplin et al. 2014).	• Increased impulsivity and risk-taking (Griskevicius et al. 2013). • Increased competitive orientation and focus on own welfare when primed to think about a scarce resource (Roux et al. 2015). • Increased motivation to help others when thinking of the self as lower in social class (Piff et al. 2010). • Greater likelihood to engage in prosocial and ethical behaviors among those who are low in subjective resources (Miller et al. 2015; Piff et al. 2010).	• Increased creativity in product usage (Hill 2001; Rosa et al. 2012). • More thinking beyond the traditional functions of products (Mehta and Zhu 2016). • Increased savoring (Quoidbach et al. 2015).
Combined Product Scarcity + Resource Scarcity Triggers	• Diminished self-esteem and reduced autonomy (Bone et al. 2014; Chaplin et al. 2014).	• Increased appeal of scarce and exclusive products (Sharma and Alter 2012).	• Lower psychological reactance (Snibbe and Markus 2005). • Greater willingness to wait when a choice is temporarily unavailable (Thompson et al. 2018). • More likely to devalue an initially preferred choice (Thompson et al. 2018).	• Consumption is influenced more by product availability when consumers experience chronic resource scarcity (Hill et al. 2016a, b; Laran and Salerno 2013).

heightened arousal (Zhu and Ratner 2015). For example, in one study, participants reported higher levels of arousal when gift cards were described as scarce rather than abundant or when no information about their availability was provided (Zhu and Ratner 2015). Heightened arousal can reduce consumers' capacity to perform cognitive tasks, increasing reliance on automatic processing and peripheral cues (Sanbonmatsu and Kardes 1988).

However, a consumer's initial level of motivation to process information seems to moderate the effect of product scarcity on information processing. When motivation to process information is high, an increase in arousal due to product scarcity constrains the ability to process information, leading to more heuristic processing (Suri et al. 2007). For example, when products are scarce consumers may be more likely to make price-quality inferences (i.e., assuming that higher-priced products are also higher in quality; Suri et al. 2007). In contrast, when motivation to process information is low, the increase in arousal due to product scarcity increases consumers' attention to task-relevant cues, leading to more systematic processing (Brannon and Brock 2001; Inman et al. 1997). For example, Inman et al. (1997) observed that quantity restrictions on discounted products increased purchase intentions most strongly for consumers whose motivation to process information was low, as measured by low need for cognition (NFC). The authors suggest that this occurs because product quantity restrictions prompt consumers to devote cognitive resources to evaluating the offer. Thus, whether product scarcity increases or decreases consumer elaboration and attention to strong arguments may vary as a function of consumers' pre-existing motivation to process information.

An interesting application of these findings relates to the use of scarcity persuasion tactics by online retailers. For example, online retailers might provide a countdown clock tracking the end of a promotion, display the number of consumers simultaneously looking at the same offering, and/or indicate the number of units still available for sale at a given price (as on Expedia.com). For consumers browsing these websites with low motivation to purchase, such tactics are likely to increase arousal and elaboration, making consumers more focused on differentiating attributes of the product. In contrast, for consumers already highly motivated to purchase the product, arousal induced by scarcity tactics may increase reliance on heuristics, such as price-quality inferences.

Resource scarcity Consumers often experience short-term resource scarcity, whether this is due to feeling financially strained due to an unforeseen expense or having less spare time due to a heavier work load. When a resource is scarce, consumers tend to shift attention to the resource that is scarce (i.e., tunneling) and away from other resources (Mullainathan and Shafir 2013; Zhu et al. 2018). For example, participants who had a limited, rather than an abundant, budget in a multiple-round game tended to borrow more resources for current consumption from future rounds (Shah et al. 2012). Focusing on the demands of each current round, while thinking less about the effects of their behavior on future rounds, resulted in excessive borrowing. Analogously, consumers who cannot buy on credit from traditional retailers may turn to options such as "rent-to-own" stores even when they understand that the interest rates implicit in these deals are unfavorable (Hill et al. 1998). In the short-term, because resource scarcity focuses consumers' attention on their most pressing current needs, longer-term goals such as saving may be crowded out unless they are made salient in the short-term. One remedy is to employ behavioral "nudges" that make long-term goals more salient. For instance, text message reminders to save money can increase savings rates among the poor (Karlan et al. 2016).

Resource scarcity can also influence the degree to which consumers consider opportunity costs when choosing for current consumption. While consumers do not usually think about opportunity costs unless they are prompted to do so (Frederick et al. 2009), research shows that those who have comparatively limited financial resources think more carefully about tradeoffs and opportunity costs inherent to spending money, because competing expenses and unmet needs are also salient (Spiller 2011; Shah et al. 2015). For example, the cost of a utility bill might be imagined not just in dollars or cents, but also in terms of how it compares to monthly fuel expenses or the cost of groceries.

Despite triggering greater attention to opportunity costs, there is not a clear relationship between resource scarcity and information search. On one hand, the household production model suggests that households with monetary resource scarcity should be willing to invest more time to find good deals (Blattberg et al. 1978; Hoch et al. 1995). On the other hand, as we observe in Stephanie Johnson's store choice, transportation costs may make it difficult for consumers with fewer resources to visit multiple stores to search for the best price (Blattberg et al. 1978).

Consistent with greater attentiveness to opportunity costs in the purchase environment, long-term resource scarcity is associated with an increased monitoring of the social environment. Fewer resources, decreased personal control, and an increased vulnerability to threat (e.g., less safe neighborhoods, job instability and shared housing) prompt higher vigilance of the social environment and greater dependence on others to achieve desired outcomes (Piff et al. 2012), as in the case of Stephanie Johnson (described earlier), who relied on her grandmother for housing. In contrast, individuals with high levels of resources experience higher freedom and control (Kraus et al. 2009), and their lives are relatively buffered from external influences and threat (Johnson and Krueger 2006). Moreover, financially resource-rich environments are more likely to emphasize individuality and value personal

accomplishments and talents (Lareau 2002). This confluence of increased freedom and control, greater independence, and reduced reliance on others, as in Courtney Smith's decision journey, shifts consumers with more resources in an individualistic direction, giving rise to self-focused patterns of social cognition and behavior and heightened attention to the individual, independent self (Piff et al. 2010).

Interaction between product and resource scarcity All consumers face product scarcity at various times in their lives due to choice restrictions such as stock-outs, government interventions (e.g., no alcohol sales on Sundays), and other such impediments (e.g., geographic locations that have limited markets; see Botti et al. 2008). Unfortunately, though, consumers who experience resource scarcity (e.g., financial deprivation) also tend to experience product scarcity more frequently. Retailers may choose not to operate in low-income areas due to high operating costs, leading to product scarcity both at the category and variety level (Andreasen 1993). When consumers feel that they are barred from the marketplace either because of income deficits or personal characteristics (e.g., gender, race, ethnicity, age or weight), they may experience heightened negative feelings in response to the unavailability of products, services or resources (Bone et al. 2014). Notably, research suggests that the joint effect of experiencing resource scarcity (e.g., personal financial deprivation) and product scarcity (e.g., confronting a limited set of options to choose in the marketplace) leads to diminished self-esteem and reduced self-autonomy (Bone et al. 2014).

