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Repeated choosing increases susceptibility to affective product features

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Abstract

The present research demonstrates that repeated active choice-making increases consumers' susceptibility to salient affective product features. We show that affective features influence product choice more after a series of active product choices than after a series of compliances with purchase instructions. The combined results of three experiments suggest that repeated choice depletes self-control resource strength, in that repeated choosing renders consumers vulnerable to the temptation of emotionally laden product features.

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Imagine that you have promised your significant other that you would do today's shopping. Inside the store, you have a hard time choosing the best color for a new coffee mug. Should it be blue or should it be yellow? You also have difficulties deciding between one of two familiar-looking brands of laundry detergent because your shopping list does not specify which brand to buy. To complicate matters even more, you find it taxing to determine how many apples to purchase, because your shopping list does not say how many you need. You struggle through the rest of the list choosing and selecting items as well as you can. Then you see the freezer full of ice cream. Ice cream is the last item on your shopping list. There is a less expensive, less attractive brand of ice cream but also a more expensive and more delicious brand. You remember that you are on a limited budget but in the end you cannot resist the temptation. You buy the more expensive, more delicious ice cream. We propose that you may not have succumbed to the delicious-looking (and more expensive) ice cream if you had not previously made choices among coffee mug colors, laundry detergents, or calculated how many apples to buy. Specifically, we submit that the ability to stick to a fixed budget is impaired by previous episodes of choice-making. In this paper we present three studies to support this claim.

Several decades ago, researchers began to recognize that consumer purchase decisions are driven by more than the tangible product or service being offered for sale. Indeed, the tangible product is but a small part of the total product. In addition to tangibles, the product includes pleasantries, images, packaging, advertising, and other product features, all of which are thought to receive considerable attention in consumer choice-making (Kotler, 1973). Now researchers know that consumer purchase decisions are influenced by considerations of both affective and cognitive product features.¹ Affective product features furnish fun, pleasure, fantasy and excitement. In contrast, cognitive product features are primarily instrumental, functional and goal-oriented (Dhar & Wertenbroch, 2000). When consumers give more weight to affective product features at the expense of cognitive product features, they may be prone to making suboptimal purchase decisions that will bring regret later (cf. impulsive spending; Rook, 1987; Rook & Fisher, 1995; Rook & Hoch, 1985). We argue that susceptibility to affective product features can be brought about by a lack of self-control strength. In this paper, we argue that it requires self-

¹ Affective and cognitive considerations have been referred to as desire and willpower (Hoch & Loewenstein, 1991), as vice and virtue considerations (Wertenbroch, 1998), as parts of the hot emotional and the cool cognitive system (Metcalf & Mischel, 1999), or as hedonic and utilitarian considerations (Dhar & Wertenbroch, 2000). For the sake of clarity, we will use the terms 'affective' and 'cognitive' throughout the remainder of the paper, following Shiv and Fedorikhin (1999).

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control strength to give sufficient weight to cognitive product features and not to succumb to the enticement of affectively laden product features. Moreover, the current approach views engagement in a repeated choice-making process as one route by which self-control strength is depleted. Accordingly, an overvaluation of affective product features is thought to come about because of depleted self-control strength, a state that may well be a consequence of the shopping process itself.

1. Previously studied determinants of susceptibility to affective product features

It has been argued that consumers may overvalue affective product features at the expense of cognitive product features, depending on the environmental stimulation (for reviews see Bitner, 1992; Lam, 2001; Turley & Milliman, 2000) or the degree of novelty and complexity in the environment (Donovan & Rossiter, 1982; Mehrabian & Russell, 1974). Examples of in-store atmospheric variables that impact the environmental load and thus consumer behavior are music, odor, colour, and lighting (Turley & Milliman, 2000). Research has shown that variations of atmospheric variables have an influence on the amount of money people spend, the number of items they purchase (Turley & Milliman, 2000), time spent in the store, and increased unplanned spending (Donovan, Rossiter, Marcolyn, & Nesdale, 1994). Hence, there is evidence that in-store atmospherics—through the novelty or complexity of the stimulation in the store—can create shopping experiences that are both affect-enhancing and cognitively demanding. As a result, shopping experiences can reduce consumers' available cognitive resources and enhance consumers' susceptibility to affective product features.

Research on the effect of environmental load has focused only on the concurrent taxing of cognitive resources on consumers' susceptibility to affective product features. Building on the self-control literature however, we aimed to demonstrate that susceptibility to affective product features can also be a consequence of previous taxation of scarce self-resources. Specifically, we focus on engagement in a series of product choices as a determinant of overvaluation of affective product features in a purchase situation. We investigate consumer choice-making in the context of a realistic shopping situation. We expect that consumers engaging in repeated choice-making will be susceptible to affective product features.

Our rationale for this reasoning is twofold. First, there is both theoretical and empirical evidence suggesting that it requires self-control strength to give sufficient weight to cognitive product features. Hence, giving more weight to affective product features and less weight to cognitive product features suggests a lack of available self-control strength (Hoch & Loewenstein, 1991; Metcalfe & Mischel, 1999; Shiv & Fedorikhin, 1999). Second, research on repeated choice-making has demonstrated that it brings about a loss of self-control due to a depletion of self-regulatory resources (Vohs et al., 2004). Hence, the present paper considers repeated choice-making (e.g., through the process of shopping) as a key factor determining subsequent susceptibility to affective product

features. Both lines of reasoning will be elaborated on in the next paragraphs.

