

MONEY, RITUALS, AND SELF-CONTROL: ESSAYS ON CONSUMER BEHAVIOUR

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To Prof. Michael Bashshur, for kindling the flame,
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Abstract

The present thesis focuses on three topics within the domain of consumer behavior: self-regulation, the psychological consequences of money, and consumption rituals. The first chapter, devoted to self-regulation, presents a new moderator for the ego depletion effect: velocity feedback. Velocity feedback refers to the perceived speed at which a goal is attained. Three laboratory experiments show that fast velocity feedback can prevent the ego depletion effect and that slower-than-expected velocity feedback can create the ego depletion effect. The second chapter, devoted to the psychological consequences of money, explores the surprising relationship between reminders of money abundance and life meaningfulness. Two laboratory experiments show that individuals who have been reminded of money report having a more meaningful life. This relationship is shown to be fully mediated by self-esteem. The third chapter, devoted to consumption rituals, explores the effect of sharing a consumption ritual on interpersonal attraction. Two laboratory experiments show that when people follow a consumption ritual, they evaluate others who follow the same ritual more positively: an appreciation effect. The appreciation effect was found to be partially mediated by one's feelings of pride, and moderated by whether the target person enjoys the product associated to the ritual.

Resumen

Esta tesis se centra en tres temas de la literatura sobre comportamiento del consumidor: la auto-regulación, las consecuencias psicológicas del dinero, y los rituales de consumo. El primer capítulo, dedicado a la auto-regulación, presenta un nuevo moderador para el efecto de *ego depletion: velocity feedback*. Se entiende por *velocity feedback* la rapidez percibida con la que se alcanza una meta u objetivo. Tres experimentos de laboratorio muestran que el efecto de *ego depletion* puede ser neutralizado por una *velocity feedback* elevada pero generado por una *velocity feedback* más lenta de lo previsto. El segundo capítulo, dedicado a las consecuencias psicológicas del dinero, explora la sorprendente relación entre los recordatorios de abundancia de dinero y el sentido de la vida. Dos experimentos de laboratorio muestran que los individuos a quienes se les ha activado el concepto de abundancia de dinero reportan que su vida tiene más sentido. Esta relación está completamente mediada por la autoestima. El tercer capítulo, dedicado a los rituales de consumo, explora el efecto que compartir un ritual de consumo tiene en la atracción interpersonal. Dos experimentos de laboratorio muestran que la gente que sigue un ritual de consumo evalúa a otros que también lo siguen más positivamente. Este efecto está parcialmente mediado por los sentimientos de orgullo, y moderado por el hecho de si la otra persona disfruta o no el producto asociado al ritual.

Preface

When psychologists try to identify the personal qualities that predict ‘positive outcomes’ in life, they consistently find two traits to be of central importance: intelligence and self-control (Baumeister, & Tierney, 2011). Self-control, also known as self-regulation, allows people to override their automatic or instinctual responses. This makes actions such as resisting temptations or breaking bad habits possible, which results in human behavior becoming much more flexible than it would otherwise be (Muraven, et al., 1999). Shoda and Mischel (1990) showed how preschoolers’ capacity to delay instant gratification (which is a measure of self-regulation strength) was indicative of their academic performance in high school as well as their ability to cope with stress and frustration. Self-regulation of one’s impulses and instincts has been argued to facilitate socialization (Vohs and Baumeister, 2004). Ameriks et al. (2007) found that a simple self-reported measure of self-regulation was capable of predicting income levels.

But how does self-regulation work? What powers it? Does exerting it have any (negative) side-effects? Considering the benefits of self-regulation, much research has been conducted in hopes of better understanding this construct. One of the most robust findings in the self-regulation literature is that initial acts of self-regulation impair one’s capacity to continue self-regulating (Muraven et al., 1998). Much like a muscle that gets tired after too much exercise, the ability to self-regulate gets depleted with use. Thus, if one performs two activities that require self-regulation one after another, doing the first one will result in a performance decrease in the second one. This is known as the ego depletion effect. Previous research has identified several moderators for the ego depletion effect such as intrinsic motivation (Vohs et al., 2014), self-affirmation (Schmeichel & Vohs, 2009) or beliefs in unlimited self-control (Job et al., 2010). Chapter 1 of the present research presents a novel moderator for the ego depletion effect: velocity feedback. Velocity feedback refers to the perceived speed at which a goal is attained (Johnson et al., 2012). Three laboratory experiments show that fast velocity feedback can prevent the ego depletion effect and that slower-than-expected velocity feedback can create the ego depletion effect.

According to Frankl (1963) humans are characterized by a ‘will to meaning’, an innate force that compels them to find meaning and significance in their lives. Life meaningfulness positively correlates with life satisfaction (Chamberlain & Zika, 1988b) and happiness (Debats et al., 1993), and has been considered a central outcome of eudaimonic well-being (Ryan & Deci, 2001). Pursuing important goals (Klinger, 1977), following a coherent life narrative (Kenyon, 2000) or fulfilling the need for self-esteem (Baumeister, 1991) are only some of the variables that have been suggested to make life feel more meaningful.

How would reminders of money abundance relate to life meaningfulness? Self-determination theory (Ryan & Deci, 2000) argues that an excessive focus on extrinsic aspirations such as the desire for financial success can distract people from pursuing more intrinsic endeavors, which are the ones that bring a higher sense of life meaningfulness (Deci & Ryan, 1985b; Ryan et al., 2013). If reminders of money abundance sufficiently increase the desire for financial success, then they should make life seem less meaningful according to Self-determination theory. Chapter 2 of the present research makes the opposite prediction; building on previous research that shows that reminders of money abundance increase self-sufficiency (Vohs et al., 2006), we argue that people who are reminded of money should exhibit higher self-esteem. We then use the well-established link between self-esteem and life meaningfulness (Baumeister, 1991; Stillman et al., 2009) to claim that reminders of money abundance should make life seem more meaningful. Two laboratory experiments found support for this latter prediction and underlying mechanism; reminders of money abundance increased reported life meaningfulness and self-esteem. Self-esteem fully mediated the relationship between reminders of money abundance and life meaningfulness. Reminders of money abundance were not found to increase the desire for financial success, which reconciles our findings with the competing prediction.

Rituals may conjure images of shamans commuting with spirits, or of people dancing and chanting around the fire. The study of human rituals has its roots in sociology and anthropology and, for quite some time, it has indeed been deeply intertwined with religion. For early sociologists such as Durkheim and Turner, rituals were in fact considered the basis of religion (Olaveson, 2001). However, both Durkheim and Turner also considered rituals the basis of society. Turner (1968) saw rituals as the

concentration of society's customs. Olaveson (2001) elaborated on that claim and argued that, for Turner, rituals are 'the place where a society's values, norms, and deep knowledge of itself are reaffirmed, and sometimes, created' (p. 93). This perspective is closer to the modern understanding of rituals, in which rituals are not considered religious or secular per se but, rather, the expression of a society's culture (Geertz, 1973). As the expression of a society's culture, rituals are pervasive and can be found in any aspect of society, including consumption (Rook, 1985).

Previous research has found that consumption rituals can create a bond between the people who share them, helping them develop and maintain social relationships (Gainer, 1995; Stamps & Arnould, 1998). This is consistent with the ritual theories from sociology and anthropology, which understand rituals as activities that foster a sense of community or group cohesiveness (Durkheim, 1959; Turner, 1967). However, the existing research on the bonding power of consumption rituals is exclusively qualitative, has not explored underlying mechanisms and moderation/mediation effects, and is limited to consumption rituals that emerge in shared consumption events such as football matches. Chapter 3 of the present research addresses these limitations. Two laboratory experiments found support for the bonding power of consumption rituals; when a target person followed one's consumption ritual, the target person was evaluated more positively: an appreciation effect. The appreciation effect was mediated by one's feelings of pride, and moderated by whether the target person enjoyed the product associated to the ritual. The well-established link between attitudinal similarity and interpersonal attraction (Byrne, 1971; Berscheid & Walster, 1978) provides a theoretical foundation for these results.

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1. VELOCITY FEEDBACK AND EGO DEPLETION

Abstract

This paper proposes a new moderator for the ego depletion effect: velocity feedback. Velocity feedback refers to the perceived speed at which a goal is attained. Throughout three studies we show that fast velocity feedback can prevent the ego depletion effect and that slower-than-expected velocity feedback can create the ego depletion effect. The studies support a novel way of understanding the dynamics between two depleting tasks: tasks can have both depletion-inducing factors and depletion-mitigating factors; depending on which factor is stronger in an initial task, either an ego depletion effect or an ego invigoration effect may occur.

Self-regulation liberates human behavior from being driven solely by external stimuli and automatic or instinctual responses (Muraven, Baumeister, & Tice, 1999). Imagine for example a person who loves sweets but is on a diet. In a world without self-regulation this person would never be able to resist the sight of a chocolate cake. In fact, any conflict between instant gratification and long-term goals would always be solved in favor of instant gratification. In a world in which individuals do have the capacity to self-regulate, going against one's instincts and urges becomes possible. Thus, temptations such as chocolate cakes can be resisted for the sake of achieving goals such as becoming healthier or fitter. The ability to warden against urges and temptations is an extremely valuable asset; in a Study by Moffitt et al. (2011), participants who displayed a higher capacity to self-regulate as children grew up to become wealthier and healthier adults. The results held even when controlling for participants' intelligence, race, social class and family background.

The Strength model of self-regulation and the need for a new paradigm

One of the most popular self-regulation models is the Strength Model of self-regulation (Baumeister et al., 1998; Muraven & Baumeister, 2000). The Strength Model posits that people's ability to self-regulate draws on a limited, all-encompassing resource that gets depleted with use. Such resource is usually called willpower.

The implication of having a limited resource that powers all acts of self-regulation is that initial acts of self-regulation will hinder subsequent acts of self-regulation. For example, if an employee who got stuck in a traffic jam represses the urge to shout hysterically (initial act of self-regulation, performed at full willpower), said employee will have a harder time stopping himself from checking his personal e-mail at work (subsequent act of self-regulation, performed with diminished willpower). All acts or activities that require self-regulation are usually called 'depleting', in reference to the notion that they use (i.e., deplete) a limited resource. The more depleting a task is, the more of that resource is spent. In terms of task dynamics, the Strength Model makes a clear prediction: if two depleting tasks are performed consecutively, doing the first one

will decrease one's performance or persistence in the second one. Such performance or persistence decrease is known as the ego depletion effect.

In previous research, the ego depletion effect has received ample support. However, there is also evidence that engaging in an initial depleting task does not always cause an ego depletion effect. In other words, engaging in an initial task that requires self-regulation may not necessarily impair performance or persistence in a subsequent task that also requires self-regulation. This is the case, for example, when people are led to believe that their capacity to self-regulate is limitless (Job et al., 2010), or when the initial depleting task is perceived as an opportunity to have fun (Laran & Janiszewski, 2011). These results suggest that the carry-over effect of one activity on another cannot be understood by simply looking at how depleting the initial task is. Instead, it might be necessary to consider a dual-force framework that takes into account both the aspects that make the initial task depleting (e.g. the existence of a response conflict) and the aspects that make the initial task invigorating (e.g. task enjoyment). We will call the former depletion-inducing factors and the latter depletion-mitigating factors. According to this dual-force framework, a task can be depleting (i.e., require self-regulation) and yet not cause the ego depletion effect (i.e., not cause a performance or persistence drop in a subsequent depleting task). The ego depletion effect should occur if the depletion-inducing factors of the initial task are stronger than its depletion-mitigating factors. The ego depletion effect should not occur if the depletion-inducing factors of the initial task are similarly strong to or weaker than its depletion-mitigating factors. If the depletion-inducing factors of the initial task are sufficiently weaker, an ego-invigoration effect could occur. The ego invigoration effect refers to the idea that performance or persistence in a subsequent depleting task would increase instead of decreasing. These predictions add an important nuance to the Strength Model, which would predict that performing an initial depleting task should cause the ego depletion effect no matter what. Evidence in favor of the dual-force framework can be found in Vohs et al. (2012) and Vohs et al. (2014), that built on the findings of Job et al. (2010) and Laran & Janiszewski (2011) and expanded them by providing a boundary condition: depletion intensity. It was found that task enjoyment and beliefs in unlimited self-regulation only prevented the ego depletion effect when the initial task was mildly depleting, but not when it was strongly depleting. In terms of the dual-force framework, the fact that a

mildly depleting task neither caused the ego depletion effect nor an ego invigoration effect could be explained if we assume that the depletion-inducing and depletion-mitigating factors of that task were similarly strong. Similarly, the fact that a more strongly depleting task caused the ego depletion effect could be explained if we assume that the depletion-inducing factors of such task were stronger than its depletion-mitigating factors.

In this paper we present a novel moderator for the ego depletion effect: velocity feedback, and will test its effectiveness by using the dual-force framework presented above.

Self-regulation and velocity feedback

Velocity feedback is the rate at which the discrepancy between an actual state and a goal decreases (Johnson et al, 2012). In simpler terms, velocity feedback refers to the perceived speed at which a goal is attained or a task is completed. Velocity feedback is tightly related to the concept of locomotion, one of the two regulatory modes in Regulatory Mode Theory (Higgins, Kruglanski, & Pierro, 2003; Kruglanski et al. 2000). Locomotion is the aspect of self-regulation that is concerned with initiating and maintaining goal-related progress. The similarities between locomotion and velocity feedback are apparent: fast and smooth goal-related progress leads to both high locomotion and fast velocity feedback. Similarly, slow goal-related progress leads to both low locomotion and slow velocity feedback.