Stage 2: Evaluation of alternatives

Next, we discuss the effects of product scarcity and resource scarcity on the next stage of the consumer's journey: evaluation of alternatives.

Product scarcity Prior work has shown that perceived product scarcity changes the inferences consumers make about products and, consequently, their evaluations of these products. "Exclusive" offers and other scarcity primes have long been used as marketing tactics to make alternatives seem more desirable (Cialdini 1993). Moreover, such tactics are often effective: product scarcity can increase both the perceived value of and demand for products (Brock 1968; Gierl and Huettl 2010; Inman et al. 1997; Parker and Lehmann 2011; Sevilla and Redden 2014; Van Herpen et al. 2009).

However, an important moderator of the effect of product scarcity on product evaluations is the inferences consumers make about *why* the product is scarce. For example, product scarcity may be due to excessive demand or to restricted supply (Roy and Sharma 2015; Van Herpen et al. 2009). If a product is scarce due to excessive demand, consumers are likely to infer that product is more popular (Roy and Sharma 2015). In contrast, if a product is scarce due to restricted supply (e.g., limited editions), it may be inferred to be of higher quality (Lynn 1991) and/or to confer higher status (Gierl and Huettl 2010). Although inferences that a product is exclusive due to restrictions in supply may increase consumers' willingness to pay (Roy and Sharma 2015), inferences that a product is scarce due to higher demand may not. Indeed, higher customer density in retail spaces (which presumably signals high product demand) tends to reduce consumers' willingness to pay for products because consumers ascribe lower social status to other consumers in higher density social settings (O'Guinn et al. 2014). Moreover, the effects of product scarcity on perceived value may depend on the product's suitability for enhancing the consumer's status via conspicuous consumption (Gierl and Huettl 2010). Specifically, if consuming the product provides social signaling benefits (e.g., driving a luxury car), product scarcity due to limited supply (vs. high demand) increases consumers' preferences. In contrast, if consuming the product does not provide social signaling benefits (e.g., consuming cookies), product scarcity due to high demand (vs. limited supply) results in more favorable product evaluations (Gierl and Huettl 2010).

Further, inferences about exclusivity versus popularity from product scarcity may be given different weights in decision making depending on the purchase context. For example, the relative importance of exclusivity versus popularity may differ based on whether the product is being purchased for oneself or others (e.g., as a gift; Wu and Lee 2016). When a product is being purchased for oneself, exclusivity is valued more (i.e., scarcity due to supply), but when a product is being purchased for someone else, popularity is valued more (i.e., scarcity due to demand; Wu and Lee 2016). The relative importance of exclusivity versus popularity also may differ based on perceived danger in the environment. While product scarcity due to limited supply often makes products seem more exclusive, increasing their desirability, fear primes can make such scarcity appeals less persuasive (Griskevicius et al. 2009). Cast within an evolutionary perspective, this may be because it is unappealing to stand out from the crowd by using an exclusive, distinct product when there is danger (e.g., when a predator is near). This suggests a clear application for advertising. In fear-inducing contexts, such as when watching a crime drama, advertising should avoid product scarcity appeals that emphasize supply-side scarcity (i.e., exclusivity) because people in these contexts are seeking to avoid being distinctive. By contrast, in romance-inducing contexts, such as when watching a romantic comedy, advertising appeals should focus on product scarcity appeals that emphasize supply-side scarcity because people in these contexts seek to stand out from the crowd (Griskevicius et al. 2009).

Because consumers make different inferences about the desirability of products based on whether product scarcity is due to restricted supply versus high demand, marketers should

be attentive to the specific cues they are sending about why products are scarce. When a product outsells the inventory in retail stores, do consumers infer that the product is limited edition/low production, or that demand is much higher than predicted? When consumers desire exclusivity, offering a limited edition product increases consumers' willingness to pay only if the brand is perceived to be high quality relative to the competition (Balachander and Stock 2009). Notably, consumers tend to infer both that product scarcity increases the value of a product and that high value products are scarce (Dai et al. 2008), suggesting that they overgeneralize the relationship between value and scarcity.

In addition to cognitive inferences, product scarcity can also trigger affective responses. Product variety scarcity (i.e., stock-out of a desired brand) can intensify affective responses, making judgments of positive (negative) evaluative targets more positive (negative). For example, consumers may experience reactance in response to a stock-out, increasing their evaluations of initially chosen alternatives, especially if the stock-out is perceived to be personally directed (Fitzsimons 2000). A scarcity of items in a product category tends to increase desire for the most-preferred item in the product category and reduce desire for the less-preferred, resulting in more polarized preferences (Zhu and Ratner 2015). Polarization occurs because, as discussed, scarcity induces arousal (Brehm 1966; Cialdini 1993), which polarizes subsequent judgments of evaluative targets by reducing attentional capacity. These effects of product scarcity on preference may have adverse consequences for consumer satisfaction when consumers might benefit from more varied consumption, as in the domain of food.

Resource scarcity As a result of the attentional narrowing and tunneling effects described in Stage 1, resource scarcity continues to have significant effects on the second stage of the consumer decision journey, reducing the effects of external cues on consumers' evaluation of alternatives. Focusing on a scarce resource, such as money, can lead people to spend more carefully, and focus more on their highest priority needs (Shah et al. 2012), making them less susceptible to some deceptive pricing strategies. For example, low-income consumers respond more negatively to quantity surcharges (Binkley and Bejnarowicz 2003), and "hidden" taxes that are not included in the posted price but added at the cash register (Goldin and Homonoff 2013). Research also shows that resource-deprived consumers are less susceptible than resource-rich consumers to the descriptions in Thaler's (1985) classic beer on the beach scenario, showing less difference in willingness to pay based on whether the beer is imagined to come from a fancy resort hotel or a run-down grocery store (Shah et al. 2015).