2. Lack of self-control resources and susceptibility to affective product features

There are both theoretical reasons and empirical evidence to suggest that preferences for affective product features (relative to cognitive product features) imply low levels of self-control. Theoretically, it has been argued that consumers will prefer attractive products over functional products when they lack sufficient self-control resources (Hoch & Loewenstein, 1991; Metcalfe & Mischel, 1999). Empirically, it was found that consumers with sufficient resources were better able to resist affective product features, whereas this was more difficult for consumers who lacked resources (Shiv & Fedorikhin, 1999).

Hoch and Loewenstein's (1991) theoretical framework of consumer purchases as a struggle between affective and cognitive considerations points to lowered self-control as one primary reason. According to this analysis, when affective considerations exceed cognitive considerations, consumer self-control breaks down.

Metcalfe and Mischel (1999) have argued that affective and cognitive representations can be conceptualized as two separate but interacting systems. Typically, responses that are determined by affective considerations are either approach or avoidance patterns. In contrast, responses that are established by cognitive considerations consist of descriptions, statements, assertions, and commentaries (i.e., reflections). According to Metcalfe and Mischel (1999), self-control ability is determined by the capacity to limit the dominance of affective considerations in the service of cognitive goal pursuit. This is possible through engagement in cooling operations such as distraction, symbolic transformations of the affective stimulus, avoiding drift to affective considerations, and enriching cognitive considerations. However, the extent of cognitive elaboration varies depending on several factors.

Trade-offs between affective and cognitive considerations have received empirical attention (Babin & Darden, 1995; Hinson, Jameson, & Whitney, 2003; Read & van Leeuwen, 1998). For instance, it has been shown that consumer choice between affective and cognitive product features depended on whether consumers had sufficient cognitive resources (Shiv & Fedorikhin, 1999). Consumers who were under high cognitive load were significantly more influenced by affective product features than consumers who were under low cognitive load. In other words, consumers with sufficient resources were better able to resist affective product features, whereas this was more difficult for consumers who lacked resources. Framed according to the self-regulatory resource model, this suggests that consumers will buy the affective product when they are depleted and therefore lack sufficient self-control resources. In contrast, when consumers are not depleted and have sufficient self-control resources, they will be able to refrain from buying the affective product.

In the present research, we show that susceptibility to affective products can be a consequence of previous taxation on

scarce self-resources. Specifically, we focus on repeated choice-making as a determinant of preference of affective products over cognitive products.

3. Active choice-making and self-control depletion

The capacity to exert self-control is an important feature of human nature. Self-control refers to the self's capacity to alter its own responses. In general, people are able to regulate their thoughts, control their emotions, alter their performance or inhibit their impulses. However, people sometimes fail at self-control (Baumeister, Heatherton, & Tice, 1994). It has been argued that all acts of self-control draw on a common limited resource that is akin to energy or strength. Hence, exertion of self-control is necessarily followed by a period of diminished capacity to exert subsequent self-control. Eventually, with sufficient rest, the resource should build up again (Baumeister, Bratslavsky, Muraven, & Tice, 1998; Muraven, Tice, & Baumeister, 1998; Vohs, Baumeister, & Ciarocco, 2005; Vohs & Heatherton, 2000).

Studies on self-control depletion typically use a two-task paradigm. Participants are asked to exert self-control and then perform a subsequent, seemingly unrelated task that also requires self-control. In over 40 published experiments (see Vohs & Baumeister, 2004, for a review), it has been found that the first self-control task reduces performance on the second self-control task. Researchers have attempted to demonstrate self-control depletion in diverse circumstances. For instance, controlling one's emotions or suppressing forbidden thoughts induced people soon afterwards to show impaired physical stamina or to give up quickly on unsolvable anagrams (Muraven et al., 1998). Likewise, resisting tempting chocolates or suppressing one's emotions caused people soon afterwards to quit faster on unsolvable puzzles or to show impaired performance on solvable anagrams (Baumeister et al., 1998). Resisting good-tasting snacks or controlling one's emotional expressions made dieters eat more ice cream in the next task (Vohs & Heatherton, 2000).

There exists evidence that choosing requires self-control and therefore depletes regulatory resources. Baumeister et al. (1998) found that making a meaningful personal choice (i.e., deciding whether or not to make a counter-attitudinal speech) caused people to quit faster on unsolvable puzzles than people who did not have to make this choice beforehand. A more extensive test was conducted by Vohs et al. (2004), who asked some participants to make a series of choices among household products or to choose about features of a product class (i.e., choice participants), whereas other participants evaluated the same products and product features but did not make any choices (i.e., these were no-choice participants). Subsequently, choice participants were found to drink less of a bad-tasting beverage (Study 1 and Study 2), persist less on a cold water pressure task (i.e., keeping one's hand in water of 5°C; Study 3), and perform worse on a math task (Study 4) than no-choice participants. In Study 5 (Vohs et al., 2004) people were approached at a shopping mall and asked to complete a choice questionnaire. Subsequently, all respondents were asked to

solve 100 addition problems. As predicted from the choice-depletion hypothesis, people who had made a lot of difficult choices during their shopping trip performed poorly on the addition problems. Vohs et al. (2004) concluded that across a wide variety of circumstances, active choice-making depletes self-control resources. These findings are in line with earlier accounts that stressed active guidance by the self as a requirement for all kinds of complex forms of information processing, including active choice-making (Schmeichel, Vohs, & Baumeister, 2003).

