Out of domain: When and Why Appetitive Stimuli Activate Consumers' Desire for unrelated Rewards

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Out of domain: When and Why Appetitive Stimuli Activate Consumers' Desire for unrelated Rewards

Abstract:

Appetitive stimuli can activate consumers' desire to seek rewards in domains unrelated to the stimuli. For example, viewing pictures of desserts can increase the desire for immediate monetary rewards. Previous research proposed various underlying mechanisms to explain why appetitive stimuli in one domain evoke the desire for rewards in another domain. I identify four main mechanisms: a general reward system, arousal, shift in time perception, and a mating mindset. This literature review is the first to present a comprehensive overview of when and why cross-domain effects do (not) occur. Crucial factors are consumers' sensitivity to rewards, self-control, current mindsets and need states. The characteristics of the stimuli such as the reward value and instrumentality also play an important role. This review further provides promising opportunities for future research.

Keywords: rewards, consumption motivation, out of domain consumption

Track: Consumer Behavior

1. Introduction

In the past two decades, a stream of literature evolved showing that exposure to appetitive stimuli can provoke the desire (motivated behavior) for indulgent consumption and rewards that are unrelated to the appetitive stimuli. This phenomenon can be called "cross-domain" effects (Berger & Shiv, 2011). Previous research showed that various cross-domain effects exist, especially in the domains of food, drinks, money, mating and information. For example, the pleasant smell of fabric freshener can increase consumers' Pepsi consumption (Wadhwa et al., 2008). Similarly, exposure to models in underwear can increase men's impatience for soda pop, money and candy bars (Van Den Bergh et al., 2008). Rewards can be conceptualized as "an object or event that elicits approach and is worked for" (Wise, 2004, p. 2). Similar to rewards, appetitive stimuli are pleasant, and have the ability to satisfy physiological needs (Li, 2008).

Surprisingly, research proposed various underlying mechanisms to explain cross-domain effects. To date, it is still not entirely clear what the driving mechanisms are. Further, it is unclear when cross-domain effects occur and when they do not occur. Therefore, this review investigates when and why appetitive stimuli elicit the desire to seek rewards in unrelated domains and has several objectives. The contribution of this paper is four-fold. First, I provide a comprehensive overview of the current state of literature in the field of cross-domain effects. Second, I categorize previous findings to suggest when cross-domain effects do (not) occur. Third, I identify important previously proposed underlying mechanisms: a general reward system, shift in time perception, arousal, and a mating mindset. Fourth, I offer guidance to untangle the proposed mechanism by separating motivated behavior and cognitive spillover effects. Lastly, I provide promising opportunities for future research.

2. When cross-domain Effects do (not) occur

The obvious question that arises is the following: When do cross-domain effects actually occur and when do they not occur? To investigate when cross-domain effects do (not) occur, I focus on two different aspects. First, when appetitive stimuli do not elicit the desire to seek unrelated rewards in the first place (i.e., boundary conditions), and second, how the desire for unrelated rewards can be mitigated after it has initially been evoked. I elaborate

these two aspects with respect to the characteristics of a stimulus and the current state of consumers.

An appetitive stimulus might not be able to evoke the desire for unrelated rewards in the first place for several reasons.

2.1 Accessibility

The perceived accessibility of a reward is likely to be a determinant. An appetitive stimulus might not trigger an individual to seek unrelated rewards if the stimulus does not sufficiently transmit the affective meaning. For example, research has shown that visual mating cues do not elicit reward-seeking behavior in women (Cloutier et al., 2008). However, touching mating cues such as men's underwear is sufficient to elicit reward-seeking behavior in other domains (Festjens et al., 2014). Hence, close proximity to appetitive stimuli might be necessary to sufficiently transmit the reward value and evoke the desire to seek unrelated rewards.

2.2 Insufficient reward value

The stimulus needs to have reward value to induce a desire to seek further rewards. An aversive stimulus (i.e., without reward value) does not elicit the desire for rewards in the first place. For example, exposure to an unpleasant smell leads to a lower consumption of a tasty drink compared to exposure to a neutral smell. While exposure to a pleasant smell leads to higher consumption of a tasty drink compared to exposure of a neutral smell (Wadhwa et al., 2008). Relatedly, a stimulus might seem to be appetitive but does not have sufficient reward value. Sampling milk chocolate (high reward value) compared to soy chocolate (low reward value) increased the consumption of a rewarding drink (Wadhwa et al., 2008). This example shows that appetitive stimuli need to have sufficient reward value to elicit indulgent consumption.