Scarcity of financial resources has also been shown to increase consumers' concern about the lasting utility of their purchases, and consequently increase their preference for material goods over experiences (Tully et al. 2015). Materialism is the perceived importance of material goods as a way to reach desired end states, including happiness (Richins and Dawson 1992). Studies have consistently shown that materialism is negatively associated with income in adults (e.g., Richins and Dawson 1992; Rindfleisch et al. 1997) as well as youth (Chaplin et al. 2014; McLanahan and Booth 1989). Impoverished adolescents (ages 11–13 and 16–17) tend to focus more on material goods when communicating what is important to them and have lower levels of self-esteem than their wealthier peers (Chaplin et al. 2014).[1] Although a strong relationship between self-esteem and materialism has also been reported with children (Chaplin and John 2007), feelings of self-esteem tend to drop during adolescence, especially for impoverished consumers, leading to heightened levels of materialism (Chaplin et al. 2014). Adolescence is often a turbulent time, with more parent-child conflict, problems fitting in with peers, and lower levels of self-esteem, regardless of level of affluence. Moreover, the decrease in parental support and involvement that often comes with economic hardship greatly affects youngsters' self-esteem (Bolger et al. 1995; Chaplin and John 2010). Because adolescents living in families with economic hardship often experience multiple sources of diminished self-esteem (e.g., adolescent insecurity, economic hardship and decreased parental involvement), impoverished teens may feel marginalized or dehumanized and "fight back" through material displays (Ozanne et al. 1998).

One implication of the finding that resource scarcity increases the desire for material goods and exclusive products is that consumers experiencing resource scarcity (e.g., the financially deprived) may be a better market for status goods than their income levels would suggest. Clearly, this raises ethical questions about targeting. Fortunately, self-esteem can be built in several ways outside of material consumption, such as by encouraging consumers to think about their positive characteristics and setting up environments where they can find and acknowledge their talents (Chaplin and John 2007; Chaplin et al. 2014). In more affluent environments, self-esteem is often built through extracurricular activities, including sports, music, arts, and other interest clubs. In terms of public policy, self-esteem in children experiencing resource scarcity can be increased in various ways such as subsidizing tutoring services and a variety of programs that allow children to explore their talents outside of the academic arena (e.g., sports, music, drama, art, coding), which may then reduce

[1] Although we discuss materialism in the context of evaluation of alternatives, we note that materialism is an individual difference variable that may influence all stages of the decision journey. For instance, materialism can influence the options that people are more likely to consider, the way they process information, the choices they make, and their feelings and actions during the consumption stage.

the emphasis on acquiring material goods to achieve happiness (Chaplin and John 2007).

Interaction between product scarcity and resource scarcity Experiencing resource scarcity can further increase the appeal of scarce and exclusive products, making them even more desirable. In one set of studies, when resources were scarce (i.e., consumers were financially deprived), consumers evaluated exclusive products (defined as those that are scarce because supply is restricted) more favorably than when resources were abundant (Sharma and Alter 2012). After participants either wrote about a time when they felt financially worse off than their peers or a time when they felt neither better nor worse off than their peers, they chose either a Hershey Bar or Twizzler's candy, one of which was abundant and the other of which was scarce. Participants who felt financially deprived were more likely to choose the candy that was scarce if scarcity was due to a supply restriction (giving it exclusivity), and not when scarcity was due to previous high demand. This suggests that when targeting a segment of consumers for whom resources are scarce, approaches that highlight product scarcity may be particularly effective if they associate the product with supply (vs. demand) side scarcity. We qualify this, however, by noting that the level and trajectory of resource scarcity over time may play an important role in such effects; temporarily feeling the subjective sense of being worse off than one's peers (as in this study) and experiencing chronic, objective resource scarcity may have different moderating effects on the appeal of product scarcity in its different forms, making this an important area for future research.

Stage 3: Choice

In this section, we discuss the effects of product scarcity and resource scarcity on consumers' choices among alternatives.

Product scarcity Consumers experience product scarcity in a variety of ways in the marketplace, such as when a desired product is sold-out, when they shop with retailers that carry limited assortments, and/or when they live in geographic areas that offer limited access to products. Although consumers often believe that more choice is better, reducing the number of alternatives to consider can reduce choice difficulty (Iyengar and Lepper 2000). If consumers do not have a high level of commitment to a specific alternative, a reduction in the number of alternatives to consider due to product variety scarcity (e.g., a stockout) may reduce the difficulty of the decision process (Fitzsimons 2000) and prevent choice overload (Iyengar and Lepper 2000). However, if they are committed to an alternative, consumers may have a negative affective response if access to that product is threatened. For example, consumers may exhibit reactance in response to perceived choice restriction (Brehm 1966), which can increase the perceived desirability of the product and reduce the consumer's satisfaction with the decision process and retailer (Fitzsimons 2000). Product scarcity also may increase competitiveness and aggression (Kristofferson et al. 2017): when products were promoted as being scarce due to limited quantity, consumers displayed significantly more aggression than when they were not believed to be scarce, exhibiting higher levels of testosterone, choosing more violent video games, shooting more bullets in a video game, and demonstrating physical aggression in response to the jamming of a vending machine.

When confronted with unavailability, an extreme form of product scarcity, consumers may either defer consumption or choose a substitute (Hamilton et al. 2014). For example, when consumers encounter variety scarcity (e.g., a specific brand is unavailable), they may choose another alternative within the product category: if Stephanie finds her son's favorite breakfast cereal out of stock, she could decide to buy another flavor of the same brand or a different brand of cereal. In contrast, if she encounters category scarcity (e.g., there is no cereal in the store), she must postpone her purchase or choose a substitute from a different product category (e.g., breakfast bars). Notably, consumers tend to choose substitutes they perceive as being similar to their initial choice (Arens and Hamilton 2018; Ratneshwar and Shocker 1991) even though more dissimilar alternatives often reduce desire for the unattained alternative more effectively (Arens and Hamilton 2016; Arens and Hamilton 2018). Thus, retailers who want customers to return after encountering a stock-out might be better off encouraging them to choose a dissimilar rather than a similar replacement for the product that is unavailable.

Resource scarcity Consumer researchers have suggested that chronic resource scarcity – specifically, an impoverished early home environment with fewer resources and higher levels of instability and uncertainty – can lead to chronic differences in choice behavior (Griskevicius et al. 2011). For instance, consumers who reported growing up with resource scarcity (e.g. "I felt relatively poor when growing up") reacted to cues of an economic recession by becoming more impulsive and taking greater risks when choosing among alternatives (Griskevicius et al. 2013). In contrast, people who reported growing up with resource abundance (e.g. "I felt relatively wealthy compared to other kids in my school") reacted to the same cues by becoming less impulsive and taking fewer risks. Similar interaction patterns have been found for consumers' sense of control (Mittal and Griskevicius 2014), food consumption (Hill et al. 2016) and risk perception (Mittal and Griskevicius 2016).

Although the ability to delay gratification is associated with many positive outcomes, such as educational attainment and lifetime income (Mischel 2014), *not* delaying gratification may be an adaptive strategy in environments

that are stressful and unpredictable (Ellis et al. 2009; Griskevicius et al. 2011). Because the future is uncertain and delayed rewards may not be available or may never be realized in such environments, it could be considered proactive for individuals to be impulsive rather than delaying gratification. Consider the juvenile felons in one study (Ozanne et al. 1998) who used criminal behaviors (i.e., stealing cars) both to get expensive items they could not afford and to rebuff a society that they believe barred them from access to the material culture. This reaction, "the sneaky thrill," was observed in research with impoverished, incarcerated juveniles and men (see Hill, Cunningham and the Gramercy Gentlemen 2016). Thus, an important moderator of the effects of resource scarcity is consumers' beliefs about whether they will rise above their current situation (Hill and Martin 2014). Consumers experiencing chronic financial deprivation may come to expect less upward mobility over time, feeling that there is little chance for improvement in their economic state in the future (Hill and Martin 2014).