4. The current studies

Susceptibility to affective product features might be affected by the shopping process itself. This reasoning assumes two steps. First, resistance to exaggerated influence of affective product features requires self-control. Therefore, self-control depletion is likely to make consumers more susceptible to affective product features. Second, Baumeister (2002) suggested that shopping may tax consumers' resources, in part because it involves a series of active choices. If this is true, at the conclusion of a shopping trip consumers should be rather susceptible to affective product features at the cost of cognitive product features. In the present research, we tested the hypothesis that making a series of product choices would heighten consumers' susceptibility to affective product features.

In three studies, we assessed susceptibility to affective product features after engaging in depleting versus non-depleting choice tasks. In Study 1, participants were either asked to make a series of six binary product choices (i.e., depleting choice task), or were instructed to select the same product as the participant before them had done (i.e., non-depleting choice task). Afterwards, participants were given the opportunity to choose between an attractive but expensive product and a cheaper but less attractive product of similar functionality. If depletion through active choice-making increases the weight of affective product features at the expense of the weight of cognitive product features, depleted participants would be expected to select the more attractive (but expensive) product more often than non-depleted participants, a prediction that received support in Study 1. In Studies 2 and 3, participants either were given the option of choosing as many single pieces of candy as they wanted from each of six different flavors of candy (i.e., depleting choice task), or were instructed to select the same number of items of those six types of candy as the participant before them had done (i.e., non-depleting choice task). In Study 2, the dependent measure of consumption was purchase amount of a very attractive but overpriced type of candy, whereas in Study 3 the consumption measure was purchase amount of a very attractive but overpriced type of candy versus a less attractive but a cheaper type of candy. Again, if depletion as a result of active choice-making increases the weight of affective product features at the expense of the weight of cognitive product features, depleted participants would be expected to buy more items of the attractive but overpriced candy than non-depleted participants. We found support for this claim in Studies 2 and 3.

4.1. Study 1

In previous research, it has been shown that making a series of choices leads to self-control depletion (Vohs et al., 2004). We built on these studies to test the hypothesis that self-control depletion through active choice-making increases subsequent susceptibility to affective product features. In the choice condition, participants were asked to make six binary product choices. For five of these six product pairs, the two products were equally attractive and equivalently priced. Accordingly, choosing between those products was expected to be difficult and hence, depleting. In the no-choice condition, participants' choices were yoked to the choice condition participant before them, such that participants were instructed to select the same products as the choice condition participant before them had done. Hence, no-choice participants did not have to ponder over options and consequently their task was considered to be non-depleting. Subsequently, all participants in both conditions made one binary product choice as the measure of importance of cognitive versus affective product features. Within this product pair, one product was more attractive but more expensive than the other product. Given similar functionality, attractiveness was considered to be a relatively affective product feature, whereas price was considered to be a relatively cognitive product feature. It was hypothesized that choice participants (i.e., participants in the choice condition) would be relatively more influenced by the affective (i.e., attractiveness) rather than the cognitive (i.e., price) feature than no-choice participants (i.e., participants in the no-choice condition).

4.1.1. Method

4.1.1.1. Participants. Participants were 101 undergraduate students. Data from 12 participants were discarded because they did not comply with the instructions by not buying the products in the assigned order. Of the remaining 89 participants, 62 were women. Ages ranged from 18 to 31 years ($M=21.42$ years, $SD=2.20$ years). Participants were rewarded with money and with a gift for their cooperation. The money and the gift had a combined value of €7.50.

4.1.1.2. Materials. A store was simulated in the laboratory. Eleven product categories were displayed on a table. Seven of these product categories were on the shopping list that participants received upon entering the shop. The remaining four product categories served as fillers.² Each product category consisted of two products. Results of a pretest conducted in the same population ($n=42$) showed that both products in each pair were equally attractive for the five product categories of interest. Those products all received the same price label, €1, which was close to their retail price. As a result, choosing between the two products within each of these five product

categories was expected to be difficult and hence, depleting. A second independent pretest also in the same population ($n=42$) showed that the prices that participants believed the two products in each of these five pairs would have in the store did not differ.

The two pretests also showed that for two product categories of interest, the two options differed in attractiveness and expected price. Those two remaining product categories served as our target product categories. We selected two product categories as a first step towards generalizability. In both categories, we created a conflict between the affective and the cognitive aspects. The affective aspect was attractiveness. The cognitive aspect was price. One product category was staples, which were either multi-colored or ordinary gray staples. Because colored staples were regarded as more attractive than regular gray staples, we priced the colored staples at €1.20 and the gray staples at €0.90. A second product category was chocolates. Santa Claus-shaped chocolates were regarded as more attractive than elf-shaped chocolates. The Santa Claus-shaped chocolates were priced at €1 and the elf-shaped chocolates at €0.90. In both cases, prices were selected such that the price difference between the products in each target product category was larger than the price difference participants would probably expect (i.e., a price difference based on the results of the pretest). Order of chocolate versus staple category was counterbalanced. Half of the participants saw the chocolate-shape product category on their shopping list first and the staples last, whereas the order was reversed for the other half of participants. For convenience, we refer to the attractive but expensive product as the affective product and to the cheap but less attractive product as the cognitive product.³

4.1.1.3. Procedure. The present experiment was the first in a series of unrelated studies. Participants were scheduled to come to the laboratory individually. Upon arrival, they were asked to watch a five-minute computer presentation with landscape pictures and peaceful music. The aim of this presentation was to reduce differences that may have existed in pre-experimental levels of self-control depletion. A pretest ($n=77$) indeed showed that this presentation reduces feelings of stress and increases reports of calm.