2.3 Money as instrumental reward

Previous research suggests that appetitive stimuli only affect the desire for monetary rewards when money can be instrumental to fulfill the desire evoked by the stimuli. For example, food stimuli can elicit the desire for money as money is instrumental to buy food (Briers et al., 2006). Further, mating stimuli can increase the preference for smaller and sooner compared to larger and later monetary rewards. Money is instrumental to signal status and attract a mating partner for men (Van Den Bergh et al., 2008). For women, money can be instrumental to signal beauty and health to ultimately attract a mating partner (Festjens et al., 2014).

2.4 Individual differences

A relevant construct is the Behavioral Activation System (BAS) that is associated with reward-seeking behavior. The BAS is responsible for consumers' sensitivity to rewards and can differ extensively between individuals (Carver & White, 1994). Individuals with a high sensitivity to rewards are more likely to respond to appetitive stimuli and engage in indulgent consumption compared to individuals with a low sensitivity to rewards (Berger & Shiv, 2011; Krause et al., 2024).

2.5 Self-control

Another important factor is self-control. Exposure to appetitive stimuli might not evoke the desire to seek rewards when an individual has high self-control and is thus not tempted to indulge. For example, individuals who restrain their eating and have more self-control than individuals who do not restrain their eating show no enhanced desire for food rewards after exposure to a reward stimuli in another domain than food (Briers et al., 2006). Further, curiosity can increase indulgent food choices. However, when believing that willpower to resist temptations is an unlimited resource, this effect does not occur (Wiggin et al., 2019). It is plausible that this believe enhanced self-control so that curiosity had no effect on subsequent reward-seeking behavior.

2.6 Food satiation

Appetitive stimuli might not evoke reward-seeking behavior in another domain if satiated with food. Food satiation might lower the desirability of rewards even when the stimulus and the reward are unrelated to food (Berger & Shiv, 2011). For example, mating stimuli make men prefer smaller and sooner over larger and later monetary rewards. However, this does not apply for men who were satiated with food (Otterbring & Sela, 2020). This finding suggests that being satiated can have an effect on unrelated rewards. Satiation might provide the feeling that no additional resources (rewards) are needed in the current state and thus suppress further acquisition behavior that might be elicited by unrelated stimuli.

2.7 High need state as domain-specific motivation

If a need state is very intense, it is likely that the respective reward or action that can satisfy the need state is highly prioritized (Loewenstein, 1996). As a consequence, other unrelated rewards might not be of interest until a domain-specific need state is satisfied (that cannot be satisfied by a specific behavior in other domains) (Brendl et al., 2003). For example, when an individual is very thirsty the only priority might be to get something to

drink in order to dampen the thirst. In this state, other rewards unrelated to drinking might be not of interest at all.

2.8 High need state as inhibitory signals

Relatedly, an urgent domain-specific need might not only initiate approach-related behavior, e.g. the need to get a drink when thirsty, but also inhibition-related behavior (Tuk et al., 2011). In contrast to the Behavioral Activation System, which regulates appetitive motivation and activates reward focus, the Behavioral Inhibition System (BIS) regulates aversive motivation with the goal to inhibit behavior that might result in negative outcomes (Gray, 1990). Research showed that visceral factors that activate the BIS, e.g., urination urgency, increase the ability to resist temptations (Tuk et al., 2011).

2.9 Mitigating the desire evoked by appetitive stimuli

Further, an intervention after exposure to appetitive stimuli can mitigate the desire to seek unrelated rewards. This intervention can be again on the level of the stimulus or the consumer. I identified four interventions: the disruption by aversive objects (Wadhwa et al., 2008), unexpected intermediate rewards such as a chocolate bar (Berger & Shiv, 2011), induced feelings of monetary satiation (Van Den Bergh et al., 2008), and reminders of the future self (Li & Zhang, 2014).

3. Underlying Mechanisms

3.1 General reward system

Several authors have proposed the existence of a general reward system in the brain that can be activated by different reward stimuli. Activation of the reward system leads to a nonspecific desire for rewards in general regardless of the domain of the stimulus (Festjens et al., 2014; Van Den Bergh et al., 2008; Wiggin et al., 2019). As a consequence, rewards unrelated to the stimulus can satiate the activated reward system (Berger & Shiv, 2011).