Chronic resource scarcity also seems to encourage consumers to make less selfish choices, which is consistent with consumers' increased monitoring of the social environment described in the initial stage of the journey (Stage 1). Research shows that despite their lower access to economic resources, prosocial behaviors such as charitable giving tend to be more prevalent for lower social class consumers than for higher social class consumers (Piff et al. 2010). For example, when playing a version of the Dictator Game in which participants were given an opportunity to donate points to an anonymous partner, individuals higher in subjective social standing donated fewer of their points than individuals lower in subjective social standing (Piff et al. 2010). A second study found that participants from higher-income households offered fewer minutes of their own time to help their distressed partner in the study than did lower-income participants (Piff et al. 2010). In another study, children from lower-income families donated more prize tokens to an anonymous sick child than those from upper-income households (Miller et al. 2015).

Notably, reputational concerns seem to moderate the relationship between resource scarcity and the tendency towards generosity (vs. selfishness). When participants believed their behavior would be anonymous, lower-income individuals were more generous than their higher-income peers, but when participants believed that their identities would be revealed to the recipient of their generosity, higher-income individuals were more generous than lower-income individuals (Kraus and Callaghan 2016). Similarly, when students at a selective university were exposed to scarcity cues, their competitive orientation increased and they were less likely to donate money to charity than when they were not exposed to scarcity cues. However, this pattern of results reversed when the choice to help others by donating to charity was explicitly linked to benefits for the self (Roux et al. 2015). These findings suggest that the generosity of resource-rich individuals is partly strategic, and driven by reputational concerns.

Interaction between product scarcity and resource scarcity Although restrictions on choice tend to prompt reactance among consumers who enjoy abundant resources (e.g., Fitzsimons 2000), consumers experiencing resource scarcity seem to show less psychological reactance when they cannot obtain an initially chosen alternative (Snibbe and Markus 2005). Specifically, in one study, participants believed they would be able to choose a pen to take home with them. Low socioeconomic status participants, who were high school (but not college) graduates, were less likely to demonstrate reactance when they could not choose their preferred pen (and the experimenter chose one for them) than high socioeconomic status participants, who were college graduates (Snibbe and Markus 2005).

More generally, low socioeconomic status consumers may be more resilient than high socioeconomic status consumers when making substitution decisions (Thompson et al. 2018). Specifically, consumers who grew up in resource deprived (vs. resource abundant) environments were more likely to wait for their initially desired alternative to become available (i.e., displaying greater patience when the alternative is temporality unavailable), and more likely to shift towards a substitute by devaluing an initially desired alternative (rather than displaying reactance by increasing its value) when this alternative was unattainable.

Stage 4: Consumption experiences

In this section, we discuss the effects of product scarcity and resource scarcity on consumption experiences.

Product scarcity When products can be obtained, product scarcity, whether it is due to high demand or low supply, can decrease quantity consumed but may have favorable effects on consumption enjoyment. When consumers were able to visually assess the remaining quantity of various household products (e.g., cleaning solutions), they used smaller quantities when the product was scarce than abundant (Folkes et al. 1993). In contrast, if a promotion leads to forward buying and a higher quantity is available in the household, consumption tends to increase (Ailawadi and Neslin 1998). This may be because higher inventories give consumers greater flexibility in consuming the product without having to worry about replacing it at high prices (Assunciao and Meyer 1993) or because the products are more salient (e.g., if they are perishable or occupy a prominent place in the pantry; Ailawadi and Neslin 1998).

Although enjoyment tends to decline with repeated consumption due to satiation, product scarcity reduces the degree to which consumers satiate due to repeated consumption of

the same product (Sevilla and Redden 2014). For example, when a variety of grapes was perceived to be scarce rather than widely available, the pattern of reduced enjoyment due to satiation was more gradual as participants consumed more grapes (Sevilla and Redden 2014).

Resource scarcity Resource scarcity often encourages consumers to consume resources more thoughtfully. As suggested by the adage "necessity is the mother of invention," resource scarcity encourages consumers to think beyond the traditional functions of a given product, enhancing product use creativity. Resource scarcity has also been shown to increase savoring when consuming resources (Kurtz 2008; Quoidbach et al. 2015).

Evidence suggests that resource scarcity encourages creativity in product use whether it is situationally primed or chronic. Research has shown that priming resource scarcity seems to reduce functional fixedness in subsequent product usage contexts (Mehta and Zhu 2016). Consistently, qualitative research shows that subsistence consumers living in poverty tend to engage in innovative behaviors with high frequency and intensity (Hill 2001; Rosa et al. 2012). For example, consumers may combine a variety of different ingredients and materials to make products (e.g., mixing animal fat from kitchen scraps with purchased ingredients to make soup), adapt products from one domain (e.g., kitchen foil) to another domain (e.g., wallpaper), or prolong the use of a product that no longer functions the way it was originally intended to function (e.g., using a broken step stool as a bookshelf). One implication of this finding is that resource scarcity might encourage consumers to make within- and across-category substitutions. This suggests that the substitution bias in the Consumer Price Index, defined as the tendency for the index to overstate inflation by not accounting for consumers' tendency to substitute one good for another when the price of the good they normally buy increases, may be particularly high for consumers experiencing resource scarcity.

Another interesting effect of resource scarcity on consumption experiences relates to savoring, or the ability to prolong and enhance a positive emotional experience. For example, consumers who had visited few countries in the past were more likely to savor a trip to a pleasant but ordinary tourist location than those who were more well-traveled (Quoidbach et al. 2015). A scarcity of time seems to produce similar effects. College seniors savored their college experience more when they were encouraged to feel that they had little time (vs. lots of time) left to enjoy it (Kurtz 2008). Experiencing resource scarcity (vs. abundance) seems to direct consumers' attention during an experience, which is critical for savoring.

