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Running head: ANTHROPOMORPHIC THINKING AND SADNESS REGULATION

When Sadness Comes Alive, Will It Be Less Painful?

The Effects of Anthropomorphic Thinking on Sadness Regulation and Consumption

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Abstract

Prior consumer research has studied the impact of anthropomorphism on product perception and evaluation. This research explores how anthropomorphic thinking influences people's experience of emotions and subsequent consumption behavior. Based on research on emotion regulation and the psychological process of detachment, we show that individuals instructed to anthropomorphize sadness (i.e., think of sadness as a person) report less experienced sadness afterward (Studies 1 and 2A). The same result is observed for its opposite, happiness, such that anthropomorphic thinking dilutes happiness (Study 2B). We argue that this reduction of emotion occurs because anthropomorphic thinking increases the perceived distance between the self and the anthropomorphized emotion, thereby creating a feeling of detachment. Evidence for a detachment process is found via measurement (Studies 3 and 4) and a theory-guided moderation, with the effect lessening when sadness is seen as a dependent (vs. independent) person (Study 3). These findings have implications for consumer behavior. When sadness is ameliorated by anthropomorphic thinking, people tend to display better self-control in subsequent consumption, as manifested by a greater likelihood of choosing a healthier or more practical product (Studies 4 and 5).

Keywords: anthropomorphic thinking, emotion regulation, detachment, self-control in consumption

When Sadness Comes Alive, Will It Be Less Painful? The Effects of Anthropomorphic Thinking on Sadness Regulation and Consumption

Anthropomorphic thinking, or thinking of nonhuman entities as human beings, has been known and practiced for thousands of years (Guthrie, 1993; Mithen, 1996). This tendency is pervasive in thinking about various entities, including both tangible entities such as animals and products (Aggarwal & McGill, 2007; Butterfield, Hill, & Lord, 2012) and intangible entities such as time and money (May & Monga, 2014; Zhou, Kim, & Wang, 2018). The past decade has witnessed a growing interest in understanding the effect of anthropomorphism in consumer research. A number of research studies have examined the influence of product anthropomorphism on product perception, evaluation, and preference (Aggarwal & McGill, 2007; Puzakova & Aggarwal, 2018; Puzakova, Kwak, & Rocereto, 2013; Wan, Chen, & Jin, 2017), providing rich implications for marketing communications. Recently, researchers have started to investigate how anthropomorphism impacts consumers' subjective experiences (Chen, Sengupta, & Adaval, 2018; Hur, Koo, & Hofmann, 2015). The present research aims to add to this conversation by exploring how anthropomorphizing a specific emotion affects people's experiences of the emotion and the implications for consumer behavior. Specifically, as an initial attempt to study emotion anthropomorphism, this research focuses on sadness throughout all the empirical studies (as well as its opposite emotion, happiness, in one experiment) and demonstrate the downstream consequences of anthropomorphizing sadness on consumer behavior.

Drawing on the emotion regulation literature, we propose and show that people instructed to anthropomorphize sadness or happiness (i.e., think of the target emotion as a person) report less experienced sadness or happiness afterward. This occurs because anthropomorphic thinking leads to a feeling of detachment from the target emotion.

Alternative accounts including task involvement, perceived control over the emotion, level of abstractness in thinking, and depletion are ruled out in the studies. Importantly, through reducing the intensity of sadness, anthropomorphic thinking shows positive impact on consumers' self-control performance in subsequent tasks (e.g., choosing a product with more practical features over an alternative with more indulgent features).

This research makes important theoretical contributions. First, while a large body of anthropomorphism literature has shown how product anthropomorphism influences consumers' perception, evaluation, and preference of the target product, this research takes a novel perspective by examining, for the first time, the effect of anthropomorphizing specific emotion (e.g., sad, happy) on consumer behavior. By doing so, this research extends our knowledge of how anthropomorphism of an abstract entity, apart from time (May & Monga, 2014) and money (Zhou et al., 2018) studied in prior work, can influence consumer experience and product choice.