3.2 Arousal

Another mechanism to seek rewards unrelated to the source of the desire seems to be arousal (Biswas et al., 2023). Arousal can be defined as a feeling of activation that can vary from excitement to drowsiness (Mehrabian & Russell, 1974). While elevated arousal initiates a focused attention (Easterbrook, 1959) it also depletes cognitive functioning (Fedorikhin & Patrick, 2010). The limitation of cognitive resources prioritizes short-sighted immediate

indulgence and lowers the resistance to temptations (Loewenstein, 1996). Arousal seems to be a mechanism intertwined with a shift in time perception.

3.3 Shift in time perception

The temporal perception may shift toward the presence for two related reasons. First, appetitive stimuli elicit arousal that shifts attention to the present. Second, the perceived temporal distance towards the future increases and thus decreases the perceived value of future rewards (Kim & Zauberman, 2013). The shift in temporal perception leads to a disconnection of the future self which shifts the focus to the present self while disregarding long-term consequences of current behavior (Li & Zhang, 2014). The value of present rewards thereby increases, making individuals more impatient and impairing the resistance to temptations (Li, 2008).

3.4 Mating mindset

I suggest that the underlying mechanisms for mating stimuli are different compared to other stimuli. Otterbring (2018) proposed that mating cues activate mate attraction motives. In other words, exposure to mating stimuli increases the desire for anything (potentially rewarding) that is useful to attract a mating partner. When in a mating mindset, women aim to show off beauty and health as signal for mate attraction, while men aim to show off wealth and status to attract a mating partner (Otterbring, 2018; Otterbring & Sela, 2020). From an evolutionary perspective, men prefer a beautiful and healthy partner, because beauty and health signal the ability to create offspring. In contrast, women prefer a partner who displays wealth and status that signals the ability to be a good provider and caretaker. Men and women pursue these signaling strategies by respective consumption (Otterbring, 2018). Consequently, the reported findings may seem to be cross-domain effects, but ultimately serve the purpose of mate attraction and can hence be considered in-domain effects.

3.5 Cognitive spillover effects

Whereas the above mechanisms are motivational in nature, a different line of research showed that cognitive mindsets activated in a previous activity may impact people's subsequent behavior in unrelated domains due to facilitating the accessibility of a concept. For example, activating an acquisition mindset can increase the acquisition of non-food objects for hungry individuals. Importantly, these non-food objects cannot satisfy the hunger motive and are thus not motivational but cognitive in nature (Xu et al., 2015). The acquisition of objects is in these cases not driven by a desire for rewards activated by a reward stimuli,

but seems to be mostly unconscious behavior due to previously activated mindsets or concepts that spills over to unrelated subsequent situations (Xu & Schwarz, 2018; Xu & Wyer, 2008).

4. Conclusions and future research

To conclude, the findings of this literature review enhance our understanding of when and why exposure to appetitive stimuli tempts consumers to indulge across different domains. This article has several central statements: In general, theories addressing the underlying mechanisms seem to agree that a motivational goal evoked in one domain can lead to general motivated behavior (Xu & Schwarz, 2018). For example, fantasies about winning the lottery can motivate people to seek other unrelated rewards, e.g., the consumption of tasty M&Ms (Briers et al., 2006). Motivational spillover effects are restricted to domains that can fulfill the underlying motive for something rewarding and do not occur in domains unable to satisfy this motive (Wadhwa et al., 2008; Xu & Schwarz, 2018). The current state and personality of an individual as well as the characteristics of a stimulus affect subsequent reward seeking behavior. Further, the underlying mechanisms may differ depending on the appetitive stimuli and it is plausible that several mechanisms can be in place simultaneously. For example, Kim and Zauberman (2013) argue that mating stimuli are physiologically arousing and psychologically rewarding, leading to a shift in time perception due to arousal and the activation of a general reward system.

These findings also provide insights for marketers, because advertisement for rewarding products may not only elicit the desire for the respective product, but for all sorts of rewarding products. Exposing consumers to an unpleasant product while shopping for example, might mitigate the desire for any rewarding products. Further, appetitive stimuli can evoke a desire to feel distinct (Berger & Shiv, 2011). This means that exposure to appetitive stimuli might impact sustainable or socially oriented consumption. This would be an interesting avenue for future research. The contributions provided in this article are theoretical and thus call for further empirical testing.

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