Interaction between product scarcity and resource scarcity Chronic resource scarcity, such as experiencing conditions typical of low socioeconomic status during childhood, promotes behaviors that are adapted to surviving in unpredictable environments. Food consumption is one of several behaviors that research on life-history theory has examined (Hill et al. 2016a, b; Laran and Salerno 2013). Because low socioeconomic status environments are typically characterized by a diminished access to resources and a higher incidence of food shortages, it is adaptive for individuals to eat when food is available even in the absence of hunger. Previous research shows that consumers who grew up in high socioeconomic status environments regulate food intake according to immediate physiological needs (Hill et al. 2016a, b). In contrast, for consumers who grew up in low socioeconomic environments, food intake is guided primarily by availability of food, such that they consume relatively high numbers of calories irrespective of their energy needs when food is available (Hill et al. 2016a, b; Laran and Salerno 2013). Interestingly, these studies suggest that early exposure to resource scarcity (childhood socioeconomic status) may increase the effect of food availability (and scarcity) on food consumption. In future research, it will be interesting to examine whether resource scarcity reduces consumers' sensitivity to the effects of promotion on consumption, as it reduces the effects of context effects (Shah et al. 2015), or whether it increases the effect of promotion on consumption due to greater responsiveness of consumption to product availability, as shown by Hill and colleagues (Hill et al. 2016a, b).

Opportunities for future research

For the purposes of organizing this review, we distinguished between product and resource scarcity and we divided the effects of product scarcity and resource scarcity into four distinct stages of the consumer decision journey. In this section, we discuss similarities and differences in their effects as well as persistence across stages of the consumer decision journey. We also discuss the generalizability of extant research on product and resource scarcity.

Do product and resource scarcity have different effects on consumer decision journeys?

As discussed earlier, it is possible to think of products as resources: because products have value, they can be used to barter for other products; products (such as tools) can be used to make other products. If, from the consumer's perspective, products and resources are fundamentally the same, we should observe similar effects of product and resource scarcity on consumer decision journeys. In support of this, our review of the literature did identify important similarities in the effects of product and resource scarcity. During the stage of evaluating alternatives, product scarcity increases the perceived value of products, just as resource scarcity increases the perceived

value of resources. During consumption, both product and resource scarcity can have positive consequences, increasing product consumption enjoyment and increasing the efficiency with which resources are consumed. Making products seem scarce, whether by positioning them as available only for a limited time, tends to make the consumption experience more pleasurable. Similarly, when resources are perceived to be scarce, consumers become more creative, increasing the efficiency of resource consumption.

However, the research also documents important differences in terms of the consequences of product and resource scarcity. Although both attract the consumer's attention (to the product and the resource respectively) in the earliest stage of the consumer decision journey, when consumers are identifying which alternatives to consider, attention to products versus resources has different implications for consumer behavior. Product scarcity tends to attract the consumer's attention to specific products that are in short supply or high demand, while resource scarcity attracts the consumer's attention to the resource that is scarce, increasing the efficiency with which the resource is used (Shah et al. 2012). Thus, while marketing tactics such as limited edition of products, restricting order size, using exclusive distribution (Lynn 1991), and restricting the timing of sales (Brannon and Brock 2001) promote interest in specific products (Howard et al. 2007), resource scarcity tends to reduce the effectiveness of such tactics on product evaluations (Shah et al. 2015).

Notably, product scarcity and resource scarcity have distinct effects on the breadth of alternatives consumers consider. Product scarcity tends to narrow consideration sets, either by reducing the number of alternatives available for consideration or by polarizing consumers' preferences (e.g., encouraging consumers to form less varied consideration sets; Zhu and Ratner 2015). In contrast, resource scarcity tends to broaden consideration sets by prompting consumers to consider a wider range of creative substitutes (Hill et al. 1998). During choice, product scarcity can reduce the difficulty of choosing among alternatives by narrowing the choice set, while resource scarcity can increase willingness to choose substitutes, which may increase choice difficulty.

Second, the consequences of short-term versus long-term scarcity are more pronounced for resources than for products. Over time, product scarcity may reinforce a higher perceived value for a scarce product, but current research does not suggest that the time horizon changes the scope of the effect. In contrast, long-term or chronic resource scarcity can shape the consumer's interactions with his or her environment and lead to stable individual differences. Unlike short-term resource scarcity, chronic resource scarcity can influence the consumer's willingness to delay gratification (Griskevicius et al. 2013) and the relative focus on benefits for the self versus others (Piff et al. 2012). Further, if chronic resource scarcity is experienced during key developmental periods, such as during childhood, its effects may be detected years later even when resources are no longer scarce.

The effects of resource scarcity on consumer decision journeys can be far reaching, affecting not only the decision-making process and its outcomes, but also more distal variables, such as interpersonal relationships. For example, resource scarcity affects the degree to which consumers must rely on one another and hence it can shape interpersonal interactions. Product scarcity affects evaluations of the product, but as of yet, evidence does not suggest that product scarcity affects long-term interpersonal relationships. Resource scarcity also appears to affect intrapersonal variables such as one's sense of self, via self-efficacy and self-esteem, especially when combined with product scarcity, as discussed earlier. In sum, while both resource scarcity and product scarcity prompt adaptations in decision making, research to-date suggests that the ramifications of resource scarcity have a wider scope.

Do the effects of product and resource scarcity persist across stages?

Although we have examined four distinct stages of the consumer decision journey in our review, the effects of product scarcity and resource scarcity are complex and outcomes at one stage are likely to influence subsequent stages of the consumer's decision journey. We encourage future research to examine these carryover effects. For example, product scarcity can decrease choice difficulty during several stages of the consumer decision journey. Even before the stage of initial consideration, product scarcity may decrease choice difficulty by eliminating alternatives from consideration. If consumers are unaware of alternatives, they cannot be considered. Further, there may be a carryover effect as the size and variety of choice sets created in Stage 1 affects evaluations in Stage 2, which, in turn, affects ease of making a choice in Stage 3. In Stage 1 (Information processing and initial consideration), consumers respond to product scarcity by increasing their reliance on automatic processing and heuristics. These responses have a strong connection to the effects noted for Stage 2 (Evaluation of alternatives), as consumers respond to product scarcity by devising simpler rules to evaluate products, increasing their desire for the most preferred item, valuing exclusivity when purchasing for themselves, and valuing popularity when purchasing for others. Finally, ease of making decisions in Stage 3 (Choice) may be increased as product scarcity narrows the choice set.

Similarly, with respect to resource scarcity, greater focus on the resource that is scarce may have continuing effects across stages of the decision journey. In Stage 1 (Information processing and initial consideration), consumers respond by focusing their attention on the scarce resource. This attention narrowing response affects all subsequent stages of the consumer decision journey. In Stage 2 (Evaluation of alternatives), consumers may

become less vulnerable to context effects, more focused on opportunity costs, and place greater value on material objects. In Stage 3 (Choice), focusing on scarce resources may lead to more careful and efficient spending. In Stage 4 (Consumption experiences), focusing on scarce resources may translate into greater creativity in product usage and increased savoring. However, it is also possible that the heightened salience of opportunity costs during earlier stages of the decision journey may have a negative impact during the consumption stage by reminding consumers of alternatives that had to be forgone. Future research should investigate the conditions under which resource scarcity may have positive or negative effects on consumer emotions during consumption.