We have not found any research that explicitly tests the role of locomotion (or velocity feedback) in the context of task dynamics between two depleting activities. The idea that velocity feedback (and by extension locomotion) should act as a depletion-mitigating factor has been hinted at in earlier work, however. According to Carver and Scheier (2001), success expectations are inferred based on velocity feedback: moving towards a goal quickly and with ease (fast velocity feedback) suggests that the goal is achievable, while moving towards it slowly and with difficulty (slow velocity feedback) suggests that the goal is difficult to achieve. It is thus not surprising that fast velocity feedback is believed to lead to a higher sense of self-efficacy (Johnson et al., 2012), in as much as it signals that a person's current abilities or skills are good enough to attain

whatever goal he may be pursuing. According to Self-determination theory (Ryan & Deci, 2000), activities that lead to a sense of competence (i.e., that make people feel self-efficacious) are intrinsically motivating. Intrinsic motivation has already been shown to be a depletion-mitigating factor (Laran & Janiszewski, 2011; Vohs et al., 2012; Vohs et al., 2014). Therefore, if fast velocity feedback produces a sense of self-efficacy, and thus intrinsic motivation, then fast velocity feedback should be a depletion-mitigating factor. As such, it could potentially stop a depleting task from causing the ego depletion effect.

On the other hand, slow velocity feedback could cause the ego depletion effect. This could happen even without altering one's sense of self-efficacy. If a person makes less progress than expected for reasons beyond his control, he may not feel any less self-efficacious but he may find the task less intrinsically motivating and therefore less enjoyable. If slower-than-expected velocity feedback diminishes intrinsic motivation and thus task enjoyment, then slower-than-expected velocity feedback should weaken the depletion-mitigating factors of a task. If that task was depleting and its depletion-mitigating factors used to be enough to compensate, the weakening of those depletion-mitigating factors may cause the ego depletion effect to appear.

In this paper, we will explore the role and the limits of fast velocity feedback as a depletion-mitigating factor (Studies 1a and 1b), and the role of slower-than-expected velocity feedback as a tool to create the ego depletion effect (Study 2). In all cases, we will do it under the dual-force framework described above.

Study 1

In Studies 1a and 1b participants performed two depleting tasks one after another. In Study 1a, task 1 was mildly depleting and conducive to fast velocity feedback. The idea was to make the depletion-mitigating factors of task 1 at least as strong as its depletion-inducing factors. We predict that after completing task 1, persistence in task 2 will not be impaired, since velocity feedback would compensate for the debilitating effect of task depletion. In other words, we expect no ego depletion effect.

In order to test our assumption that the relative strength of the depletion-inducing and depletion-mitigating factors of task 1 determines how well one does in task 2, we modified the strength of these factors in Study 1b. In that study, the task 1 of Study 1a was adapted to be more strongly depleting and less conducive to fast velocity feedback. Compared to Study 1a, the goal was to make the depletion-inducing factors of task 1 stronger than its depletion-mitigating factors. We predict that after doing task 1, persistence in task 2 will be impaired. In other words, we expect the ego depletion effect to happen.

Study 1a

Method

Participants

Fifty-four undergraduate students participated in exchange of a performance-contingent reward. All participants were part of a subject pool managed by a Southern European university and were familiar with participating in remunerated experiments. One participant lacked the reflexes to perform one of the tasks and had to be removed from the analyses.

Procedure

Participants came to a computer laboratory in groups of about twenty people. Once inside, each participant was guided to a randomly-assigned computer workstation. Computers were separated by panels so that participants could not see the screen of their neighbors and create a certain sense of privacy.

Participants were randomly assigned to a *control* condition ($n = 26$) or a *Stroop* condition ($n = 28$). Participants in the *Stroop* condition had to perform two activities; those in the *control* condition only one. The first task for those in the *Stroop* condition

was a color-Stroop task. In that task, participants are presented with a color word that can appear in varying font colors, for example the word BLUE in red letters. The objective is to indicate the color in which the word appears. Trials can be incongruent, when the word meaning and the font color are different, or congruent, when the word meaning and the font color are the same. Because people have the automatic tendency to read the word, answering correctly for incongruent trials requires self-regulation (since that automatic tendency needs to be overridden). The color-Stroop task had 120 rounds, sixty-five of which were incongruent. Each round started by showing participants a fixation point, after which the target stimulus was presented. The variation of stimuli was low: only two font colors (red and blue) and two color word meanings (RED and BLUE) were combined to create a total of four possible stimuli. Participants were instructed to report the font color of each word that appeared on screen by using the keyboard. In particular, they had to press the key that matched the initial letter of the font color. Importantly, participants only had one second to provide an answer. As soon as they pressed a key or after one second had elapsed, participants were automatically advanced to the next round. Participants received €0.05 for every correct answer and the same amount was deducted from their earnings when making a mistake. Failing to answer within a second was not penalized. The task included a ten-round training period to help participants familiarize themselves with the activity. In the Stroop task, we measured participants' performance (as an estimate of how fast or slow velocity feedback may have been) and participants' response times in congruent and incongruent trials (as a manipulation check to see if the task was depleting).

Then all participants performed an anagram task. Note that for those in the *control* condition, this was the only task they did. Participants were presented with six sequences of letters, which appeared on the screen one by one. Each sequence had nine letters. Participants were told that they had to rearrange the letters in each sequence until they managed to form a valid Spanish word of exactly eight letters. Thus, each sequence required dropping one letter. The sequences were chosen to be very difficult to solve, but there existed a correct solution for all of them. Correct answers were worth €0.20 each and providing an incorrect answer was not penalized. The instructions said that participants could stop trying to solve a particular anagram if it proved to be too difficult for them, but warned them that after giving up on a sequence they could not

reattempt it later. There was a maximum time limit of thirty minutes to complete this activity. The dependent variable was the average amount of time that participants spent on a sequence of letters before finally giving up. We chose to measure persistence because this measure is susceptible to depletion effects: depleted individuals tend to persist less long. We chose to restrict our analysis to sequences of letters that participants could not solve because this captures persistence more cleanly and minimizes the noise added by differences in skill level: without restricting the analysis to unsolved sequences only, it would not be possible to distinguish a participant who gave up soon from a participant who, due to his skill, found the solution quickly.

Results and Discussion

Manipulation check

To assess whether the Stroop task was depleting, we tested whether response times in incongruent trials were on average higher than in congruent trials. This should be the case because only the incongruent trials presented participants with a response conflict that requires self-regulation (the mismatch between font color and word meaning). To verify whether participants actually engaged in self-regulation, looking at the response times is useful because the act of self-regulating takes time (Greene & Paxton, 2009). As expected, participants took longer to complete incongruent trials ($M = 0.65$ seconds, $SD = 0.12$) than congruent trials ($M = 0.57$ seconds, $SD = 0.10$; $t(27) = 11.26$, $p < .001$). Thus, we can assume that the Stroop task was depleting.

Velocity Feedback

Additional to being depleting, the Stroop task was intended to give participants a sensation of fast, smooth progress (i.e., fast velocity feedback). We believe that the design of the Stroop task is naturally good at generating such a sensation for at least one reason: it has a very simple rule-set that covers all possible scenarios that can be encountered when performing the task. Interiorizing the rule-set means that participants always know what to do and how to do it. This minimizes the chances of getting 'stuck', and should be conducive to fast velocity feedback. Participants' performance in the

Stroop task was used to measure to which extent they interiorized the rule-set and, ultimately, to infer if velocity feedback during the task could have been high. Out of the 120 rounds included in the Stroop task, participants on average answered 110.43 rounds correctly ($SD = 9.27$). Additionally, 75% of participants answered at least 106.25 rounds correctly. These excellent performance indicators suggest that velocity feedback during the task must have been high.

Anagram Persistence

Our dependent variable for this study was the average amount of time that participants spent on a sequence of letters before finally giving up. The analysis was limited to unsolved sequences of letters only. Unsolved sequences were the norm and not the exception: on average participants managed to solve 0.96 sequences out of 6 ($SD = 1.24$). No participant managed to solve them all.

Participants in the *Stroop* condition ($M = 194.58$ seconds, $SD = 77.76$) persisted longer than participants in the *control* condition ($M = 136.87$ seconds, $SD = 53.79$; $t(51) = -3.11$, $p = .003$). This suggests that high velocity feedback successfully acted as a depletion-mitigating factor. Furthermore, and from the perspective of the dual-force framework, the result implies that the depletion-mitigating factors of the Stroop task were stronger than its depletion-inducing factors, to the point that an ego-energizing effect was created. Laran & Janiszewski (2011) found a similar effect when framing a depleting task as an opportunity to have fun. They called it a ‘vitality surplus’.

Study 1b

Study 1b featured the same dual-task set up and the same activities as Study 1a. The crucial difference was that the Stroop task in Study 1b was modified to be more depleting and less conducive to fast velocity feedback. While the goal of Study 1a was to design a Stroop task whose depletion-inducing factors were not stronger than its depletion-mitigating factors, the goal of Study 1b was to do the opposite: create a Stroop task where the depletion-inducing factors were stronger. Under those circumstances, the dual-force framework predicts that performing this new Stroop task

should cause the ego depletion effect i.e., it should cause a persistence decrease in the anagram task. This is opposite to the prediction we made in Study 1a.

Method

Participants

Fifty-nine undergraduate students participated in exchange of a show-up fee. All participants were part of a subject pool managed by a Southern European university and were familiar with participating in remunerated experiments.

Procedure

As in Study 1a, participants came to a computer laboratory in groups of about 20 and were randomly assigned to either a *control* condition (n = 29) or a *Stroop* condition (n = 30). In the *control* condition, we first measured participants' mood using the positive and negative affect schedule (PANAS) and then they performed the same anagram task used in Study 1a. The time limit of the task was shorter (fifteen minutes instead of thirty) and performance was not monetarily incentivized. Our dependent variable was the same as in Study 1a: the average amount of time participants spent on unsolved sequences of letters before finally giving up.

In the *Stroop* condition, participants first performed a color-Stroop task. This color-Stroop task was designed to be more depleting than the one used in Study 1a. This was achieved by extending the font color-word meaning combinations to nine and, especially, by increasing the amount of information participants needed to pay attention to while performing the task: while in Study 1a participants merely had to pay attention to the words' font color, in Study 1b they had to focus on the words' position on the screen (left or right) and, based on that, report either the font color or the word meaning. This task structure should have prevented the task from becoming less depleting over time, since, unlike in the Stroop task from Study 1a, participants could not afford to ignore the meaning of the words (a strategy that is often developed with enough practice

and that reduces the response conflict of the task; Reisberg et al., 1980). Furthermore, the rules that decided which side of the screen required reporting which aspect of the words changed midway through the task. This should have made the task even more depleting because it forced participants to break a previously established habit. Due to the task's extra complexity, participants had more time to answer each round (two seconds instead of one). Also, their performance was not monetarily incentivized. As in Study 1a, we measured task performance (as an estimate of how fast or slow velocity feedback may have been) and participants' response times in congruent and incongruent trials (as a manipulation check to see if the task was depleting). After completing the Stroop task, participants from the *Stroop* condition moved on to the same two activities that participants from the *control* condition did: the PANAS and the anagram task.

We measured participants' mood via the PANAS because performing a depleting task can potentially alter one's mood. If that were to happen and mood was not measured, it would be impossible to disentangle what exactly caused a potential persistence decrease in the anagram task: the expenditure of limited self-regulatory resources or the mood alteration. By measuring participants' mood, disentangling both explanations becomes possible.

Results and Discussion

Manipulation check

As in Study 1a, we assessed whether the Stroop task was depleting by testing if response times in incongruent trials were on average higher than in congruent trials. Participants indeed took longer to complete incongruent trials ($M = 1.31$ seconds, $SD = 0.16$) than congruent trials ($M = 1.14$ seconds, $SD = 0.15$; $t(29) = 10.81$, $p < .001$). Thus, we can assume that the Stroop task was depleting. Next we tested whether the Stroop task from Study 1b was more depleting than the Stroop task from Study 1a. To do so, we relied on the notion that larger differences in response times between congruent and incongruent trials should be indicative of greater depletion. The difference in response times between congruent and incongruent trials was larger in the Stroop task from Study 1b ($M = 0.17$ seconds, $SD = 0.09$) than in the Stroop task from Study 1a ($M = 0.08$

seconds, $SD = 0.04$; $t(39) = -5.42$, $p < .001$). Thus, we can assume that the Stroop task from Study 1b was more depleting than the Stroop task from Study 1a.

Velocity Feedback

As in Study 1a, we used participants' performance in the Stroop task to infer how high velocity feedback may have been during the task. Since the Stroop task in Study 1b presented a more complex rule-set compared to the Stroop task in Study 1a, we expected performance to be lower and velocity feedback to be slower. This is indeed what happened; participants in Study 1b answered correctly a lower proportion of Stroop trials ($M = 81.61\%$, $SD = 11.19\%$) compared to participants in Study 1a ($M = 92.02\%$, $SD = 7.72\%$; $t(56) = 4.10$, $p < .001$). Although the difference was statistically significant, it is nonetheless arguable that participants in Study 1b had little trouble understanding and applying the more complex rules of their Stroop task. Although their sensation of fluid progress may have been lower (slower velocity feedback) it certainly did not disappear completely. Therefore, the net effect of performing the Stroop task on the anagram task should still have been determined by the interaction between the depletion-inducing factors of the Stroop task and its depletion-mitigating factors.