After the presentation, participants were invited to visit a simulated store. They received a shopping basket and were told to pick seven products from a shopping list. Participants received €7.50 and were told that, at the end of the experiment, they would have to actually buy one of the products they had picked. This product would be randomly determined by means of a lottery. This procedure is incentive compatible (e.g., Wertenbroch, 1998). It was made clear that if a more expensive product was purchased at the end of the experiment, consequently less money would be left of the €7.50 to take home. Hence, this incentive compatible procedure does not necessarily bias participants towards choosing affective products.

² The seven product categories on participants' shopping lists were light bulbs, coasters, candles, drinking straws, Christmas cards, chocolates and staples. The four filler product categories were drinking glasses, cactuses, alarm clocks and pens.

³ There were no visible brand names on the products. Therefore, participants could not choose products based on familiarity with a particular brand.

At this point, participants were randomly assigned to one of two conditions: a choice or a no-choice condition. Participants in both conditions received a shopping list. In the choice condition, the shopping list consisted of seven product category names. For each of these seven product categories, participants had to decide which of the two options to select. In the no-choice condition, the shopping list contained the names of six products instead of product categories. Only for the last product category, which represented the dependent measure, did participants have to make a decision between two options. To increase comparability between the two conditions, no-choice participants were yoked to the choice participants with respect to the product choices. Hence, in terms of an account of actual selections, the no-choice and choice conditions had identical selections for all products until choice number six. The major difference was that the no-choice condition involved no active choice-making regarding the first six products on the shopping list. In both conditions, the time required to pick up every single product and to put it in the shopping basket was registered.

Subsequently, by means of a lottery game, it was determined which product participants had to buy with part of their €7.50. At the end of the experiment, participants were debriefed and thanked.

To ensure that mood did not differ as a function of having or not having to make choices, a pretest ($n=36$) was conducted. The results showed that the choice manipulation did not induce significant differences in positive ($F(1, 34)=0.18, p=0.67$) or negative affect ($F(1, 34)=0.05, p=0.83$) as measured by the Positive Affect Negative Affect Scale (Watson, Clark, & Tellegen, 1988).

4.1.2. Results and discussion

We predicted that participants in the choice condition would show more susceptibility to affective product features than participants in the no-choice condition and thus purchase the affective product more often than the cognitive product. To test this hypothesis, we conducted a logistic regression analysis with choice (no choice versus free choice) as the predictor variable, shopping time as a covariate, and product choice as the dependent variable. This analysis indicated that choice participants chose the affective product significantly more often (53.5%) than no-choice participants (37.0%), Wald χ^2 ($df=1$)=6.50, $p<0.05$.

Shopping time was inserted as a covariate because preliminary analyses revealed significant differences in shopping times between the choice and the no-choice condition, $F(1, 83)=20.84, p<0.0001$. Average shopping times were significantly lower for no-choice participants ($M=50.98$ s, $SD=18.66$ s) than for choice participants ($M=71.56$ s, $SD=22.82$ s). Preliminary analyses showed no effects of gender or product replicate on the dependent measure of product choice. Therefore, these variables were omitted from the analyses.

Study 1 tested the idea that consumer choice changes attraction to affective and cognitive aspects of products. We found that after a series of active product choices, affective product features were chosen more often as compared to

products purchased after a similar task but which did not involve choosing.

Even with these encouraging results, two alternative explanations are possible. First, choice participants needed more time to complete the shopping task than no-choice participants. The choice condition may have led to a more real-life shopping experience than the no-choice condition, and hence may have increased the personal relevance of the last product choice. Because of increasing relevance, the attractiveness might have received more attention, and hence affected choice more in the choice condition than in the no-choice condition. However, time spent shopping was statistically controlled for, which mitigates this possible explanation. A second alternative explanation involves the idea that the percentage of affective choices in the experimental condition is a random choice process, given that the percentage of affective choices was 53.5%, which is statistically equivalent to 50%. Studies 2 and 3 were designed to tackle these concerns and replicate the depletion effect of product choice.

4.2. Study 2

Study 2 was a conceptual replication of Study 1 that additionally corrected the time confound of Study 1 by altering the demands of the shopping task to require equal amounts of time shopping.

As in Study 1, we used making product choices as a manipulation of self-control depletion. In the choice condition, participants were asked to choose as many single pieces of candy as they wanted from each of six different flavors of candy. In the no-choice condition, participants were instructed to select the same number of items of those six types of candy as the participant in the choice condition before them had done. Subsequently, participants in both conditions were given the opportunity to buy as much candy as they wanted of a highly appealing type of candy. The price of the candy was set as much higher than its retail price, and thus the price (which was a cognitive feature) was a negative feature. However, because the candy was very appealing, its expected taste (i.e., an affective feature) was a rather positive feature. In line with our hypothesis and the findings of Study 1, we expected that choice participants would be more affected by the affective product feature relative to the cognitive product feature, and hence they would purchase more of the attractive candy than no-choice participants.