Another interesting question is how scarcity might affect a consumer's progression across stages of the consumer decision journey. As mentioned earlier, both product and resource scarcity may end the consumer decision journey before it begins if consumers who have limited resources do not consider the option to fulfill their needs through the consumption of products. Or, scarcity could cut the journey short if consumers realize, after evaluating alternatives, that they cannot afford any of them, or if they learn that the ones they like best are unavailable. Future research examining the effects of scarcity on the consumer's movement through the stages of the consumer decision journey would be valuable for advancing the broader understanding of the consequences of scarcity on consumer decision making.

A related question worth exploring is how the effects of resource and product scarcity might change over time as a function of life experiences. Research suggests that childhood may be a critical period for shaping both consumer responses to resource scarcity (e.g., Griskevicius et al. 2013) and product scarcity (Thompson et al. 2018). Further, life experiences such as changes in labor force participation, marriage and divorce, and illness are systematically related to changes in the availability of resources over time. It would be fruitful to examine the psychological and social psychological consequences of starting out with more (vs. less) resource scarcity and then experiencing relative restriction (vs. abundance) later in life. For example, when heterosexual couples divorce, many men experience a subsequent increase in monetary resources whereas many women experience comparative resource scarcity (Cunha 2016). Given the frequency with which consumers encounter such life experiences, research examining how changes in scarcity over time affect consumer decision journeys could provide a more nuanced understanding of the effects of scarcity on consumer behavior.

How generalizable are the effects?

Given the relatively limited research on scarcity that has been conducted to date, another important topic for future research is the degree to which the effects we have identified are generalizable across measures, types of resources, levels of analysis, length of exposure and causes of scarcity. There are several interesting questions for future research related to the generalizability of the effects of product and resource scarcity on consumer behavior.

One important limitation in our ability to draw conclusions from previous work examining resource scarcity is that the construct has been operationalized in a variety of ways. Some researchers have used absolute measures (e.g., educational attainment, household income) while others have relied upon subjective relative measures (e.g., perceived social class). It remains unclear whether systematic differences are robust to measuring resource scarcity using absolute, relative or subjective metrics. Existing research suggests that interventions or measures that include a relative dimension (i.e., one's level of resources in relation to others) can shift consumers from selfish to more prosocial behavior. Priming tasks that make consumers think about scarce resources without a social dimension trigger a competitive orientation, increasing focus on one's own welfare (Roux et al. 2015). In contrast, more socially embedded manipulations, such as asking consumers to think about how they rank relative to others in terms of social class, increase focus on others and lead to more prosocial behavior (Piff et al. 2010). This suggests that the absence versus presence of social comparisons may be a critical factor in predicting whether resource scarcity triggers self-oriented or other-oriented patterns of cognition and behavior. Future research should formally test whether resource scarcity fosters greater orientation towards others only when social comparisons are evoked.

Moreover, much of the existing work on resource scarcity in the fields of psychology and marketing has been conducted among populations who may have limited resources by Western standards but have not experienced severe economic deprivation (i.e., resource scarcity that threatens their basic survival needs). Cultural underpinnings and material circumstances of poverty vary greatly across the world, making it difficult to generalize findings to populations with varying levels of product and resource scarcity. Many populations that researchers have studied have relatively homogeneous levels of resources (e.g., college students), yet variations in the level of resource scarcity may attenuate or even reverse certain effects. For example, while low socioeconomic status generally predicts more interdependence than high socioeconomic status (Markus and Conner 2013; Snibbe and Markus 2005), women living in poverty (i.e., very low socioeconomic status) may have fewer social connections than working class women (i.e., moderately low socioeconomic status; Stephens et al. 2014).

Studying consumers with a wide range of resources can be challenging. In particular, gaining access to consumers who

experience severe resource scarcity may be difficult and require researchers to use creative recruitment strategies. Finding a local sponsor, such as a church pastor or school principal interested in giving voice to their constituencies in exchange for donations can be helpful. Another tactic is for researchers to take a locally-appropriate role such as community volunteer (e.g., tutor, baby-sitter) and use ethnographic methodologies like participant observation and long interviews (see Hill et al. 2016a). Gaining access to consumers experiencing resource scarcity in developing markets, in which the percentage of the population living in poverty is likely to be higher, is even more difficult, expensive and time consuming. Some scholars have developed relationships with universities and community groups to provide data collection opportunities (Viswanathan et al. 2010). Another alternative is to use large, secondary datasets gathered by non-governmental organizations (NGOs) and affiliated institutions. For example, the United Nations collects information on consumptive lives in most nations of the world, and these data can be combined with data from other sources to inform longitudinal examinations across developed and developing markets (see Hill and Martin 2012).

A related limitation of the existing knowledge on resource scarcity is that it is unclear whether scarcity of different resources (e.g., money vs. time) differentially affects consumer decision journeys, and whether there are compounding, interactive effects of experiencing scarcity across different resources (e.g., being both money poor and time poor). For example, recent work shows that time scarcity may be weighted more heavily than money scarcity when consumers compute the value of their time (Monga et al. 2017) and that time scarcity can lead people to choose unimportant tasks with lower monetary payoffs over important ones with higher payoffs (Zhu et al. forthcoming). However, research suggests that time scarcity may lead to positive rather than negative inferences about a consumer's social status (Bellezza et al. 2017). While income is the most common indicator of resource scarcity employed by researchers (see Cannon et al. 2018 for discussion), future research should explore the development of broader metrics including non-monetary resource scarcity.

Another limitation is that there has been very little research comparing the effects of product or resource scarcity at the level of the individual versus broader social groups. Consumers may react differently to experiencing product scarcity at the individual level (e.g., a product is not available to me) versus the group level (e.g., a product is not available to an entire geographic area). It is possible that when product scarcity is applicable to a broader collective, consumers may infer that uncontrollable forces are at play (e.g., natural disasters), and psychological reactance may not emerge, whereas if scarcity is attributed to unequal or unjust resource distribution, it is more likely to emerge (Baker 2009). For example, if consumers believe that their community experiences product scarcity as a result of deliberate decisions of companies not to serve a particular group of consumers, psychological reactance may be stronger than when a consumer is confronted with product scarcity at the individual level. After disaster relief interventions, "underfulfillment of needs and insufficient resource distribution are common grievances and sources of real or perceived injustice" (Baker 2009).

Another important topic for future research relates to the length of exposure to product and resource scarcity. Specifically, how does experiencing more temporary versus permanent, or more localized versus systemic product or resource scarcity impact the decision journey? As discussed, differences in chronic traits probably only emerge as a result of scarcity when consumers have long-term, repeated exposure to environments of product and/or resource scarcity. However, these individual differences fostered by exposure to scarcity (e.g., materialism, self-esteem, creativity) are likely to shape every stage of the consumer decision journey and may work in a bidirectional manner. For instance, adolescents who grow up in impoverished communities are more likely to score high in materialism, as discussed. Because such individuals place a high value on material possessions, they may be more predisposed to notice and experience product scarcity, which reinforces a materialistic self-concept.