PANAS

The positive and negative affect of participants in the *Stroop* condition (measured right after performing the Stroop task) were compared against those of participants in the *control* condition (measured right at the beginning of the experiment). Regarding the positive affect subscale of the PANAS, participants in the *Stroop* condition ($M = 29.27$ points, $SD = 5.43$) did not score different from participants in the *control* condition ($M = 31.38$ points, $SD = 7.21$; $t(57) = 1.28$, $p = .208$). Regarding the negative affect subscale of the PANAS, participants in the *Stroop* condition ($M = 14.43$ points, $SD = 4.65$) did not score different from participants in the *control* condition ($M = 15.10$ points, $SD = 5.46$; $t(57) = 0.51$, $p = .613$). Therefore, any effects that performing the Stroop task may have caused on participants' persistence in the anagram task cannot be attributed to mood changes.

Anagram Persistence

As in Study 1a, our dependent variable was the average amount of time that participants spent on unsolved sequences of letters before finally giving up. Also as in Study 1a, unsolved sequences of letters were the norm: on average, participants managed to solve 0.34 sequences out of 6 ($SD = 0.54$), and no participant managed to solve all the sequences. Unlike in Study 1a, we predicted that anagram persistence in unsolved sequences of letters would be lower in the *Stroop* condition than in the *Control* condition. This was because the Stroop task from Study 1b was modified to be more depleting and less conducive to fast velocity feedback compared to the Stroop task from Study 1a. If these changes to the Stroop task were enough to make its depletion-inducing factors dominate, then the ego depletion effect should have occurred. This is indeed what happened; participants in the *Stroop* condition ($M = 79.44$ seconds, $SD = 34.70$) persisted less than participants in the *control* condition ($M = 119.37$ seconds, $SD = 40.70$; $t(57) = 4.06$, $p < .001$). This is the classic ego depletion effect that we expected to obtain.

Taken together, the results from Studies 1a and 1b show that velocity feedback behaves like other moderators of the ego depletion effect such as task enjoyment or beliefs in unlimited self-regulation capacity. Like those other moderators, fast velocity feedback can prevent the ego depletion effect when an initial task is mildly depleting (Study 1a) but not when the initial task becomes relatively more depleting (Study 1b). In a broader context, Studies 1a and 1b also support the dual-force framework and its message that, in order to understand the dynamics between two depleting tasks, it is necessary to look at both the depletion-inducing and the depletion-mitigating factors of the initial task. Study 1b also helps reconcile the results from Study 1a with the previous literature, in which the Stroop task has extensively been used to cause the ego depletion effect.

Study 2

In Study 2 we sought to replicate the main result of Study 1a, using the same tasks and set-up. More importantly, Study 2 also provided an alternative test of the role of velocity feedback: we modified the Stroop task from Study 1a by adding pauses after each round; the goal was to create a sensation of slower-than-expected velocity

feedback in order to make the task less enjoyable. In this case, the slower velocity feedback is not a consequence of task difficulty (as in Study 1b), but is externally induced. This manipulation should weaken the depletion-mitigating factors of the Stroop task. While the Stroop task from Study 1a did not cause the ego depletion effect, we predict that the Stroop task in Study 2 will.

Method

Participants

Fifty-six undergraduate students participated in exchange of a show-up fee. All participants were part of a subject pool managed by a Southern European university and were familiar with participating in remunerated experiments.

Procedure

Participants came to a computer laboratory in groups of about 20 people. They were randomly assigned to either of three conditions: a *control* condition (n = 16), a *standard Stroop* condition (n = 20) and an *interrupted Stroop* condition (n = 20). In the *control* condition, participants only performed the same anagram task described in the previous two Studies. The task had a time limit of fifteen minutes and was not monetarily incentivized. The dependent variable was, as in the previous studies, the average amount of time participants spent on unsolved sequences of letters before finally giving up.

In the *standard Stroop* condition, participants first performed the same color-Stroop task from Study 1a (but without the performance-contingent monetary rewards). We measured task enjoyment by asking participants how much of a timer waster performing the Stroop task had been (using a scale from 1 to 5). Besides collecting their opinion on this issue, we also measured their performance and their response times in congruent and incongruent trials. After finishing with the Stroop task, participants moved on to the anagram task.

In the *interrupted Stroop* condition, participants first performed a version of the Stroop task that was identical to the one used in the standard Stroop condition except for one extra feature: after completing each round, participants were greeted by a screen that told them to wait for a few seconds. After three seconds, a button appeared and participants had to press it in order to continue to the next round. Thus, while in the standard Stroop condition participants moved from round to round automatically, in the interrupted Stroop condition they were forced to wait and then to manually confirm that they wished to continue. This supposed around four seconds of downtime per round, while the time to answer a round was a single second at most. With this manipulation, we hoped to create a sensation of slower-than-expected velocity feedback that did not affect how self-efficacious participants felt (since their inability to go faster had nothing to do with how good they were at the task). We measured task enjoyment and their performance and response times in congruent and incongruent trials. After finishing with their version of the Stroop task, they too moved on to the anagram task.

Results and Discussion

To check whether the results from Study 1a were replicated, we used the *control* and *standard Stroop* conditions of Study 2. The only notable difference between these conditions and the analogous conditions from Study 1a was in the incentives: in Study 1a task performance was monetarily incentivized while in Study 2 it was not.

Manipulation Check

To assess whether the Stroop task from the *standard Stroop* condition (henceforth standard Stroop task) was depleting, we tested whether response times in incongruent trials were on average higher than in congruent trials. As expected, participants took longer to complete incongruent trials ($M = 0.55$ seconds, $SD = 0.12$) than congruent trials ($M = 0.50$ seconds, $SD = 0.08$; $t(19) = 4.32$, $p < .001$). Thus, we can assume that the standard Stroop task was depleting.

Velocity Feedback

To assess how fast velocity feedback in the standard Stroop task could have been, we used participants' performance in that task. Out of the 120 rounds included in the Stroop task, participants on average answered 113.30 rounds correctly ($SD = 7.74$). Additionally, 75% of participants answered at least 111 rounds correctly. These excellent performance indicators are on par with those seen in Study 1a; in Study 1a participants answered on average 92% of the rounds correctly while in Study 2 they answered on average 94% of the rounds correctly. Overall, we can assume that velocity feedback in the standard Stroop task must have been quite high.

Anagram Persistence

We tested whether the standard Stroop task could cause the ego depletion effect by comparing how long participants in the *control* and *standard Stroop* conditions persisted in the anagram task. As in the previous studies, the analysis was restricted to unsolved sequences of letters only. Also as in previous studies, unsolved sequences of letters were the norm: on average, participants managed to solve 0.67 sequences out of 6 ($SD = 0.86$), and no participant managed to solve all the sequences. To replicate the results from Study 1a, persistence in the *control* condition must not have been higher than in the *standard Stroop* condition. This is indeed what happened; participants in the *control* condition ($M = 109.55$ seconds, $SD = 36.53$) did not persist longer than participants in the *standard Stroop* condition ($M = 101.34$ seconds, $SD = 47.40$; $t(34) = 0.57, p = .572$).

Thus, the main result of Study 1a was replicated: a depleting Stroop task that was conducive to fast velocity feedback once again failed to cause the ego depletion effect. However, not only had the Stroop task from Study 1a failed to cause the ego depletion effect but it had managed to create an ego invigoration effect. From the perspective of the dual-force framework, this difference in outcomes implies a difference in the relative-weight of the depletion-inducing and depletion-mitigating factors of each Stroop task. In the Stroop task from Study 1a, the depletion-inducing factors must have been weaker than the depletion-mitigating factors for the ego invigoration effect to have occurred. In the standard Stroop task from Study 2, the depletion-inducing and depletion-mitigating factors must have been similarly strong for neither the ego

invigoration effect nor the ego depletion effect to have occurred. The fact that performance-based monetary rewards were only present in Study 1a could explain why the ego invigoration effect only happened in that study. Performance-based monetary rewards have been shown to prevent the ego depletion effect (Muraven & Slessareva, 2003). This means that the Stroop task from Study 1a included an additional depletion-mitigating factor compared to the standard Stroop task from Study 2. With the help of that additional factor, overcoming the depletion-inducing factors of the Stroop task must have been easier. That could explain why an ego invigoration effect occurred in Study 1a but not in Study 2.

After replicating the results from Study 1a, we next tested whether slower-than-expected velocity feedback could cause the ego depletion effect by making tasks less enjoyable.

Manipulation Check

Differences in task enjoyment between the Stroop tasks of the *interrupted Stroop* condition and the *standard Stroop* condition were evaluated; higher numbers indicate a stronger impression that the Stroop task had been a waste of time. As predicted, participants in the *interrupted Stroop* condition ($M = 4.25$ points, $SD = 0.91$) considered the Stroop task to be more of a time waster than participants in the *standard Stroop* condition ($M = 3.45$ points, $SD = 1.32$; $t(34) = -2.24$, $p = .032$).

While a decrease in task enjoyment could potentially cause the ego depletion effect to occur, the same could be achieved if the interrupted Stroop task accidentally became more depleting as a result of our velocity feedback manipulation. To rule out this alternative explanation, we tested whether the interrupted Stroop task was more depleting than the standard Stroop task. As in Study 1b, we relied on the notion that larger differences in response times between congruent and incongruent trials should be indicative of greater depletion. The difference in response times between congruent and incongruent trials was larger in the *interrupted Stroop* ($M = 0.09$ seconds, $SD = 0.05$) than in the *standard Stroop* ($M = 0.05$ seconds, $SD = 0.04$; $t(38) = -2.56$, $p = .015$). This result was surprising because the only difference between the two Stroop tasks were the

pauses after each round, which should have not caused the response conflict of the interrupted Stroop task to grow larger. A more likely possibility was that the pauses made participants lose focus from the task and caused them to be slower in general. This could have happened because the pauses required using a computer mouse to advance to the next round while the task required having both index fingers over specific keys of the keyboard in order to be as fast as possible. To test whether the interrupted Stroop task was actually more depleting or simply more susceptible to higher response times, we evaluated the response times in congruent trials. Since congruent trials do not present a response conflict and therefore do not require self-regulation, they are ideal to disentangle these two explanations. Participants from the *interrupted Stroop* condition took longer to complete congruent trials ($M = 0.58$ seconds, $SD = 0.08$) than participants from the *standard Stroop* condition ($M = 0.50$ seconds, $SD = 0.08$; $t(38) = -3.08$, $p = .004$). Therefore, the higher response times in the interrupted Stroop task seem to have been caused by the need to refocus on the task rather than by a more intense response conflict. This suggests that the interrupted Stroop task did not become more depleting as a result of the velocity feedback manipulation. It did, however, become less enjoyable as we previously showed.

Anagram Persistence

Persistence in the anagram task was compared between the *interrupted Stroop* condition and the *control* condition. As in previous studies, the analysis was restricted to unsolved sequences of letters only. Also as in previous studies, unsolved sequences of letters were the norm: on average, participants managed to solve 0.58 sequences out of 6 ($SD = 0.73$), and no participant managed to solve all the sequences. We predicted that anagram persistence in unsolved sequences of letters would be lower in the *interrupted Stroop* condition than in the *Control* condition. This was because the interrupted Stroop task, thanks to the slower-than-expected velocity feedback manipulation, was altered to be less enjoyable. If the weakening of the depletion-mitigating factors of the interrupted Stroop task was enough to cause its depletion-inducing factors to dominate, then the ego depletion effect should have occurred. This is indeed what happened; participants in the *interrupted Stroop* condition ($M = 84.32$ seconds, $SD = 32.49$) persisted less than

participants in the *control* condition ($M = 109.55$ seconds, $SD = 36.53$; $t(34) = 2.19$, $p = .035$). As predicted, the ego depletion effect did occur.

While the Stroop task from the *standard Stroop* condition failed to cause the ego depletion effect, the Stroop task from the *interrupted Stroop* condition successfully did it. This result validates the role of slower-than-expected velocity feedback as a factor capable of causing the ego depletion effect by making tasks less enjoyable.

General discussion and conclusions

The data support the suggestion that velocity feedback is a moderator for the ego depletion effect. In Study 1a, fast-velocity feedback prevented an initial depleting task from causing the ego depletion effect. In Study 1b, the same initial depleting task from Study 1a was altered to be more depleting and less conducive to fast-velocity feedback. In that situation, fast-velocity feedback was no longer able to prevent the ego depletion effect. The results from Studies 1a and 1b align with the previous literature, in which other moderators of the ego depletion effect (such as task enjoyment or beliefs in unlimited self-regulation capacity) have been shown to only be effective at preventing the ego depletion effect when the initial task is mildly depleting. Finally, Study 2 showed that slower-than-expected velocity feedback, by reducing task enjoyment, can make an initial depleting task cause the ego depletion effect when it had previously failed to generate it.

These results support Laran & Janiszewski (2011) and Kotabe & Hofmann (2015) in their claim that the Strength Model of Self-regulation, which has been the standard in the last fifteen years, is oversimplified because it only focuses on those aspects that make tasks depleting, while it ignores those aspects that make tasks invigorating (such as, in the present paper, fast velocity feedback). In line with those authors, we believe that in order to understand the carry-over effects of one task over another, acknowledging the multi-dimensional nature of tasks is essential. That is why we embrace the dual-force framework, and believe that it is the interaction between the depleting and invigorating aspects of a task that ultimately decides if such task will cause an ego depletion effect. The results of the present paper fit well with this dual-force framework.