4.2.1. Method

4.2.1.1. Participants. Participants were 47 undergraduate students. Data from three participants were discarded because they did not comply with the instructions by not buying the products in the assigned order. Of the remaining 44 participants, there were 14 men and 30 women. Their age ranged from 19 to 25 years ($M=21.45$ years, $SD=1.42$ years). All students participated in order to receive partial course credit. They were also rewarded with money and with a gift. The money and the gift had a combined value of €2.

4.2.1.2. Materials. A store was simulated in the laboratory. Seven bowls filled with approximately 200g of candy were displayed on two tables. All seven types of candy in the bowls were on the shopping list that participants received. Results of a pretest conducted in the same population ($n=32$) showed that the attractiveness of six types of candy was equivalent and high. In close accordance with actual prices, three types of candy received a price label of €0.60/100g and the other three types of candy received a price label of €0.80/100g. The pretest also showed that one type of candy (i.e., wrapped mini-chocolates) was more attractive than the other types of candy. This type of candy served as our target candy and therefore was last on participants' shopping list. We priced this attractive type of candy at €1/100g, which is more expensive than the retail price, which was €0.77/100g. The quantity of mini-chocolates (i.e., most expensive candy) purchased was our measure of susceptibility to affective product features, relative to cognitive features.

4.2.1.3. Procedure. The procedure of Study 2 was identical to the one of Study 1, with a few exceptions. In the simulated store, participants were told to put the different types of candy from a shopping list in seven little paper bags. As all participants manually scooped the different pieces of candy in the seven bags, shopping time was expected to be equal in both conditions. In both conditions, the time required to put every type of candy in the little paper bag and to put the bag in the shopping basket was recorded. Participants received €2 and were told that they would have to buy one of the amounts of candy they selected at the end of the experiment. The bag of candy to be purchased would be randomly determined by the experimenter by means of a lottery and thus participants were reminded that no single bag of candy could cost more than €2.

At this point, participants were again randomly assigned to one of two yoked conditions: a choice or a no-choice condition. In the choice condition, the shopping list consisted of seven candy names. Participants were asked to choose as many single pieces of candy as they wanted from each of seven different flavors of candy. In the no-choice condition, the shopping list contained the names and the desired number of the first six candy items and the name of the highly appealing type of candy (e.g., "mini-Twix: Take four of them"). Participants were given the opportunity to buy as much candy as they wanted only for the highly appealing type of candy. While participants in both conditions were shopping, the experimenter was eating the very attractive target type of candy to make this target type of candy even more attractive.

4.2.2. Results and discussion

Again we predicted that participants in the choice condition would show a higher susceptibility to affective product features than participants in the no-choice condition and thus purchase more of the highly appealing type of candy than no-choice participants. We conducted a one-way ANOVA using choice (no choice versus free choice) as predictors of amount of the mini-chocolate candy. The results indicated that choice participants purchased significantly more of the candy

($M=47.18$ g, $SD=35.27$ g) than did no-choice participants ($M=29.51$ g, $SD=17.33$ g), $F(1, 42)=4.45$, $p<0.05$.⁴

Preliminary analyses did not reveal any gender effects. Therefore, this variable was omitted from the analyses. This time, preliminary analyses also failed to reveal significant differences in shopping times between the choice and the no-choice condition, $F(1, 42)=0.22$, $p=0.64$. Hence, we were successful in equating shopping times in both conditions and thus this variable was also omitted from the analyses.

The results of Study 2 support the view that choosing reduces consumers' resistance to affective product features. As in Study 1, we found that susceptibility to affective product features was higher after a series of active product choices than after a similar task that did not require choice-making. Note that in Study 2, the choice manipulation was not confounded with time; therefore, the alternative explanation that shopping time differences accounted for the effect is mitigated. The aim of Study 3, then, was to directly address the other alternative explanation that choice participants made their selections randomly.

4.3. Study 3

As in Studies 1 and 2, we used making product choices as a manipulation of self-control depletion. Participants either chose as many single pieces of candy as they wanted from each of six different flavors of candy (i.e., the choice condition) or selected the same number of items of those six types of candy as the participants in the choice condition to whom they were yoked (i.e., the no-choice condition). Subsequently, participants in both conditions were given the opportunity to buy as much candy as they wanted of a highly appealing but overpriced type of candy and a less appealing but cheaper type of candy. Again, the series of preceding choices in the choice condition should deplete participants and should increase the relative importance of the affective product feature (i.e., taste) and decrease the relative importance of the cognitive product feature (i.e., price) relative to the no-choice condition. Because the affective product feature is weaker for the less attractive type of candy, we expected that in comparison with no-choice participants, choice participants would buy more of the very attractive candy (i.e., greater influence of affective product features) but not of the less attractive candy. The random explanation, in contrast, predicts that choice of the two types of candy should become less distinguishable (i.e., closer to a 50:50 distribution) in the choice condition than in the no-choice condition.

4.3.1. Method

4.3.1.1. Participants. Participants were 42 undergraduate students (30 men and 12 women). Their age ranged from 19 to 24 years ($M=20.98$ years, $SD=1.44$ years). All students participated in order to receive partial course credit. They were

⁴ As the variance was significantly different in both conditions, we also conducted a non-parametric analysis. A Mann-Whitney U -test yielded similar results, $Z=2.05$, $p<0.05$.

also rewarded with money and with a gift. The money and the gift had a combined value of €2.