Finally, it is interesting to consider how the perceived cause of scarcity affects consumers' responses. If product or resource scarcity is self-imposed, for example if a consumer moved to a rural area with comparative product scarcity by choice or chose to operate on a limited budget to save for a major purchase, scarcity may evoke different responses across the stages of the decision journey. For instance, if a consumer knowingly purchases a smaller package of a snack food with the goal to exercise portion control (Wertenbroch 1998), the consumer may savor the snack food more and consume it more slowly. In contrast, if product scarcity is attributed to external causes, such as when the consumer purchases a smaller package because it is the only one left on the shelf, the consumer might feel reactance and enjoy it less.

Implications of product and resource scarcity for consumer-based strategy

In this section, we summarize several implications of product and resource scarcity for developing consumer-based strategies, including marketing strategy (segmentation, targeting and positioning), marketing tactics (marketing communications, pricing and customer relationship management), and public policy.

Segmentation and targeting

To the extent that chronic effects of resource scarcity translate into lasting individual differences in consumer decision making, they generate important implications for segmentation and targeting. The negative effects of chronic resource scarcity on self-esteem, particularly among teens, suggest that consumers experiencing resource scarcity are more likely to use materialism as a compensatory mechanism to boost self-esteem and may be a more effective target for status goods than their income levels would suggest. Clearly, targeting this segment clearly raises ethical questions; those interested in marketing for the social good can sponsor alternative mechanisms to enhance self-esteem, such as after-school programs in underfunded schools and foundations (e.g., Dove's Self-Esteem Project, Always #LikeAGirl).

Long-term resource scarcity can also be used to target segments of consumers based on their risk preferences. Notably, the childhood socioeconomic status of consumers can be highly predictive of adult decision making under certain conditions (Mittal and Griskevicius 2016). Research suggests that when people from low socioeconomic status backgrounds are provided with probability figures or base rates of being affected by health risks, they become more motivated to take precautionary actions again the risks (e.g., by buying insurance) than when they learn the consequences of the diseases (Mittal and Griskevicius 2016). Thus, highlighting the chances of being affected by health risks rather than the consequences of being affected might be a better way to nudge people from poorer backgrounds to take precautionary actions.

Positioning

Clearly, consumers' inferences about why a product is scarce (e.g., due to limited production vs. popularity) matter. Emphasizing uniqueness may make products more attractive to affluent consumers, whereas emphasizing popularity may make products more attractive to impoverished consumers (Sharma and Alter 2012). For instance, when given a choice between pens that were more or less unique, upper-class consumers were more likely to choose pens that were different from other pens in the set, whereas lower-class consumers tended to prefer pens that were similar to the other pens (Stephens et al. 2007). Yet, it is worth noting that consumers might make negative inferences if they believe scarcity is artificial (e.g., a company deliberately limits supply) rather than organic (e.g., the company genuinely cannot keep up production to meet demand). If consumers perceive scarcity as artificial, they might still value the scarce product more highly. But they might feel that the company is manipulating consumer tastes, and therefore judge the company more harshly. If this is the case, then consumers may not be particularly loyal to the company, and preferences for the product might prove less robust over time.

If consumers experiencing resource scarcity do not expect their resources to improve over time (Hill and Martin 2014), they may be more likely to spend on goods and services now rather than saving up for larger purchases. Thus, products positioned as affordable indulgences (e.g., Starbucks coffee or a lipstick) may be particularly attractive to resource-constrained consumers (Hill et al. 2012).

Marketing communications

The attention-focusing effect of resource scarcity can influence which marketing appeals are most effective. Because consumers experiencing resource scarcity tend to devote their limited resources to addressing current and pressing needs, they may be less likely to spend on preventative maintenance if they cannot see a clear and quantifiable benefit of doing so. However, communications that attract consumers' attention by clearly emphasizing the costs of not engaging in maintenance – such as avoiding a very large potential outlay due to damage or loss (as in the case of product warranties) – may be effective in shifting spending. Marketing communications can also be used to attract consumers' attention to important goals. For example, when money is scarce, savings goals might be overlooked, and reminders to save money may significantly increase savings rates among the poor (Karlan et al. 2016). However, while these interventions may be effective in the short term, more systematic changes may be needed to prevent consumers from reverting back to focusing on current needs (see Karlan et al. 2018).

Moreover, resource scarcity can influence the effectiveness of appeals focusing on oneself or others. Whereas consumers experiencing resource scarcity, like Stephanie Johnson, are likely to respond more favorably to appeals focusing on the need for help or on shared goals (e.g., what all of us can do together to help), affluent consumers like Courtney Smith are likely to respond more favorably to appeals focusing on self-benefit of helping, such as the "warm glow" of giving or other self-relevant personal goals (e.g., helping others helps the self; Roux et al. 2015; Whillans et al. 2017). For example, sustainable products such as solar panels can be positioned around the benefits they offer society or the benefits they offer the self, based on the same technical features (e.g., energy savings; Goldsmith et al. 2016). One ethical issue to consider is whether it is appropriate for firms to use different appeals for consumers based on their level of resources. For instance, Facebook is now developing algorithms that would allow their data scientists to estimate their users' socioeconomic status based on factors such as their education, travel history and number of devices owned; this would allow them to target them with different advertisements as a function of

socioeconomic status (see Hart 2018). We will return to this issue in our discussion of public policy.

Pricing

Companies may price the same good or service differently when it is scarce, and pricing policies may allow consumers to trade one resource for another. For instance, ride sharing services charge "surge prices" during peak times, but consumers who are willing to wait for a ride can avoid the surge and pay a lower fare. Similarly, some companies allow consumers to use their social capital to acquire goods and services (e.g., Amazon Vine). These different payment options (e.g., paying in time vs. money vs. social connections) allow consumers who experience scarcity of one resource to acquire the same goods and services by spending a different resource. However, these practices should be employed cautiously as research has shown that consumers often respond negatively when they perceive a firm as charging different prices to different groups (e.g., Shaddy and Shah forthcoming).

Because consumers who experience resource scarcity of money are more sensitive to opportunity costs than affluent consumers, they may scrutinize deals more carefully, making them less susceptible to quantity surcharges (Binkley and Bejnarowicz 2003), "hidden" fees that are not included in the posted price (Goldin and Homonoff 2013) and other price presentation effects. Similarly, consumers who experience a scarcity of money may be less susceptible to some context or framing effects, such that willingness to pay for items might be more stable for poorer consumers than wealthier consumers (Shah et al. 2015). That said, because consumers who experience scarcity of money tend to focus more on opportunity costs than affluent consumers, pricing formats that effectively communicate opportunity costs may have a significant effect on behavior. For example, one study compared two ways of explaining the costs of payday loans: either as interest rates (over 1–2 weeks) or as a dollar amount. Communicating costs as a dollar amount reduced adoption of payday loans, perhaps because the dollar amount allowed consumers to more easily imagine opportunity costs of borrowing (Bertrand and Morse 2011).