Recently, the existence of the ego depletion effect has been questioned; some researchers have suggested that it may be an artifact of publication bias (Carter & McCullough, 2013), which in turn prompted a yet-unpublished registered replication attempt to be conducted (Hagger et al., 2015). We wonder if the reason why the ego depletion effect is difficult to replicate could be none other than the fact that the potential depletion-mitigating factors of the initial depleting task are usually ignored. Depending on their strength, studies in which the ego depletion effect should have surfaced may have not exhibit it, or even show opposite results. More research is needed to determine if by taking into account those depletion-mitigating factors the ego depletion effect could become an easier-to-replicate phenomenon.

The present studies have several limitations; in terms of design, it would have been cleaner if the results from Studies 1a and 1b would have come from a single study, instead of from two separate studies. Mood, as a potential alternative explanation to the ego depletion effect, should have been measured in all studies, and not just in Study 1b. Furthermore, incentives throughout the studies should have been consistent. The fact that the results from Study 1a were replicated in Study 2 (despite the fact that the former had performance-based monetary rewards and the latter a show-up fee) makes the difference in incentives less concerning however. In terms of the theoretical framework, the dual force framework lacks reliable metrics to measure the magnitude of the depletion-inducing and depletion-mitigating factors of a task *ex ante*. As a result, it is difficult to predict whether a certain task will cause the ego depletion effect, the ego invigoration effect, or neither. Instead, we are forced to assume that because a task did cause the ego invigoration effect (Study 1a) the magnitude of its depletion-mitigating factors was stronger than the magnitude of its depletion-inducing factors. Finding reliable metrics to measure the magnitude of those factors so that the dominating one could be predicted could be an interesting new avenue for research on self-regulation.

Despite the limitations in design and the shortcomings of the dual-force framework, the present paper does offer reasonable evidence of the role of velocity feedback as an ego depletion moderator, and of the importance of considering both depletion-inducing factors and depletion-mitigating factors when predicting the carry-over effects of one task over another.

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2. MONEY AND LIFE MEANINGFULNESS

Abstract

In this paper, we propose two possible and competing mechanisms by which reminders of money abundance may affect life meaningfulness. On the one hand, reminders of money abundance may increase one's desire to be financially successful, which in turn should make life seem less meaningful according to previous research. On the other hand, reminders of money abundance may increase one's self-esteem, which in turn should make life seem more meaningful according to previous research. This paper finds evidence for the latter effect and mechanism: reminders of money abundance make life seem more meaningful, increase self-esteem, and do not affect the desire for financial success. Self-esteem, in turn, mediates the relationship between reminders of money abundance and life meaningfulness.

Roger is having dinner in front of the TV, half-absently watching commercial after commercial as he waits for the evening news to start. In the midst of shampoos, cars and detergents, one particular commercial stands out and catches Roger's attention; it starts with a few one hundred-dollar bills falling from the sky. As a mild rain that suddenly turns into a downpour, the few dollar bills quickly become dozens, then hundreds. The camera then tilts down to reveal how all that money has been accumulating on the ground, forming a lush, green patina. The slogan then reads: 'This Friday, a jackpot of \$20M can be yours. Play Mega Millions'. By watching this lottery commercial, the concept of money abundance has been activated in Roger. Will life seem more or less meaningful to Roger after seeing this commercial?

Reminders of money abundance and life meaningfulness

According to Frankl (1963) humans are characterized by a 'will to meaning', an innate force that compels them to find meaning and significance in their lives. Life meaningfulness positively correlates with life satisfaction (Chamberlain & Zika, 1988b) and happiness (Debats et al., 1993), and negatively correlates with depression (Debats et al., 1993) and suicide thoughts (Harlow et al., 1986). It is thus not surprising that life meaningfulness has been considered a core dimension (Ryff, 1989) or a central outcome (Ryan & Deci, 2001) of well-being.

How do reminders of money abundance relate to life meaningfulness? Self-determination theory (Ryan & Deci, 2000) predicts a negative relationship between the desire for financial success and life meaningfulness. Self-determination theory takes an eudaimonic approach to well-being. According to the eudaimonic approach, well-being is achieved when people engage in activities that are most congruent with their deeply held values (Waterman, 1993). In other words, the eudaimonic approach postulates that in order to experience well-being, individuals must remain true to themselves and focus on those things that they find intrinsically worthwhile. This, in turn, results in a life that feels meaningful and that leads to a sense of vitality (Ryan & Frederick, 1997) and self-actualization (Maslow, 1943). Consistent with this idea, Self-determination theory predicts that pursuing intrinsic aspirations such as those for personal growth or affiliation brings more eudaimonic well-being (and therefore a higher sense of

meaningfulness, vitality and self-actualization) than pursuing extrinsic aspirations such as those for financial success or fame (Ryan et al., 2013). This is because attaining intrinsic aspirations is valuable by itself, while attaining extrinsic aspirations is valuable only in as much as they fulfill some deeper need or goal. Furthermore, previous research has suggested that an excessive focus on extrinsic aspirations can distract people from devoting themselves to more intrinsic endeavors (Deci & Ryan, 1985b). The implication is that an excessive focus on extrinsic aspirations such as the desire for financial success could undermine eudaimonic well-being and its outcomes (meaningfulness, vitality and self-actualization). There is some evidence of this; Kasser and Ryan (1993) found that participants who ranked financial success as their most important aspiration reported lower eudaimonic well-being than participants for whom financial success was a less central aspiration. Measures of vitality and self-actualization were used to assess eudaimonic well-being. Although life meaningfulness was not measured, the eudaimonic theory of well-being put forth by Ryan and colleagues suggests that the results should be transferable to life meaningfulness. Thus, if reminders of money abundance increase the desire for financial success to the point that it becomes a central aspiration, people should experience a lower sense of eudaimonic well-being and, consequently, a lower sense of life meaningfulness.

However, reminders of money abundance could play a different role, other than activating financial success as a central aspiration. We argue that reminders of money abundance could make life seem more meaningful by increasing self-esteem. One popular theory of life meaningfulness states that in order to achieve a meaningful life one's daily actions must fulfill four needs: the needs for purpose, value, efficacy, and, self-esteem (Baumeister, 1991). Purpose is experienced when one's actions feel related to one's desired goals. For example, if a person wishes to know Japanese (goal) and he is studying Kanji (activity), then studying Kanji is purposeful and hence conducive to life meaningfulness. Value is experienced when one's actions can be morally justified, either because they feel like the right thing to do or because they have been rationalized to appear that way. For example, if a person returns a wallet full of money to a police officer, this action has positive value (i.e., it is morally justifiable) and thus conducive to life meaningfulness. Efficacy is experienced when one feels in control of the outcomes of his own actions. For example, a person who studies very hard for an exam and passes

it experiences a sense of efficacy because his action (studying) had the desired outcome (passing the exam). The resulting sense of efficacy is conducive to life meaningfulness. Lastly, self-esteem is experienced when one's actions reinforce the worthiness of an individual. For example, situations that make one (or others) feel proud of oneself are good self-esteem boosters and thus conducive to life meaningfulness. Stillman et al. (2009) found support for Baumeister's four-need model of meaning by showing that the negative effect of social exclusion on life meaningfulness was mediated by the needs for purpose, value, efficacy and self-esteem. The four needs were significant mediators both when assessed individually (i.e., one mediator at a time) and simultaneously (all four mediators together). Thus, reminders of money abundance could make life seem more meaningful if they could fulfill any of these needs. We propose that reminders of money abundance could make life seem more meaningful by fulfilling the need for self-esteem.

Reminders of money abundance and self-esteem

Self-esteem reflects the overall attitude that one has about oneself. Previous work has identified two main determinants of self-esteem. Intrapersonal theories of self-esteem suggest that one's private self-evaluations are the root of self-esteem. Following James (1890), a person compares his current achievements ('I am a PhD student') to his ambitions ('I want to be a tenured professor') in order to evaluate himself. The narrower the gap between the two, the more positive the person's self-evaluations are and the higher the person's self-esteem becomes. Intrapersonal theories of self-esteem do acknowledge that one's self-evaluations can be shaped by other people's thoughts and opinions about oneself (i.e., social feedback). Nonetheless, these theories tend to minimize the role that social feedback may have on one's self-esteem, treating it as 'one more input'.

On the other hand, interpersonal theories of self-esteem, such as sociometer theory (Leary, 1999), contend that social feedback plays a focal role in determining one's self-esteem. For example, imagine that a young man thinks that he is very good at playing videogames. Should this self-evaluation increase his self-esteem? The answer is that it mainly depends on social feedback. If the young man's family and friends consider that being good at playing videogames is a waste of time (negative social feedback), then the

young man's self-esteem will most likely not increase. However, if they think it is admirable or praiseworthy (positive social feedback), then the young man's self-esteem will most likely increase. Conversely, intrapersonal theories of self-esteem would have predicted that as long as the young man enjoys videogames and had wished to become a good player, his becoming a good player should have increased his self-esteem regardless of social feedback.

The power of social feedback to shape self-esteem has been demonstrated in the laboratory (Leary & Baumeister, 2000; MacDonald et al., 2003). Interestingly, the effect of social feedback on self-esteem seems to be more pervasive than people suspect. In one study, participants experienced either social approval or social disapproval. Both the participants who had initially claimed that their self-esteem would not be shaken by other people's beliefs about themselves and the participants who had claimed otherwise reported similar self-esteem increases (decreases) when exposed to the positive (negative) social feedback (Leary et al., 2003).

Reminders of money abundance may decrease the power of social feedback to shape self-esteem. Vohs et al. (2006) found that individuals who were exposed to reminders of money abundance persisted longer in a difficult task before asking for help, were more likely to deny a help request, and more strongly preferred working and even playing alone (as opposed to with somebody else). Vohs et al. proposed that there was a common root to all these phenomena: reminders of money abundance made participants behave more self-sufficiently. Self-sufficiency is a state in which individuals believe that everyone should fend for themselves instead of relying on others, which explains the unwillingness to help others or ask others for help, as well as the preference for working and playing alone. Zhou et al. (2009) found that reminders of money abundance mitigate the distress caused by social rejection. This fits with the self-sufficiency hypothesis; by relying more on their own strength and capacities, self-sufficient people distance themselves from others. This, in turn, makes them less susceptible to social feedback.

If we examine these last results from the perspective of self-esteem, there is a clear implication: because of the increased sense of self-sufficiency that they provide, reminders of money abundance should decrease the role of social feedback in

determining one's self-esteem. We argue that this should result in a self-esteem increase: reaching a high level of self-esteem is complicated by the fact that any positive self-evaluation one may hold becomes significantly less positive if it fails to pass the filter of social approval. For example, imagine a person who enjoys hunting and considers himself a good hunter (positive self-evaluation). Also imagine that this person's colleagues abhor hunting, regarding it as something barbaric (negative social feedback). In that case, the positive self-evaluation does not translate into an increased self-esteem. Things could be different if that person could bring himself to care less about social feedback. That is precisely the role that reminders of money abundance play; by liberating people's self-evaluations from the filter of social approval, reminders of money abundance should make seeing oneself in a more positive light (i.e., reaching a higher level of self-esteem) easier.

Summarizing, we propose that reminders of money abundance have two possible and competing mechanisms to affect life meaningfulness. On the one hand, reminders of money abundance could decrease life meaningfulness by raising one's desire to be financially successful. On the other hand, reminders of money abundance could increase life meaningfulness by raising one's self-esteem. The two studies below will serve us to test the validity of the two proposed mechanism as well as the actual effect of reminders of money abundance on life meaningfulness.

Study 1

The purpose of Study 1 was to test how reminders of money abundance affect life meaningfulness. This, in turn, should offer some insights into the plausibility of the two competing mechanisms; if reminders of money abundance raise self-esteem, an increase in reported life meaningfulness should be observed. If a decrease happens instead, self-esteem would be unlikely to account for it. If reminders of money abundance strengthen the desire for financial success, a decrease in reported life meaningfulness should be observed. If an increase happens instead, the desire for financial success would be unlikely to account for it.

Method

Participants

Eighty-one undergraduate students participated in exchange of a show-up fee. All participants were part of a subject pool managed by a Southern European university and were familiar with participating in remunerated experiments. One participant was considered an outlier (that participant's response to the study's dependent variable was more than 2.5 SD away from the mean) and was removed from the analyses. For outlier identification, using a cut-off point of 2.5 standard deviations from the variable mean is not uncommon (e.g. Fleeson et al., 2002).

Procedure

Participants came to a computer laboratory in groups of about 20 people. Once inside, each participant was guided to a randomly-assigned computer workstation. Computers were separated by panels so that participants could not see the screen of their neighbors and create a certain sense of privacy.

Participants were randomly assigned to either a *control* condition (n = 40) or a *money prime* condition (n = 41). In the *control* condition, the instructions and questions of the study were displayed over a white background. In the *money prime* condition, the background was a picture of money bills instead. This was the only difference between the two conditions. Money backgrounds have successfully been used as priming tools in the past (Caruso et al., 2013). The money background we used depicted a large assortment of euro bills of high denomination to specifically activate the concept of abundance of money (as opposed to the concept of financial difficulties).