4.3.1.2. Materials. A store was simulated in the laboratory. Four pairs of bowls filled with approximately 200g of candy were displayed on two tables. All eight types of candy in the bowls were on the shopping list that participants received upon entering the shop. Results of a pretest ($n=32$) showed that seven types of candy were equally attractive. In close accordance with actual prices, the first pair of bowls of candy received a price label of €0.60/100g, the second pair of bowls of candy received a price label of €0.70/100g, and the third pair of bowls of candy received a price label of €0.80/100g. The last pair of candy bowls once again contained the highly appealing mini-chocolates and one of the relatively less attractive types of candy (i.e., M&M's without peanuts). These types of candy came last and second-last on participants' shopping list, respectively. In the pretest ($n=32$), 75% preferred the mini-chocolates to the M&M's ($Z=2.83$, $p<0.01$). The less attractive type of candy received a price label of €0.80/100g and the very attractive type of candy received a price label of €1/100g. The quantity of mini-chocolates purchased (which was the most expensive candy) relative to the quantity of M&M's purchased (which was the less expensive candy) was the dependent measure of susceptibility to affective product features.

4.3.1.3. Procedure. The procedure of Study 3 was identical to the one of Study 2, with a few exceptions. In the simulated store participants were instructed to put the candy of the two bowls that were placed together in the same little paper bag. This was done to rule out the random choice hypothesis. Indeed, in order to rule out this alternative hypothesis, all participants had to make a double product choice at the conclusion of their shopping trip. If depleted participants would choose randomly, we would expect them to select an equal amount of both types of candy. In contrast, if depleted participants would choose on the basis of affective features, we would expect them to select more of the very attractive type of candy (mini-chocolates) than of the less attractive type of candy (M&M's). Again, participants received €2 and were told that, at the end of the experiment, they would have to actually buy one of the paper bags with this money.

At this point, participants were again randomly assigned to one of two yoked conditions. In the choice condition, the shopping list consisted of eight candy names. Participants were free to choose as many single pieces of candy as they wanted from each of eight different flavors of candy. In the no-choice condition, the shopping list contained the names and the desired number of six candy types and the names of the two target types of candy (i.e., the very and the moderately attractive type of candy). No-choice participants were given the opportunity to buy as much candy as they wanted only for the last two types of candy.

4.3.2. Results and discussion

We again hypothesized that participants in the choice condition would show a higher susceptibility to affective

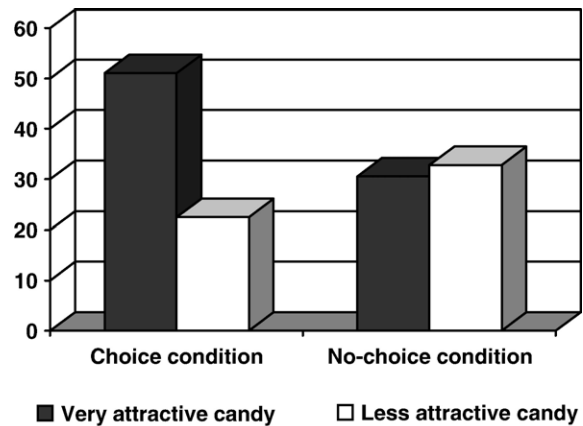


Fig. 1. Purchased amounts (in grams) of very attractive and less attractive candy in the choice condition and in the no-choice condition.

product features as compared to participants in the no-choice condition and thus purchase more of the highly appealing type of candy than no-choice participants. In the present study, we also wanted to provide a direct test of the possibility that participants who had few regulatory resources made their selections randomly, rather than on the basis of affective product features as we claim. We conducted a repeated measures ANOVA with the purchased amount of candy (i.e., the very attractive and the moderately attractive types of candy) as repeated measures and with choice (no choice versus free choice) and gender as independent variables. Gender was included because we observed a marginally significant choice by type of candy by gender three-way interaction, $F(1, 38)=3.36$, $p=0.07$, indicating that the observed effects tended to be stronger for women than for men.

The repeated measures ANOVA showed the expected choice \times type of candy interaction, $F(1, 38)=8.99$, $p<0.01$. The shape of the interaction indicated that choice participants purchased a higher quantity of the very attractive type of candy ($M=51.01$ g, $SD=51.44$ g) than of the moderately attractive type of candy ($M=22.47$ g, $SD=15.99$ g), $F(1, 19)=8.89$, $p<0.01$, but that no-choice participants did not purchase different quantities of the very attractive candy ($M=30.55$ g, $SD=25.35$ g) as compared to the moderately attractive candy ($M=32.78$ g, $SD=23.45$ g), $F(1, 19)=0.36$, $p=0.55$ (see Fig. 1). From another perspective, we found that participants in the choice condition purchased a higher quantity of very attractive candy than did participants in the no-choice condition $F(1, 38)=4.65$, $p<0.05$, (thereby replicating Study 2) and that participants in the choice condition tended to purchase a lower quantity of less attractive candy as compared to no-choice participants, $F(1, 38)=3.19$, $p<0.10$.⁵ The latter finding is consistent with our framework, in that choice participants apparently not only overweigh the affective product feature of relative attractiveness of very attractive candy, but also overweigh the affective product feature of relative unattractiveness of less attractive candy.

⁵ Again, the variances differed significantly but non-parametric test led to the same conclusions for all tests.