Customer relationship management

Consumers for whom resources are chronically scarce draw on a different set of past experiences and they may bring different expectations to their interactions with service providers than more resource-affluent consumers. Research linking experiences of economic deprivation to a heightened focus on others suggests that affluent consumers score higher on measures of psychological entitlement (e.g., "I feel I am more deserving than others") and narcissism (i.e., a generally inflated view of the self and dominant orientation to others; Campbell et al. 2004; Piff 2014). One implication of this finding is that consumers who experience chronic monetary resource scarcity may be systematically less likely to voice complaints following poor service than comparatively affluent customers. This intuition accords with recent findings indicating that increased entitlement among higher-income individuals causes them to react more aggressively when they are treated in a way that they perceive to be unfair (Ding et al. 2017). Lower likelihood of voicing dissatisfaction may have systematic negative effects on the quality of the consumption experiences provided to resource-constrained consumers. Likewise, consumers experiencing resource scarcity more frequently experience denial of access to service providers (Bone et al. 2014; Martin and Hill 2015; Wentzel et al. 2013). To encourage participation from all consumers, careful consideration should be given to the design of feedback channels, including the medium (e.g., online, mobile, phone, paper), participation incentives, language, and question format.

Recent research suggests that co-production efforts in which consumers engage with service providers to achieve desired outcomes, such as filling out a health inventory prior to a doctor visit or gathering tax-related documents prior to seeing an accountant, can increase perceived time pressure (Mende et al. 2017), which is a form of resource scarcity. Notably, some stress ("eustress") induced by such co-production activities can improve consumers' evaluations of service outcomes because they become more engaged in the process. Thus, when managing the consumer journey through a service encounter, it is important for service providers to recognize that reducing a customer's workload is not always beneficial. In particular, offering unsolicited support can trigger reactance and block beneficial eustress (Mende et al. 2017).

Finally, the greater level of creativity in consumption that is encouraged by resource scarcity presents both challenges and opportunities for customer relationship management. First, if resource scarcity encourages consumers to be more creative in their consumption, they may be more willing to make within- and across-category substitutions. Thus, marketing efforts to decrease churn and build brand loyalty are particularly important when targeting segments of consumers more likely to be experiencing resource scarcity. Second, consumers experiencing either product or resource scarcity are more likely to use products in unintended and novel ways and adapt products to fulfill their needs. Hence, tapping insights from this segment of consumers may be particularly informative for new product development and brand repositioning efforts.

Public policy and regulation

Given the significant effects of product scarcity on consumer decision journeys, one critical policy question is whether it is legal for marketers to manipulate product scarcity. The

Federal Trade Commission Act of 1914 provides guidelines for marketing practices deemed to be deceptive or not (see Richards and Preston 1992). Whether manipulations of product scarcity meet this standard depends upon the way in which scarcity is presented and whether it is likely to harm consumers. For example, a seller who creates the illusion among potential buyers that prices are rising because of product scarcity while deliberately holding back inventory may be considered deceptive. However, messages describing "standing room only," limited time offers or goods that are selling fast are likely to be viewed as non-deceptive puffery.

Policy is also critical in addressing resource scarcity. Much of the world's population contends with resource scarcity in some form (Martin and Hill 2012). Because resource scarcity is often defined as a lack of economic capital, most social welfare and entitlement programs at the state and federal levels are based on income transfer. A more consumer-based way of looking at the problem is to ensure consumption adequacy (Martin and Hill 2015) rather than a minimum level of income. Consumption adequacy is achieved when consumers have the ability to meet their basic needs for goods and services. Thus, it is important to study how consumers experiencing monetary resource scarcity may use other resources, especially social capital, to make up for consumption deficits due to a lack of economic capital. We know that tradeoffs and substitutions occur regularly among the resource poor (Hill 2001), but whether these modifications to consumption choices are shared within social networks is unclear. It is important to look at the larger role of social connections in the acquisition process and the meanings behind items consumed that may be different from those of more affluent consumers.

Finally, the intersection of product and resource scarcity also creates challenges for policy makers. Consider the case of a good or service that is only available to wealthy consumers (e.g., a product that is only sold in retail outlets located in highly affluent neighborhoods). Poor consumers will therefore experience both product and resource scarcity. In this case, consumers might believe that a company is engaging in redlining (i.e., refusing service to someone deemed a financial risk) or other discriminatory behavior. Redlining occurs in both rural and urban areas. Many communities lack retailers such as banks, restaurants, and grocery chains (Andreasen 1993). Additional obstacles include lack of mobility from places of product scarcity to locations with greater abundance. For example, food delivery services may redline certain neighborhoods, meaning that they do not serve these areas. In fact, affluent neighborhoods may seek to deny easy access from impoverished areas as a way to maintain a more high-class atmosphere (Hill 2010). In the U.S., legislative efforts have attempted to force entities to locate in underserved neighborhoods (e.g., banks), such as the Community Reinvestment Act of 1977, and reduce redlining and discriminatory credit practices against low-income neighborhoods. Specifically, this Act encourages commercial banks and savings associations to help meet the needs of borrowers in all segments of their communities, including low- and moderate-income neighborhoods. Redlining practices can lead to a backlash not only from poor consumers, but wealthy consumers as well, making it a critical managerial concern as well as an ethical one.

Conclusion

In this article, we summarize research examining the independent and joint effects of product scarcity and resource scarcity on the consumer decision journey. Product and resource scarcity both attract the consumer's attention, increase the perceived value of the items being considered and encourage creativity in use. Despite these similarities, product and resource scarcity also have distinct effects. Product scarcity tends to narrow consideration sets, whereas resource scarcity broadens them by encouraging consumers to consider a wider range of alternatives. Resource scarcity (vs. product scarcity) has the potential to generate more significant consequences in the long-term. Over time, product scarcity reinforces the perceived value of a scarce product, but there is no clear evidence that it leads to stable individual differences. In contrast, long-term exposure to resource scarcity can influence willingness to delay gratification, orientation towards others, self-esteem, and materialism, and its effects can be detected years later, even when resources are no longer scarce. In sum, the effects of resource scarcity appear to influence how individuals think and behave on a more global level.

Important questions about how product and resource scarcity influence consumer behavior remain open and we hope that our review stimulates future work on this important topic. We have also highlighted both marketing and public policy implications of product and resource scarcity. Clearly, understanding the similarities and differences between product and resource scarcity as well as their combined effects on consumer decision journeys will be useful to managers and policy makers alike.

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