All participants performed two tasks. The first one was a word-completion task; participants were presented with fourteen incomplete words, which appeared on screen one by one. Only the first few letters of each word (i.e. the stem) were displayed. Participants were instructed to find the remaining letters that would turn those stems into real Spanish words. Crucially, half the stems could be turned into either money-

related or money-unrelated words (e.g. r i _ _ could become either rico (rich) or risa (laughter)), while the rest of the stems could only be turned into money-unrelated words. This word-completion task was adapted from Vohs et al. (2006) and served as the manipulation check to test the effectiveness of the money prime. In particular, we measured the number of stems that participants from each condition managed to turn into money-related words.

The second task required participants to complete ‘The Meaning in Life Questionnaire’ (Steger et al., 2006), which measures life meaningfulness. The score in the presence of meaning scale served as the dependent variable for this study.

Results and Discussion

Manipulation check

Participants in the *money prime* condition ($M = 2.85$ stems, $SD = 1.55$) turned more stems into money-related words than participants in the *control* condition ($M = 2.20$ stems, $SD = 1.31$; $t(78) = -2.03$, $p = .045$). This suggests that the concept of money was more salient in the mind of primed participants and, therefore, that the money prime was effective.

Life meaningfulness

Participants in the *money prime* condition ($M = 23.20$ points, $SD = 6.39$) scored higher in the presence of meaning scale than participants in the *control* condition ($M = 20.33$ points, $SD = 6.27$; $t(78) = -2.03$, $p = .046$). This suggests that, as predicted, activating the concept of money abundance did lead to an increase in reported life meaningfulness.

This result suggests that the relationship between reminders of money abundance and life meaningfulness is positive. Based on our theoretical account, we therefore predict that this relationship is likely to be mediated by self-esteem and not by the desire for financial success. If reminders of money abundance had strengthened the desire for financial success, a decrease in reported life meaningfulness should have been observed. Since an increase occurred instead, it is unlikely that the desire for financial success could account for it. On the other hand, if reminders of money abundance raised self-

esteem, an increase in reported life meaningfulness would have been observed. Since such increase occurred indeed, it is at least possible that self-esteem could account for it. We will explore this possibility in Study 2.

Study 2

The purpose of Study 2 was to replicate the result of Study 1 and to gain insight into the psychological mechanism behind it; we tested whether reminders of money abundance increase self-esteem and/or the desire for financial success. Furthermore, we tested if any of those two mechanisms mediated the relationship between reminders of money abundance and life meaningfulness.

Based on the results from Study 1, we predict that reminders of money abundance increase self-esteem but not the desire for financial success. We also predict that self-esteem mediates the relationship between reminders of money abundance and life meaningfulness.

Method

Participants

One hundred and ninety-six people participated in exchange of a fixed monetary reward. All participants were recruited through Amazon Turk and were of American nationality. Three participants were considered outliers (their response to the study's dependent variable was more than 2.5 SD away from the mean) and were removed from the analyses.

Procedure

Participants used a computer or Smartphone of their choosing to perform the study. Before starting, participants were requested to seclude themselves in a place free of distractions and to complete the study in one sitting. As in Study 1, participants were

assigned to either a *control* condition (n = 97) or a *money prime* condition (n = 99). We used a different money priming task compared to Study 1, as a test for the robustness of the effect. Instead of using a money background, we presented participants with pictures featuring stacks of \$100 bills. Each picture displayed two sets of stacks and participants had to identify which one was the largest. Given how the stacks were arranged in the pictures, the answer was not always obvious; this forced participants to pay attention to the money, which was our intention. The true purpose of the activity was masked by presenting it as a spatial intelligence task. Since the amounts of money being displayed were large, we expected the task to activate the concept of abundance of money, just as in Study 1. Whether or not participants were assigned to perform this priming task was the only difference between the *control* and *money prime* conditions.

The rest of the study was identical for all participants and included four tasks: the first one was the word-completion task used in Study 1, which served as a manipulation check for the money prime's effectiveness. To assess the prime's effectiveness, we measured the number of stems that participants from each condition managed to turn into money-related words. The second task was completing 'The Meaning in Life Questionnaire' (Steger et al., 2006), also used in Study 1. The score in the presence of meaning scale was once again our dependent variable.

In the third task participants were presented with a selection of life goals from the 'personal growth' and 'wealth' categories of the Aspirations Index (Kasser & Ryan, 1996). Out of the five goals that form the personal growth category of the Aspirations Index we selected one: 'To know and accept who I really am'. Participants were presented with that goal and asked how close they were to attain it (using a scale from 1 to 7). We used their answer as a proxy for their self-esteem levels: participants who report being closer to accept themselves should have more self-esteem than participants who report being further away from accepting themselves. The other four goals of the personal growth category refer to aspirations of autonomy and individual psychological growth and were thus excluded from the study. Out of the five goals that form the wealth category of the Aspirations Index we selected three: 'To be a very wealthy person', 'To have many expensive possessions' and 'To have enough money to buy everything I want'. Participants were presented with those goals and asked how important they were for them (using a scale from 1 to 7). Their answers, aggregated into

an average score, were used to measure participants' desire to be financially successful. The remaining two goals were excluded because they were very similar to the other three, in an effort to keep the survey as short as possible to avoid participant fatigue.

Finally, the fourth task required participants to complete the 9-item, 3-factor version of the Love of Money scale (Tang et al., 2006). The factors are 'rich', 'motivation' and 'importance'. The factor 'rich' includes three statements that measure how much one desires to be wealthy. Participants had to use a 5-point scale to indicate their agreement/disagreement with such statements. Their answers, aggregated into an average score, were used as an alternative measure of participants' desire to be financially successful. If, as predicted, reminders of money abundance do not increase the desire for financial success, can they otherwise change people's attitude towards money? The factors 'motivation' and 'importance' were added in an attempt to answer this question. The factor 'motivation' measures how much one is motivated to work hard for money. The factor 'importance' measures how much importance one attaches to money. As in the factor 'rich', both factor 'motivation' and factor 'importance' featured three statements each and participants had to show their agreement/disagreement with them by using a 5-point scale. Then, an average score for each factor was computed.

The study included an instructional manipulation check to filter out mindless answering (Oppenheimer et al., 2009); participants who failed to answer it correctly were removed from the analyses. Participants who completed the study in less than three minutes or more than twenty were assumed not to be paying enough attention to the study and were also removed (in the case of participants who needed more than twenty minutes, they were assumed to be multitasking or not to have completed the study in one sitting, which would have rendered the money prime ineffectual). Eleven participants were removed after applying these criteria. Combined with the three outliers mentioned above, fourteen participants (7.14%) were excluded in total. The *control* condition was reduced to eighty-seven participants and the *money prime* condition to ninety-five participants.

Results

Manipulation check

Participants in the *money prime* condition ($M = 1.75$ stems, $SD = 0.91$) turned more stems into money-related words than participants in the *control* condition ($M = 1.51$ stems, $SD = 0.94$; $t(180) = -1.76$, $p = .080$). The effect was marginally significant. This suggests that the concept of money was somewhat more salient in the mind of primed participants and, therefore, that the money prime was effective to some extent.

Life meaningfulness

Participants in the *money prime* condition ($M = 26.26$ points, $SD = 6.16$) scored higher in the presence of meaning scale than participants in the *control* condition ($M = 24.43$ points, $SD = 6.64$; $t(180) = -1.94$, $p = .054$). This replicates the result of Study 1: activating the concept of money abundance one again led to an increase in reported life meaningfulness.

Desire for financial success

Participants in the *money prime* condition ($M = 3.77$ points, $SD = 1.54$) did not rate wealth-related goals as significantly more important than participants in the *control* condition ($M = 3.86$ points, $SD = 1.73$; $t(180) = 0.34$, $p = .734$). Similarly, participants in the *money prime* condition ($M = 3.79$ points, $SD = 0.87$) did not score higher in the 'rich' factor of the Love of Money scale compared to participants in the *control* condition ($M = 3.81$ points, $SD = 0.76$; $t(180) = 0.22$, $p = .823$). These results suggest that, as predicted, participants who had the concept of money abundance activated did not exhibit a higher desire to be financially successful compared to control participants.

Self-esteem

Participants in the *money prime* condition ($M = 5.44$ points, $SD = 1.51$) reported being closer to attaining the goal of knowing and accepting themselves than participants in the *control* condition ($M = 4.95$ points, $SD = 1.30$; $t(180) = -2.33$, $p = .021$). This suggests that, as predicted, reminders of money abundance increased self-esteem.

Next we tested whether self-esteem mediates the relationship between reminders of money abundance and life meaningfulness. To test for mediation, we followed the Bootstrapping procedure detailed by Preacher and Hayes (2004). Bootstrapping involves repeatedly extracting samples from a data set and estimating the indirect effect (in this case, of self-esteem on life meaningfulness) in each extracted sample. All those estimated indirect effects allow for the construction of a 95% confidence interval for the 'true' effect size of the indirect effect. If the borders of the 95% confidence interval do not include zero, then the indirect effect is significant. The indirect effect for self-esteem was significant ($Z = 2.16$, $SE = 0.44$; $p = .031$). The 95% confidence interval for the effect size of the indirect path through self-esteem did not include zero (0.16; 1.80), indicating that self-esteem was a significant mediator. A closer look at the relevant regressions (Baron & Kenny, 1986) reveals that self-esteem fully mediated the relationship between reminders of money abundance and life meaningfulness; when participants' condition (i.e., primed vs. non-primed) was used as the only independent variable to predict life meaningfulness, the effect of participants' condition was significant ($b = 1.84$, $t(180) = 1.94$, $p = .054$). Yet, when self-esteem was added as a second independent variable, the effect of participants' condition (i.e. of the money prime) was no longer significant ($b = 0.90$, $t(179) = 1.03$, $p = .307$) while the effect of self-esteem remained significant ($b = 1.93$, $t(179) = 6.31$, $p < .001$). Overall, these results suggest that, as predicted, self-esteem mediated the relationship between reminders of money abundance and life meaningfulness.

Love of money

Using the Love of Money scale (LOMS), we analyzed how reminders of money abundance affect people's attitude towards money. As shown previously, reminders of money abundance did not increase the desire for financial success. Could these reminders make money a more motivating incentive or increase the importance people attach to money?

Participants in the *money prime* condition ($M = 3.74$ points, $SD = 0.91$) did not score higher in the 'motivation' factor of the LOMS compared to participants in the *control* condition ($M = 3.69$ points, $SD = 0.86$; $t(180) = -0.39$, $p = .700$). This result suggests

that activating the concept of money abundance did not increase participants' motivation to work hard for money.

Participants in the *money prime* condition ($M = 4.10$ points, $SD = 0.61$) scored higher in the 'importance' factor of the LOMS compared to participants in the *control* condition ($M = 3.85$ points, $SD = 0.65$; $t(180) = -2.65$, $p = .009$). This result suggests that activating the concept of money abundance strengthened participants' belief that money was valuable and good.

Next, we measured how 'love of money' relates to life meaningfulness. A linear regression with life meaningfulness as the dependent variable and the three factors of the LOMS as independent variables was conducted. The 'rich' factor of the LOMS (which measures the desire for financial success) negatively predicted life meaningfulness ($b = -1.92$, $t(178) = -2.35$, $p = .020$), while factors 'motivation' ($b = -0.14$, $t(178) = -0.19$, $p = .853$) and 'importance' ($b = 1.41$, $t(178) = 1.48$, $p = .141$) were not significant.

Discussion

Study 2 replicated the results from Study 1, showing that reminders of money abundance increase reported life meaningfulness. Importantly, Study 2 tested the two competing mechanisms that, based on existing literature, could account for the relationship between reminders of money abundance and life meaningfulness. As predicted, reminders of money abundance increased self-esteem but not the desire to be financially successful. Also as predicted, self-esteem was found to (fully) mediate the relationship between reminders of money abundance and life meaningfulness.

The desire for financial success was found to negatively predict life meaningfulness. We expected that to be the case since life meaningfulness is an outcome of eudaimonic well-being (Ryan et al., 2013), and other outcomes of eudaimonic well-being such as vitality and self-actualization have also been shown to be negatively predicted by the desire for financial success (Kasser & Ryan, 1993).

This study also shed some light on the effects of reminders of money abundance on people's attitude towards money. Reminders of money abundance do not increase the

motivation to work hard for money but they do increase the importance that people attach to money. This last result is consistent with the theory that money and social acceptance are substitute resources (Zhou et al., 2009): Zhou et al. found that reminders of money abundance mitigated the distress of social exclusion and that feeling socially excluded increased the desire for money. This led Zhou et al. to theorize that money and social acceptance are substitute resources with a common purpose: allowing people to profit from the social system in order to satisfy their needs. If people distance themselves from others after being reminded of money (Vohs et al., 2006) but they still need to profit from the social system in order to satisfy their needs, it follows that money will become more important, since it is the only other resource besides social acceptance that grants access to the advantages of living in society.

General discussion and conclusions

The present research expands the literature on the psychological consequences of money by showing that reminders of money abundance make life seem more meaningful, even if only temporarily. The present research built on the self-sufficiency hypothesis, which posits that reminders of money abundance strengthen the belief that everybody should fend for themselves (Vohs et al., 2006). While this can lead to some less-than-admirable behaviors (e.g. denying a request for help), the present research shows that self-sufficiency has its perks: it increases self-esteem. Self-esteem was found to fully mediate the relationship between reminders of money abundance and life meaningfulness. This finding is consistent with the theoretical model proposed by Baumeister (1991), which suggested that self-esteem was one of the needs that had to be fulfilled in order to attain a meaningful life.