Preliminary analyses did not reveal significant differences in total shopping time between the choice and the no-choice condition, $F(1, 40)=0.00$, $p=0.95$. Hence, this variable was omitted from the analyses.

The results of Study 3 confirmed the view that choosing reduces consumers' resistance to affective product features. Like in Study 1 and Study 2, we found that there was a greater impact of affective product features after a series of active product choices than engaging in a no-choice task that was similar in all other respects. In Study 3, we also found that people purchased more of the very attractive type of candy relative to the less attractive type of candy after a series of active choices. Because the difference between the attractive and the relatively less attractive type of candy increased rather than decreased in the choice condition, an alternative explanation in terms of random choice is not viable.

5. General discussion

5.1. Summary of findings and limitations

The major aim of the present investigation was to show that one of the most frequent activities during a shopping trip—that is, choosing—enhances consumers' susceptibility to purchasing products on the basis of affective product features. The three studies reported in this paper provided support for this view. In Study 1, we found that when people have made a series of active product choices they are more likely to buy an attractive but expensive product as compared to when they merely have complied with purchase instructions. Study 2 replicated the basic effect with another product type (candy). We found that when people have made a series of choices they buy more items of a very attractive type of candy than when they have followed a pre-established shopping plan. Study 2 also eradicated the concern that time differences between the conditions influenced the results of Study 1. In Study 2, the effect was replicated without purchase time differences between the two conditions. In Study 3, we also found that people's preference for a more attractive but more expensive type of candy over a less attractive but cheaper type of candy increases after a series of active choices. This study also ruled out the alternative explanation in terms of increasing random choice in a depleted state because in the choice condition, the difference between the two types of candy increased rather than decreased.

An often-stated criticism accompanying depletion studies is the omission of manipulation checks on the inferred mediator (i.e., depletion). In our studies, we also decided not to include manipulation checks. Reasons were twofold. First, the nature of our theorized mediating variable “self-control resource strength” still needs to be clarified conceptually. Hence, finding a suitable manipulation check for this very abstract “resource” is quite cumbersome. Presumably, the resource nourishes both mental and physical abilities, as it has been demonstrated that performances in both the mental and the physical domain rely on it (e.g., Baumeister et al., 1998; Muraven et al., 1998). Hence, the most suitable manipulation check appears to be to ask participants how they feel both physically and mentally

while making their product choices (e.g., how much careful consideration do you put into your choices, how much do you deliberate before making each choice, how much do you think about your options prior to making your choices, how active do you feel making your choices, how tired do you feel right now, etc.).

A second reason as to why we decided not to include manipulation checks is that these may draw attention to the purpose of the study and may contaminate responses to the dependent measure (Sigall & Mills, 1998). For instance, people seem to harbor the belief that hard work entitles them to take rest (Martijn, Tenbült, Merckelbach, Dreezens, & de Vries, 2002). As a result, explicit questions about fatigue that immediately follow a taxing choice phase may trigger that belief and produce belief-consistent behavior. Furthermore, Sigall and Mills (1998) argued that manipulation checks are unnecessary when the most plausible rival causes for the occurrence of certain effects are experimentally eliminated, which is what we attempted to do in this series of studies. In addition, even if they are measured after the behavior (e.g., Wallace & Baumeister, 2002), manipulation checks may provide rationalization rather than process measures.

5.2. Alternative explanations

The present findings are in correspondence with predictions stemming from the idea that both decision making and resisting the temptation of affective product features depend on a common, but limited, resource. Even with these results, several alternative accounts should be discussed. As noted, the findings of Study 1 were susceptible to two alternative explanations. One explanation relied on a time confound, whereas the other explanation relied on a random choice process. Both alternatives were however ruled out in the subsequent studies, and these subsequent studies provided more confidence in the reliability and robustness of our conclusions.

Several other interpretative possibilities could be considered. A conceptually different account of how prior choice-making might have an influence on subsequent product preferences involves the idea that choice participants may have rewarded themselves for their hard work by choosing the more affective option by the time they had to select the final product. Related research by Khan and Dhar (2005) suggests that, in certain circumstances (i.e., after making utilitarian choices), prior choice-making can induce consumers to choose self-indulgent options later on. Although this explanation may be applicable to the findings of Studies 1 and 2, it is less applicable to the results of Study 3. For instance, in Study 1, choices were made between two options of equal attractiveness and cost but for which product features differed. Given that choice participants made repeated difficult choices, they may have decided to reward themselves for their hard work by selecting the affective product at the end. However, the findings of Study 3 seem to be at odds with the idea that choice participants felt like they had earned the right to indulge. Choice participants bought more of the very attractive, but slightly less of the moderately attractive type of candy than no-choice participants. Overall, choice participants

did not buy more candy. Indulgence would seem to imply buying more of no matter what type of candy.

A potential problem with our series of studies might be that we did not have a control condition that did not perform the tasks done in the yoked control condition. This raises the possibility that there is something about being in the yoked control condition that influences choice, rather than that there is something about repeated choice-making that influences choice, as we suggest. With the current data, we cannot firmly rule out that the effect we report is not an effect of yoking. However, we believe that participants in the yoked control condition did not do anything more than follow specific instructions, which is a very common task in a lab. So, we believe that having choice rather than lacking choice is producing our results. Other studies that used less stringent control conditions (e.g., rating rather than choosing) have also produced depletion effects in the choice condition (e.g., [Vohs et al., 2004](#)), which reinforces our analysis.