The present research is consistent with and expands on the notion that the desire for financial success undermines eudaimonic well-being (Kasser & Ryan, 1993). The desire for financial success was found to negatively predict life meaningfulness (an outcome of eudaimonic well-being that was not measured in the study by Kasser and Ryan). Crucially, reminders of money abundance were not found to increase the desire for financial success, which makes the main finding of the present paper (reminders of

money abundance make life seem more meaningful) compatible with Kasser and Ryan's results.

Since reminders of money abundance make life seem more meaningful and since life meaning correlates with life satisfaction and happiness, it would be tempting to promote 'thinking of money' as a valid strategy to improve people's life. Regrettably, that would most likely backfire. By exposing participants to reminders of money abundance, the present research has shown the short-term effects of thinking of money: when individuals are reminded of money, their self-esteem increases and their lives temporarily seem more meaningful. Also, they attach more importance to money. However, what are the long-term consequences of thinking of money? Could thinking of money eventually trigger aspirations of financial success? This does not seem so far-fetched since, as we have shown, reminders of money abundance make money seem more important, and it is a natural reaction to end up desiring those things that one regards as important. The present research has shown that the desire for financial success undermines life meaningfulness. Self-determination theory suggests that this happens because an excessive focus on extrinsic rewards (such as money) distracts the individual from pursuing more intrinsically satisfying endeavors (Deci & Ryan, 1985b). This undermines eudaimonic well-being and, as one of its outcomes, life meaningfulness as well. If thinking of money eventually triggers strong enough aspirations of financial success, thinking of money becomes a double-edged sword: in the short run it creates the illusion that life is more meaningful (due to the self-esteem boost), but in the long run it may end up undermining life meaningfulness (due to the emphasis on financial success).

The present research has at least two limitations. Firstly, the way in which self-esteem was measured; we measured self-esteem by using one of the personal growth goals of the Aspirations Index: "To know and accept who I really am". Although self-acceptance is a good proxy for self-esteem, it may have been beneficial to use a more thorough and conventional measure of self-esteem such as Rosenberg's self-esteem scale (Rosenberg, 1965) and see if the mediating role of self-esteem could be replicated with that measure. Secondly, although the data supported that our measure of self-esteem mediated the relationship between reminders of money abundance and life meaningfulness, the fact remains that we did not test for alternative mediators. One such alternative mediator

could be locus of control (Rotter, 1990). If reminders of money abundance increase self-sufficiency, they may also lead to shift towards an internal locus of control. Following Rotter, an internal locus of control refers to the belief that outcomes are determined by one's own ability and actions, as opposed to fate, luck or powerful others. Could a shift towards an internal locus of control explain why reminders of money abundance increased life meaningfulness? This does not seem so far-fetched considering that another need of Baumeister's four-need model of meaning was efficacy. Furthermore, could a shift towards a more internal locus of control explain both the increase in self-esteem and life meaningfulness? Discovering how locus of control is affected by reminders of money abundance and how it affects outcomes such as self-esteem and life meaningfulness may prove an interesting avenue for future research.

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3. CONSUMPTION RITUALS AND BONDING

Abstract

Previous research has found that sharing consumption rituals binds people together. However, that research is exclusively qualitative, has not explored underlying mechanisms and moderation/mediation effects, and is limited to consumption rituals that emerge in shared consumption events such as football matches. In the present research, we hypothesize that the underlying mechanism behind the bonding power of consumption rituals is based on the well-established link between attitudinal similarity and interpersonal attraction. Two laboratory experiments found support for the bonding effect and the hypothesized mechanism: simply learning that a target person follows one's consumption ritual (an instance of attitudinal similarity) resulted in that person being evaluated more positively. Learning that a target person not only does not follow one's consumption ritual but also consumes the associated product in a way deemed incorrect (an instance of attitudinal dissimilarity) resulted in that person being evaluated more negatively. Those results were mediated by one's feelings of pride, and moderated by whether the target person enjoyed the product associated to the ritual, and by whether the target person was a friend or a stranger. Overall, the present research supports and expands the previous work on the bonding power of consumption rituals.

When Roger opens a new bottle of wine, he does not simply drink the liquid. First, he meticulously pours the wine into a crystal glass. Then, he raises the glass against a white background so that he can better appreciate the wine's tonality. Next, Roger makes the wine swirl gently inside the glass to appreciate the wine's density. After that, Roger brings the glass closer to his face and takes a slow, deep breath, appreciating the wine's aroma. Only after this prelude does Roger proceed to drink the wine and savor its flavor.

The situation above describes a consumption ritual involving wine sampling. Previous work has shown that such consumption rituals can increase the value derived from consumption (Vohs et al., 2013). In this paper, we study the social aspect of consumption rituals: we investigate the relationship between shared consumption rituals and interpersonal attraction.

(Consumption) rituals and interpersonal attraction

Research about human rituals originated in sociology and anthropology (Durkheim, 1959; Turner, 1967) and has remained a primary topic of study in those fields. Rituals and religion have traditionally been deeply intertwined; for Turner (1973), a ritual is a 'stereotyped sequence of activities involving gestures, words, and objects, performed in a sequestered place, and designed to influence preternatural entities or forces on behalf of the actors' goals and interests' (p. 1100). In spite of this definition, it would be a mistake to consider rituals a mere synonym of religious practices. Indeed; Turner (1968) more generally understood rituals as the concentration of a society's customs. Olaveson (2001) elaborated on that claim and argued that, for Turner, rituals are 'the place where a society's values, norms, and deep knowledge of itself are reaffirmed, and sometimes, created' (p. 93). This more general perspective on rituals has at least two implications: 1) rituals express the culture of a society (see Geertz, 1973) and, therefore, they are excellent tools to learn and understand that culture. 2) As an expression of a society's culture, rituals are pervasive and can be found in multitude of situations: National days include patriotic rituals such as flag parades, birthdays include rituals such as blowing the lit candles of a birthday cake, and company promotions include rituals such as speeches and dinner celebrations. The fact that a society ritualizes National days,

birthdays and promotions implies that those events are culturally-relevant in that society.

Consumption is another situation that can be ritualized. Think, for example, of how gift giving and sharing food has taken on the form of a ritual performed on Thanksgiving day (Wallendorf & Arnould, 1991). The notion of consumption rituals was introduced to consumer research by Rook (1985). Rook defined consumption rituals such as the wine-sampling ritual described above as symbolic, patterned activities that are performed with inner intensity. Although Rook encouraged consumer researchers to continue studying the (at that time) novel construct of consumption rituals, his proposal was met with little enthusiasm (Arnould, 2001). In the last fifteen years, the research on consumption rituals has remained scarce. Two main results have emerged from the studies on consumption rituals; first, consumption rituals have been shown to make consumption more intrinsically involving and, ultimately, more enjoyable. In one study (Vohs et al., 2013), participants had to eat several carrots. Before eating them, participants had to perform a pre-defined set of gestures and movements that, according to pretests, either felt like a ritual (ritual condition) or felt like random actions (control condition). Participants assigned to the ritual condition reported higher anticipated and experienced enjoyment of the carrots compared to participants assigned to the control condition. The effect of rituals on consumption enjoyment was mediated by feelings of personal involvement.

A second result that has emerged from the consumption rituals literature is that consumption rituals create a bond between the people who share them, helping them develop and maintain social relationships. Stamps and Arnould (1998) studied the significance of the Florida Classic as a ritualistic consumption experience. The Florida Classic is an end-of-year football bowl game played between the only two historically Black universities in Florida. The African-American middle class community is distinctively involved in this event. Observational field notes and focus group participants describe the Florida Classic as a highly anticipated event that includes a variety of rituals such as mall-crawling, tail-gating, the Glory Foods party, the black tie gala, and the gospel concert. The paper argues that by involving the African-American middle class attendees in such ritualistic activities, the Florida Classic helps create and sustain their community. This research is consistent with the ritual theories from

sociology and anthropology, which understand rituals as activities that foster a sense of community or group cohesiveness (Durkheim, 1959; Turner, 1967). For Durkheim (1959), rituals involved assemblies where community members came together to express their like-mindedness via symbolic activities. As a result, those beliefs and symbols they shared became stronger, and, in the process, so did the cohesiveness of the group. The like-mindedness of the African American middle-class community can be found in the shared passion for football, but also in beliefs regarding equality of opportunity and black pride. The Florida Classic is in Durkheim's words an 'assembly', and the rituals that emerge from it are the means by which the African American middle-class community expresses and reinforces its like-mindedness. Ultimately, this results in a more cohesive community. Gainer (1995) studied the consumption rituals that emerge in the context of music and art live performances and concluded that even when attendees are not bound by ties of race or social class, sharing consumption rituals still binds people together, helping develop and maintain social relationships.

The existing research on the bonding power of consumption rituals has three limitations: 1) it is exclusively qualitative, 2) it does not delve into the mechanism that leads to the bonding effect nor explores potential mediators or moderators, and 3) it is limited to rituals that emerge in shared consumption events such as football matches or live performances. Because of this, it is not possible to know if shared consumption rituals need to be collectively performed for the bonding effect to appear, or if the mere knowledge that the ritual is shared would be enough. This is relevant because if these collective performances are not necessary, then even consumption rituals that are performed individually (e.g. the wine-sampling ritual described above) could bind people together.

The purpose of the present research is to expand the previous work on the bonding power of consumption rituals by addressing the aforementioned limitations. A laboratory setting was used in order to test the bonding effect of consumption rituals quantitatively, explore potential underlying mechanisms and moderators/mediators, and isolate the effect of simply knowing that a ritual is shared from the effect of jointly performing such shared ritual.

Attitudinal (dis)similarity

What is the underlying mechanism that gives consumption rituals their bonding power? As mentioned above, classic theories of ritual such as Durkheim's (1959) contend that rituals bind people together because they involve assemblies in which people's like-mindedness is expressed and reinforced. Thus, rituals seem to necessitate two ingredients in order to bind people together: a pre-existing like-mindedness (such as sharing a certain product preference), and an assembly (i.e., a shared consumption event such as a football match) in which such like-mindedness is enacted and amplified. As we have seen, qualitative research on the bonding power of consumption rituals supports this theory (Stamps & Arnould, 1998; Gainer, 1995). By bringing the study of consumption rituals to the laboratory, we can study the bonding power of consumption rituals outside the context of these 'assemblies' or shared consumption events. Could a bond be formed between two people who simply learnt that they share a consumption ritual? Or must the ritual be first jointly performed for the bond to appear?

Previous research has found a very robust link between attitudinal similarity and interpersonal attraction: when two people share the same view on a subject, they like each other more (Byrne, 1971; Berscheid & Walster, 1978). Condon and Crano (1988) explored the underlying mechanism that makes attitudinal similarity result in interpersonal attraction. They found evidence for the '*inferred evaluation*' hypothesis (Aronson & Worchel, 1966). According to the inferred evaluation hypothesis, people assume that if a person agrees with them, that person will also like them. Other research has also found that people tend to like those who like them, a phenomenon known as reciprocal liking (Lowe & Goldstein, 1970). Therefore, attitudinal similarity results in interpersonal attraction because people assume that agreement signals liking and then they feel compelled to reciprocate that liking. As a result, the person who showed agreement becomes more well-liked.

We argue that those who share a consumption ritual also share a view on how a certain product must be consumed or experienced. Based on that, sharing a ritual can be understood as a form of attitudinal similarity and, as such, it should lead to increased interpersonal attraction. Thus, we predict that consumption rituals do not need to be jointly performed in order to bind people together; merely knowing that the ritual is

shared should result in a bonding effect as it signals attitudinal similarity. As a proxy for this bonding effect, we measured whether people who follow a consumption ritual evaluate others who follow the same ritual more positively. Throughout the paper, we refer to this potential 'positive opinion change' as an 'appreciation effect'.

If the appreciation effect resulting from sharing a consumption ritual is driven by attitudinal similarity, large enough attitudinal dissimilarity could cause a negative opinion change or 'depreciation effect'. We argue that such large-enough attitudinal dissimilarity is reached when one finds someone else's way of consuming a product 'incorrect'. Consider once again the case of Roger, the person who followed the involving wine-sampling ritual described earlier. Let us assume that Roger notices a stranger drinking wine. Not only does this stranger not follow Roger's ritual but he pours the wine in a plastic glass and unceremoniously swallows it in one gulp. Let us assume that Roger finds the stranger's way of drinking wine incorrect. In that situation, we predict a depreciation effect: because the stranger's way of drinking wine signals such a large attitudinal dissimilarity (regarding how wine should be experienced) between the stranger and Roger, Roger is going to evaluate him more negatively.

Situations where a person neither follows one's rituals nor consumes the product around which they revolve 'incorrectly' are a middle ground in terms of attitudinal similarity. In these situations, we predict neither an appreciation nor a depreciation effect. In other words, one's opinion of that person should not vary.

The role of pride

As previously stated, the inferred evaluation hypothesis (Aronson & Worchel, 1966) posits that agreement signals liking: people assume that if a person agrees with them, that person will also like them. Becoming well-liked by others as a result of one's actions or attitudes triggers feelings of pride. Mascolo and Fischer (1995) defined pride as an emotion 'generated by appraisals that one is responsible for a socially valued outcome or for being a socially valued person' (p. 66). Some evolutionary psychologists argue that the function of pride is to promote thoughts, feelings and behaviors that serve to maintain and increase one's position within the social hierarchy (Tracy, Shariff, & Cheng, 2010). The implication is that any thoughts, feelings and behaviors that make an

individual feel more valued by others (i.e., more well-liked) should trigger feelings of pride.

If attitudinal similarity signals the possibility of becoming more well-liked by others (inferred evaluation hypothesis), and becoming more well-liked by others triggers feelings of pride, then sharing a consumption ritual –as a form of attitudinal similarity– should trigger feelings of pride too. We expect one’s feelings of pride to mediate the relationship between one’s opinion change of the target person, and the target person’s consumption behavior (follows versus does not follow one’s consumption ritual).

Boundary conditions

Imagine that wine-enthusiast Roger notices another person that follows his wine sampling ritual. Yet, that person does not enjoy the experience. Apparently, he dislikes wine. From Roger’s perspective, could the fact that that person followed his same ritual still lead to an appreciation effect if that person did not like the product around which the ritual revolves? Following one’s ritual and liking the associated product are two instances of attitudinal similarity. In comparison, following one’s ritual but disliking the associated product results in a combination of attitudinal similarity and dissimilarity. The effect of sharing consumption rituals on interpersonal attraction is hypothesized to be driven by attitudinal similarity. Since the target person enjoying (disliking) the product associated to one’s consumption ritual reaffirms (diminishes) the attitudinal similarity between one and the target person, we propose ‘product enjoyment’ as a moderator for the appreciation effect. Specifically, we predict that only the situation that unambiguously reflects attitudinal similarity (the target person follows one’s ritual and enjoys the associated product) should lead to an appreciation effect. When the signal regarding attitudinal similarity is ambiguous, no appreciation effect should occur.

Imagine now that wine-enthusiast Roger notices a person that not only does not follow his ritual but also drinks wine in a way that Roger considers incorrect. We hypothesized that instances of large attitudinal dissimilarity such as this one would result in a depreciation effect: Roger would evaluate that person more negatively. However, would that still be the case if the person who consumes incorrectly was a friend instead of a stranger? Previous research has found that friends are more similar than non-friends in

several domains including personality traits (Schug et al., 2009) and activity preferences (Werner & Parmelee, 1979). We argue that this reservoir of similarity (which is not available among strangers because they do not know each other) should minimize the negative impact of an instance of attitudinal dissimilarity (such as learning that a friend drinks wine in a way deemed incorrect). Based on that we propose ‘person type: friend versus stranger’ as a moderator for the depreciation effect; we predict that when a target person consumes a product in a way deemed incorrect, one’s opinion of him will become more negative only if such target person is a stranger. If the target person is a friend, this depreciation effect will not occur. We however expect the appreciation effect (a positive opinion change upon learning that the target person follows one’s consumption ritual) to occur both among friends and strangers.

Summarizing, we propose that: 1) simply learning that a target person follows one’s consumption ritual will result in a more positive evaluation of that person (appreciation effect), 2) learning that a target person does not follow one’s consumption ritual will result in neither a more positive nor more negative evaluation of that person as long as said person *is not* deemed to consume the product associated to the ritual incorrectly, and 3) learning that a target person does not follow one’s consumption ritual will result in a more negative evaluation of that person if said person *is* deemed to consume the product associated to the ritual incorrectly (depreciation effect). We hypothesize that these results are driven by attitudinal (dis)similarity between one and the target person. We propose one mediator for these results: one’s feelings of pride. We also propose two boundary conditions: whether the target person enjoys the product associated to the ritual, and whether the target person is a friend or a stranger.

Study 1

The purpose of Study 1 was to test the existence of the appreciation and depreciation effects, as well as the role of pride as a mediator between one’s opinion change of the target person and the target person’s consumption behavior (follows versus does not follow one’s consumption ritual).

Method

Participants

One hundred and sixty-eight undergraduate students participated in exchange of a show-up fee. All participants were part of a subject pool managed by a Southern European university and were familiar with participating in remunerated experiments.

Procedure

Participants came to a computer laboratory in groups of about 20 people. Upon arrival, each participant was guided to a randomly-assigned computer workstation. Computers were separated by panels so that participants could not see the screen of their neighbors and create a certain sense of privacy.

All participants had to complete a single task. In a first phase, instructions introduced participants to the concept of consumption rituals: they read a short text on the topic and then answered several questions about it. The text provided examples of consumption rituals (wine sampling, watching a horror movie with the lights turned off...) and used them to outline some of the main features of a consumption ritual (symbolism, patterned activities...). The text also emphasized that consumption rituals can be very diverse. The questions about the text followed a 'True or False' format and included statements such as 'Consumer rituals only apply to food and beverages' or 'Consumer rituals are always sophisticated'. Those questions served as comprehension checks; participants who failed to answer all of them correctly were removed from the analyses. Twenty-one participants (12.50%) were eliminated as a result. The comprehension checks were complemented with an instructional manipulation check later in the study to filter out mindless answering (Oppenheimer et al., 2009). Twenty-five additional participants (14.88%) failed to answer it correctly and were also removed. In total, forty-six participants (27.38%) were excluded.

After familiarizing themselves with the concept of consumption rituals, participants were asked to write down a product that they consumed by following a ritual, and to

describe that ritual in as much detail as possible. Examples include cutting a croquette in small pieces to enjoy its flavor more times, or dressing in a certain way, lying down and smoking in preparation for listening to music. After naming the product and describing the associated ritual, participants were asked to imagine that a hypothetical stranger also consumed the same product as them. At this point, participants were randomly assigned to either of three hypothetical scenarios: in the *Follows* condition (n = 41), participants were told to imagine that the hypothetical stranger followed participants' ritual when consuming the product participants had chosen. This allowed us to separate the effect of simply knowing that a consumption ritual is shared from the effect of collectively performing the shared ritual. In the *Neutral* condition (n = 43), participants were told that the hypothetical stranger did not follow participants' ritual when consuming the product that participants had chosen. No other information was given. In the *Incorrect* condition (n = 38), participants were asked to describe a way to consume the product they had chosen that they would consider incorrect. Then, they were told to imagine that the hypothetical stranger consumed the product they had chosen in such a way.

After being exposed to their assigned scenarios and learning about the consumption behavior of the hypothetical stranger, all participants had to report how proud they felt using a scale from 1 (not at all) to 5 (a lot), and how much their impression of the hypothetical stranger would change using a scale from 1 (I would like that stranger much less) to 5 (I would like that stranger much more). The middle point of the scale (3) indicated no opinion change. Participants' opinion change (or not) about the hypothetical stranger was the dependent variable of the study.

Results and discussion

Opinion change

A one-way ANOVA was conducted on the influence of the target person's consumption behavior (*follows*, *neutral* and *incorrect*) on participants' opinion change about the target person. The effect of the target person's consumption behavior was significant ($F(2, 119) = 26.34, p < .001$). Bonferroni-adjusted post-hoc tests revealed that the difference lied between the *follows* condition and the other two conditions. Participants'

opinion change about the target person was more positive in the *follows* condition ($M = 3.66$, $SD = 0.73$) than in the *neutral* ($M = 2.98$, $SD = 0.34$; $p < .001$) and *incorrect* ($M = 2.92$, $SD = 0.36$; $p < .001$) conditions. The difference in opinion change between the *neutral* and *incorrect* conditions was not significant ($p = 1.000$).

In order to understand whether the results above support the existence of the predicted appreciation and depreciation effects, we took the average opinion change score of each condition and compared it against the middle point of the scale (3), which indicates no opinion change. In the *follows* condition, the average opinion change score was significantly higher than three ($M = 3.66$, $SD = 0.73$; $t(40) = 5.79$, $p < .001$). An average score that is higher than three indicates a positive opinion change. Thus, support was found for the predicted appreciation effect. Importantly, and also as predicted, merely knowing that the target person followed one's consumption ritual was enough to trigger the appreciation effect. This suggests that a bond can be created even if the shared ritual is not jointly performed. In the *neutral* condition, the average opinion change score was not significantly different from three ($M = 2.98$, $SD = 0.34$; $t(42) = -0.44$, $p = .660$). An average score not different from three indicates no opinion change. Thus, and as predicted, participants' opinion of the target person remained the same when he neither followed participants' rituals nor was portrayed as consuming participants' products incorrectly. In the *incorrect* condition, the average opinion change score was not significantly different from three either ($M = 2.92$, $SD = 0.36$; $t(37) = -1.36$, $p = .183$), suggesting no opinion change. This is inconsistent with the predicted depreciation effect.

The unexpected similarity between the *neutral* and *incorrect* conditions could be explained if some of the participants assigned to the *incorrect* condition were unable to imagine the target person consuming their chosen product incorrectly. That would make the *neutral* and *incorrect* conditions essentially the same from the perspective of those participants, and would explain why those conditions yielded similar results. An examination of the data reveals that when participants in the *incorrect* condition were asked to think of a way in which their chosen product could be consumed incorrectly, fourteen participants (36.84%) replied that there was no incorrect way of consuming their chosen product. When those participants were temporarily removed, the average opinion change score of the *incorrect* condition became significantly lower than three

($M = 2.83$, $SD = 0.38$; $t(23) = -2.15$, $p = .043$). Thus, support was found for the predicted depreciation effect.

Pride

A one-way ANOVA was conducted on the influence of the target person's consumption behavior (*follows*, *neutral* and *incorrect*) on participants' reported feelings of pride. The effect of the target person's consumption behavior was significant ($F(2, 119) = 27.53$, $p < .001$). Bonferroni-adjusted post-hoc tests revealed that the difference lied between the *follows* condition and the other two conditions. Participants reported feeling more proud in the *follows* condition ($M = 3.12$ points, $SD = 1.47$) than in the *neutral* ($M = 1.51$ points, $SD = 0.99$; $p < .001$) and *incorrect* ($M = 1.45$ points, $SD = 0.92$; $p < .001$) conditions. The difference in reported pride between the *neutral* and *incorrect* conditions was not significant ($p = 1.000$). This difference remained non-significant even when the fourteen participants from the *incorrect* condition that could not follow the procedures were removed.

Next we tested whether participants' reported pride mediates the relationship between the target person's consumption behavior and participants' opinion change of the target person. To test for mediation, we followed the Bootstrapping procedure detailed by Preacher and Hayes (2004). Bootstrapping involves repeatedly extracting samples from a data set and estimating the indirect effect (in this case, of pride on participants' opinion change of the target person) in each extracted sample. All those estimated indirect effects allow for the construction of a 95% confidence interval for the 'true' effect size of the indirect effect. If the borders of the 95% confidence interval do not include zero, then the indirect effect is significant. The indirect effect via pride was significant ($Z = 4.15$, $SE = 0.04$; $p < .001$). The 95% confidence interval for the effect size of the indirect path via pride did not include zero (0.09; 0.27), indicating that pride was a significant mediator. A closer look at the relevant regressions (Baron & Kenny, 1986) reveals that pride partially mediated the relationship between the target person's consumption behavior and participants' opinion change of the target person; when the target person's consumption behavior was the only independent variable to predict participants' opinion change of the target person, the effect of the target person's

consumption behavior was significant ($b = 0.37$, $t(120) = 6.25$, $p < .001$). Yet, when pride was added as a second independent variable, the effect of the target person's consumption behavior remained significant despite the effect size decrease ($b = 0.20$, $t(119) = 3.30$, $p = .001$). Overall, these results suggest that, as predicted, feelings of pride (partially) mediate the relationship between the target person's consumption behavior (follows versus does not follow participants' rituals), and participants' resulting opinion change about the target person.

Study 2

The purpose of Study 2 was twofold; first, to replicate the results from Study 1. Secondly, to test whether the appreciation and depreciation effects are moderated by product enjoyment (whether the target person enjoys the product associated to participants' ritual or not) and by person type (whether the target person is a friend or a stranger). We predicted that the appreciation effect would be moderated by product enjoyment and that the depreciated effect would be moderated by person type.

Method

Participants

Three hundred and fifty-eight people participated in exchange of a fixed monetary reward. All participants were part of a subject pool managed by Prolific Academic, an online platform to conduct studies. All recruited participants were of American nationality.

Procedure

Participants used a computer or Smartphone to perform the study. Before starting, participants were requested to seclude themselves in a place free of distractions and to complete the study in one sitting. The study consisted of only one task. As in the

previous study, participants were introduced to consumer rituals via a short text and then they had to answer several questions that served as comprehension checks. Fifty participants (13.97%) failed to answer at least one of the comprehension checks correctly and were removed from the analyses. The comprehension checks were complemented with an instructional manipulation check later in the study to filter out mindless answering (Oppenheimer et al., 2009). Seventeen additional participants (4.75%) failed to answer it correctly and were also removed. In total, sixty-seven participants (18.72%) were excluded. After familiarizing themselves with the notion of consumption rituals and, as in Study 1, participants were asked to write down a product that they consumed by following a ritual, and to describe such ritual in as much detail as possible. At that point, participants were randomly assigned to either of eight possible scenarios. In those scenarios, a target person, who could be either a friend or a stranger, consumed the same product that participants had chosen. The target person could follow the same ritual as participants while consuming the product, or could consume the product in a way that participants deemed incorrect (as in Study 1, participants were asked to describe such way). Furthermore, the target person could enjoy consuming the product or hate it. Thus, the study followed a 2 (person type: friend vs. stranger) x 2 (consumption behavior: follows ritual vs. consumes incorrectly) x 2 (product enjoyment: enjoys vs. hates) design. Between 32 and 44 participants were assigned to each cell of the design.

After being exposed to their assigned scenarios, and just as in Study 1, all participants had to report how proud they felt using a scale from 1 (not at all) to 5 (a lot), and how much their impression of the target person would change using a scale from 1 (I would like that person much less) to 5 (I would like that person much more). Participants' opinion change about the target person was the dependent variable of the study.