5.3. Theoretical and managerial implications

Previously, research has demonstrated that consumer susceptibility to affective product features can be strengthened by in-store atmospherics. We build upon the idea that consumer's attraction to affective product features is a crucial step to understanding consumer behavior, and go beyond to provide evidence for the notion that susceptibility to affective product features can also be enhanced by the act of shopping (insofar as it involves active choice-making) itself.

The present research has implications for the literature on impulsive spending. In the past, some definitions have depicted impulsive spending behavior as resulting from certain product characteristics ([Stern, 1962](#)). However, more recent definitions have portrayed it as stemming from affective experiences within the shopper ([Rook, 1987](#); [Rook & Fisher, 1995](#); [Rook & Hoch, 1985](#)). According to [Hoch and Loewenstein \(1991\)](#), consumers experience an ever-shifting conflict between desire and willpower. Impulsive spending occurs whenever the desire to buy, to own, or to consume exceeds willpower. In other words, it occurs whenever consumers' capacity to exert self-control breaks down. [Vohs and Faber \(in press\)](#) found that participants who lacked self-control resources because they had to control their attention or suppress certain thoughts displayed subsequently more impulsive buying tendencies (Study 1), were subsequently willing to pay higher prices for a variety of products (Study 2), and spent subsequently more money on books (Study 3) than participants with sufficient self-control resources. The authors concluded that impulsive purchasing is a function of self-regulatory resources. Our research lends credence to these theoretical accounts of impulsive spending and extends the findings of [Vohs and Faber \(in press\)](#) by providing empirical evidence for the role of regulatory resources in determining the relative influence of affect and cognitions on choice. Moreover, to our knowledge, we are the first to both manipulate self-control depletion and assess the effects of this manipulation in the same consumer behavior context.

The current findings also have several practical consumer and managerial implications. For retailers, the results suggest that offering a large set of choices has an impact on the product attributes that consumers will take into account later in their shopping choices. Building on this idea, our results also suggest that the impact of affective product features may be expected to increase during the shopping event. Our results also imply that retailers would benefit from the use of expensive and attractive end-of-aisle-displays or delicious-looking but somewhat overpriced candy at cash registers. Typically, cheaper candy items are placed at cash registers to make an impulse decision easy. Our results suggest that even more expensive items would also be purchased if made readily available at the end of the shopping trip.

For consumers, an important implication of the present findings is that resisting the temptation of affective product features would be easier achieved by reducing the number of decisions they make in the store. One possibility is to rely on the same brands or highly familiar products. This way, self-control resources are not depleted. Another solution to reduce in-store decision making would be to use a detailed shopping list containing the desired amounts for well-specified product brands while shopping. Apparently however, only a little more than half (55%) of supermarket shoppers are inclined to use shopping lists ([Block & Morwitz, 1999](#)), and it is unlikely that these lists contain brand, volume, and flavor information. In addition, a recent study by [Oppewal and Koelemeijer \(2005\)](#) has shown that adding items to existing assortments leads to an increase in assortment evaluation, suggesting that consumers like to have a lot of in-store options.

5.4. Future research

Our results raise three main questions for future research. One issue concerns the consequences of depletion for consumer decisions regarding major durable goods. Another issue is whether the depletion effect would also be observed for other types of affective product cues besides the ones used here. These questions deal with the generalizability of the depletion effect to other products and other product cues, respectively. Finally, it might be relevant in a consumer behavior context to learn more about the nature of the depletion process. Is depletion of the scarce self-control resource a gradual process or does depletion kick in suddenly if a certain threshold of choice-effort has been exceeded?

First, the issue as to whether depletion will also have an effect on consumer decisions with respect to durables such as a plasma TV set, a car, or even a house, remains open to future research. It has already been observed that affective considerations can loom larger than cognitive considerations when consumers have to make important decisions such as which apartment to acquire ([Dhar & Wertenbroch, 2000](#)). When making forfeiture decisions, consumers were found to prefer an apartment with a breathtaking view of the sunset and the city skyline (i.e., a positive affective product feature) and a 45-min distance to work (i.e., negative cognitive product feature) over

an apartment with a view of a parking lot (i.e., a negative affective product feature) and a 10-min distance to work (i.e., a positive cognitive product feature). Future research is needed to clarify whether depletion would also induce consumers to make similar affect-laden decisions when buying durable goods. We certainly believe that it could.

This brings us to a second area for future research. Even though we established a link only between repeated choice-making and subsequent susceptibility to affective product features such as attractiveness, the underlying model strongly suggests that the effects of depletion may be generalizable to other affective product features, such as, for instance, prestigious brand names. In fact, any affective product feature should receive more weight than any cognitive product feature in the mind of a depleted consumer who lacks sufficient resources to resist the temptation of affective product features. We call for future research that investigates the effects of self-control depletion on a broad range of product features.

Finally, it would be very interesting to gain insight in the timing of the depletion process. During a shopping trip, does every product choice become progressively more influenced by affective product features, or is some minimum number of repeated product choices required in order for consumers to become susceptible to affective features at once? We speculate that depletion does not always occur according to some invariable pattern, but that the nature of the process will be linked to the nature of the product choices. We know from other research that one choice might be enough to induce depletion immediately, given that this choice is of considerable importance to the choice-maker (Baumeister et al., 1998). If choices do not matter a lot, depletion might come into play more gradually.

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