A remarkable difference between Studies 1 and 2 is that Study 2 does not include a *neutral* consumption behavior condition. In Study 1 the target person could follow participants' ritual, not follow it, or consume the product in a way deemed incorrect. The *neutral* condition (not following participants' ritual) is absent in Study 2. This was done because the *neutral* condition was considered redundant. The insights from including a *neutral* condition can be gained by using a dependent variable whose scale captures opinion change and whose middle point indicates no change in opinion.

Indeed; by testing whether the average opinion change in the *follows* condition is significantly higher than the middle point of the scale, we can obtain similar information as if we had a *follows* and *neutral* conditions and tested whether the average scores of the former is higher than average score of the latter. Study 1 indeed showed that in the *neutral* condition, evaluation change was not different from the scale midpoint. Since a neutral condition was redundant and the design in Study 2 already includes eight cells, we decided to exclude it.

Results and Discussion

Opinion change

A three-way ANOVA was conducted with the target person's type (friend versus stranger), the target person's consumption behavior (follows participants' ritual vs. consumes incorrectly) and the target person's product enjoyment (enjoys participants' product versus hates it) as independent variables, and participants' opinion change about the target person as the dependent variable.

The main effect of the target person's *type* was significant; participants' opinion change about the target person was more positive when he was a friend ($M = 3.08$, $SD = 0.51$) than when he was a stranger ($M = 2.91$, $SD = 0.67$; $F(1, 283) = 6.54$, $p = .011$).

The main effect of the target person's *product enjoyment* was significant; participants' opinion change about the target person was more positive when he enjoyed participants' chosen product ($M = 3.13$, $SD = 0.77$) than when he hated such product ($M = 2.88$, $SD = 0.36$; $F(1, 283) = 14.16$, $p < .001$).

Consistent with the results from Study 1, the main effect of the target person's *consumption behavior* was significant; participants' opinion change about the target person was more positive when he followed the same ritual as participants ($M = 3.18$, $SD = 0.67$) than when he consumed participants' products 'incorrectly' ($M = 2.80$, $SD = 0.45$; $F(1, 283) = 40.27$, $p < .001$). Furthermore, participants' opinion change about the target person was significantly higher than three when the target person followed participants' rituals ($M = 3.18$, $SD = 0.67$; $t(148) = 3.31$, $p = .001$). An average score that is higher than three indicates a positive opinion change. Thus, support was found

for the appreciation effect. Conversely, participants' opinion change about the target person was significantly lower than three when the target person consumed participants' products incorrectly ($M = 2.80$, $SD = 0.45$; $t(141) = -5.23$, $p < .001$). An average score that is lower than three indicates a negative opinion change. Thus, support was found for the depreciation effect. Taken together, these results replicate the appreciation and depreciation effects found in Study 1.

Pride

Participants reported feeling more proud when the target person followed participants' rituals ($M = 1.84$ points, $SD = 1.25$) than when the target person consumed participants' chosen product incorrectly ($M = 1.27$ points, $SD = 0.68$; $t(229) = -4.82$, $p < .001$). This replicates the result from Study 1.

Next we tested whether pride mediates the relationship between the target person's consumption behavior and participants' opinion change of the target person. As in Study 1, we followed the Bootstrapping procedure detailed by Preacher and Hayes (2004). The indirect effect via pride was significant ($Z = 3.70$, $SE = 0.03$; $p < .001$). The 95% confidence interval for the effect size of the indirect path via pride did not include zero (0.05; 0.18), indicating that pride was a significant mediator. A closer look at the relevant regressions (Baron & Kenny, 1986) reveals that pride partially mediated the relationship between the target person's consumption behavior and participants' opinion change of the target person; when the target person's consumption behavior was the only independent variable to predict participants' opinion change of the target person, the effect of the target person's consumption behavior was significant ($b = 0.38$, $t(289) = 5.64$, $p < .001$). Yet, when pride was added as a second independent variable, the effect of the target person's consumption behavior remained significant despite the effect size decrease ($b = 0.27$, $t(288) = 4.13$, $p < .001$). Overall, these results replicate the finding of Study 1: participants' feelings of pride (partially) mediate the relationship between the target person's consumption behavior and participants' opinion change about the target person.

Boundary conditions

Inconsistent with our prediction, the two-way interaction between the target person's type (friend versus stranger) and the target person's consumption behavior was not significant ($F(1, 283) = 0.99, p = .321$). At first glance, this suggests that the appreciation and depreciation effects found earlier are not qualified by whether the target person is a friend or a stranger. Although the two-way interaction is not significant, a closer examination of the four subgroups of the interaction provides some interesting insights. Participants' opinion change score about the target person is on average 3.25 (95% CI [3.13; 3.37]) when the target person is a friend who follows participants' rituals, and 3.15 (95% CI [3.02; 3.28]) when the target person is a stranger who follows participants' rituals. The lower bound of the 95% confidence intervals is higher than three in both cases. This means following participants' ritual results in an appreciation effect no matter whether the target person is a friend or a stranger. This similarity helps explain why the two-way interaction was not significant. However, the remaining two subgroups are more dissimilar. Participants' opinion change score about the target person is on average 2.91 (95% CI [2.78; 3.04]) when the target person is a friend who is deemed to consume participants' product incorrectly, and 2.69 (95% CI [2.56; 2.81]) when the target person is a stranger who is deemed to consume participants' product incorrectly. The lower bound of the 95% confidence intervals is only lower than three in the case of the stranger who consumes incorrectly, but not in the case of the friend who consumes incorrectly. Thus, while both the friend and the stranger can receive the appreciation effect, only the stranger receives the depreciation effect. This is consistent with our prediction.

Also consistent with our prediction, the two-way interaction between the target person's consumption behavior and the target person's product enjoyment was significant ($F(1, 283) = 22.28, p < .001$), see Figure 1.

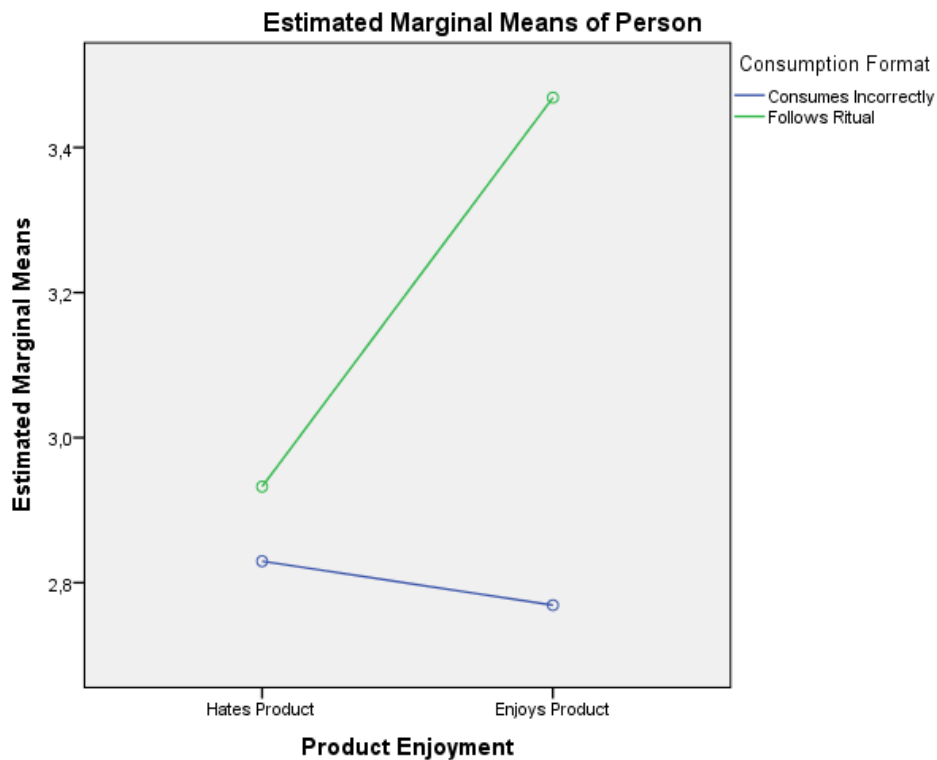


Figure 1. Average opinion change score about the target person as a function of the target person's product enjoyment (enjoys versus hates) and the target person's consumption behavior (follows ritual versus consumes incorrectly).

The plot in Figure 1 shows that participants' opinion change about the target person was the most positive when the target person both enjoyed participants' chosen product and followed participants' ritual. A comparison using the 95% confidence intervals over the marginal means of each subgroup reveals that this difference is significant; participants' average opinion change score about the target person was indeed significantly more positive in the enjoys-follows subgroup ($M = 3.47$, $SE = 0.07$, 95% $CI [3.34; 3.60]$) than in the enjoys-incorrect subgroup ($M = 2.77$, $SE = 0.07$, 95% $CI [2.64; 2.90]$), the hates-follows subgroup ($M = 2.93$, $SE = 0.06$, 95% $CI [2.82; 3.05]$) and the hates-incorrect subgroup ($M = 2.83$, $SE = 0.06$, 95% $CI [2.71; 2.95]$).

Comparing the marginal means of each subgroup against the neutral value of three (which indicates no opinion change) is also insightful. Only the mean of the enjoys-follows subgroup is significantly higher than three ($M = 3.47$ points, $SD = 0.84$; $t(67) = 4.64$, $p < .001$). This confirms the predicted boundary condition for the appreciation effect: only the situation that unambiguously reflects attitudinal similarity (the target

person follows one's ritual and enjoys the associated product) leads to an appreciation effect, while situations that are a mixture of attitudinal similarity and dissimilarity (enjoys-incorrect and hates-follows subgroups) do not.

Finally, neither the two-way interaction between the target person's type and the target person's product enjoyment ($F(1, 283) = 0.51, p = .478$), nor the three-way interaction between the target person's type, the target person's product enjoyment and the target person's consumption behavior ($F(1, 283) = 1.65, p = .200$) were significant.

General discussion and conclusions

The results of two studies provide support for our claim that when a person follows one's consumption ritual, one's opinion about that person becomes more positive: an appreciation effect. This claim was based on previous work that suggests a strong link between attitudinal similarity (of which sharing a consumption ritual was argued to be an instance) and interpersonal attraction (Byrne, 1971; Berscheid & Walster, 1978). The results further indicate that when a person is believed to consume a product incorrectly (a situation of large attitudinal dissimilarity), one's opinion about that person becomes more negative: a depreciation effect. The appreciation and depreciation effects were mediated by one's feelings of pride, and moderated by whether the target person enjoyed the ritual's associated product, and whether the target person was a friend or a stranger. Consistent with the link between attitudinal similarity and attraction, only the situation that reflected unambiguous attitudinal similarity (following one's ritual and enjoying the associated product) led to an appreciation effect. Moreover, both friends and strangers could trigger the appreciation effect, but only strangers triggered the depreciation effect.

The results above are in line with the previous qualitative research on the bonding power of consumption rituals and expand that research by providing an underlying mechanism for the bonding effect (attitudinal similarity), a mediator (one's feelings of pride) and two moderators (whether the target person enjoys the product associated to the rituals, and whether the target person is considered a friend or a stranger).

The previous research on the bonding power of consumption rituals was limited to rituals that emerged on shared consumption events such as football matches or live performances. The present research has shown that consumers do not need to assemble and perform a certain consumption ritual together for the bonding effect to emerge; simply knowing that the ritual is shared is enough. If we consider classical theories of ritual such as Durkheim's (1959), this result is surprising. For Durkheim, the bonding power of rituals was deeply rooted in the notion that rituals were collective activities. Indeed; Durkheim argued that rituals involved assemblies where society members came together to express their shared beliefs via symbolic activities. It was through the collective expression and reenactment of those shared beliefs that the group became more cohesive. Yet, the present research shows that merely knowing that a person follows one's ritual already results in a more positive evaluation of that person i.e., in stronger interpersonal attraction. According to Lott and Lott (1965), interpersonal attraction is both a necessary and a sufficient condition for group cohesiveness. The implication is that consumption rituals may foster a sense of group cohesiveness among those who share them even without relying on assemblies in which the ritual would be jointly performed. This suggests that even consumption rituals that are performed individually (e.g. the wine-sampling ritual from the introduction) could bind people together.

The present research shows that people who are deemed to consume a product 'incorrectly' are more negatively evaluated. Regarding this depreciation effect, there is a question that the present paper does not answer: to what extent are rituals responsible for it? Recall the case of Roger, the person who followed a very meticulous ritual when drinking wine, and the case of the stranger who drank wine very unceremoniously and from a plastic glass. In that example, Roger found Tom's way of drinking wine incorrect. Could that be because of the ritual Roger follows or would Roger have reached the same conclusion even if he had not followed any specific ritual when drinking wine? If following consumption rituals makes it more likely for people to regard alternative ways of consuming products as 'incorrect', and given that incorrect consumption triggers a negative opinion change, consumption rituals could have a darker side to them: they could make people less tolerant to (consumption) diversity. This hypothesis becomes more plausible when we consider that consumption rituals

could create a sense of cohesiveness among people who follow the same ritual. One of the implications of social identity theory (Turner & Oakes, 1986) is that groups with a strong sense of unity can give preferential treatment to group members and discriminate people considered outsiders. There is some evidence of this 'in-group bias' (Ahmed, 2007). An interesting question for future research is whether consumption rituals, by potentially turning people who share such rituals into a cohesive group, could also make those people less tolerant towards ways of consuming their product that deviate from their ritual.

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