Second, the novel effect of emotion anthropomorphism on consumption provides strong marketing implications for increasing sad consumers' self-control in different consumption choices. Sadness can be easily triggered in everyday life and is known as one of the key incidental causes of indulgent consumption (Garg, Wansink, & Inman, 2007; Wilcox,

Kramer, & Sen, 2010). We showed that regulating sadness through anthropomorphic thinking not only promoted healthier choice in the food domain (salad vs. cheesecake) but also increased choice of a more practical product in the non-food domain (a laptop perfect for productivity vs. a laptop perfect for entertainment). A third major contribution pertains to research on emotion regulation. Complementing prior research on reappraisal emotion regulation and psychological detachment (Gross, 2015; Kross et al., 2014), this research documents a new cause of detachment, namely anthropomorphic thinking. Importantly, the feeling of detachment induced by anthropomorphic thinking and the aforementioned desirable effects on consumer self-control can work when the anthropomorphic mindset is activated *prior to* the sad experience, which makes this strategy novel compared to other emotion regulation strategies. In the following sections, we develop our hypotheses and test them in six studies.

Theoretical Background

Anthropomorphic Thinking: Definition and Impacts

Anthropomorphic thinking emerged about 40,000 years ago (Mithen, 1996). The word *anthropomorphism* comes from two Greek words: *anthropos* (man) and *morphe* (form). Therefore, anthropomorphic thinking refers to thinking of nonhuman entities as human beings (Epley, Waytz, & Cacioppo, 2007). Both anecdotal evidence and scholarly research have shown that anthropomorphic thinking can be easily triggered when nonhuman entities possess human-like characteristics (Epley, Waytz, Akalis, & Cacioppo, 2008; Waytz,

Cacioppo, & Epley, 2010). The process can be involuntary and mindless (Kim & Sundar, 2012; Nass & Moon, 2000).

Over the past decade, consumer researchers have documented the consequences of anthropomorphism, primarily in the domain of product evaluation and perception (Aggarwal & McGill, 2007; Chandler & Schwarz, 2010; Puzakova & Aggarwal, 2018; Puzakova et al., 2013; Wan et al., 2017). For example, Aggarwal and McGill (2007) find that evaluation of anthropomorphized products depends on how well the product fits the proposed human schema. In their experiments, participants liked an anthropomorphized product better when the anthropomorphic characteristics given to that product were congruent with the activated human schema. In another example, Wan et al. (2017) show that anthropomorphism increases consumers' preference for products with superior appearance (vs. functional) attributes. These findings significantly enhance our understanding of the influence of anthropomorphism on product evaluation and perception.

Recently, consumer researchers have started to examine the impact of anthropomorphism on consumers' subjective experiences. For example, anthropomorphizing tempting food (such as high-calorie chocolate cookies) makes consumers feel less conflicted when eating them (Hur, Koo, & Hofman, 2015). In addition, lonely and helpless people who interact with anthropomorphized products experience a greater sense of connectedness and control, respectively, which consequently promotes their subjective vitality (Chen et al., 2018). Extending this line of research, we explore how anthropomorphizing sadness influences consumers' experience of sadness emotion and subsequent behavior.

The idea of portraying emotions as humans is not novel—people have utilized this practice for centuries. As early as medieval times, *Le Roman de la Rose* (De Lorriss & De Meun, 1275) described how a man won his love with the aid of his personified emotions. Anthropomorphized emotions have also appeared in poems (Ron, 2006), books (Gendler, 1988), and movies (*Inside Out*, 2015). Furthermore, a pilot study asking participants to rate the extent to which different entities are viewed as humanlike confirmed that sadness can be readily anthropomorphized to a degree comparable to that at which people anthropomorphized other nonhuman entities observed in previous research (see Web Appendix for details). We argue that anthropomorphizing sadness, a negative emotion that is pervasive in consumers' daily life, can downplay people's experience of sadness.

Emotion Regulation, Detachment Process, and Anthropomorphic Thinking

Emotion regulation refers to “attempts to influence which emotions one has, when one has them, and how one experiences and expresses these emotions” (Gross, 1998b, p. 275). Social psychologists have documented a wide range of strategies that can influence people's emotions (cf. Gross, 2015). One effective strategy is cognitive reappraisal, or reinterpreting an event in order to change people's emotional reactions in response to the event (Ochsner et al., 2004; Shiota & Levenson, 2012).

As the appraisal theory of emotion suggests, one's emotional response to a situation depends much on how one “appraises” the situation (Lazarus, 1991). Therefore, researchers find that for a situation that potentially elicits negative emotions, re-interpreting (or “reappraising”) the situation can help reduce people's experienced negative emotions (Gross,

1998b, 2015; Ray, Wilhelm, & Gross, 2008). More specifically, researchers find that the following two specific reappraisal strategies are often used: *positive reappraisal* and *detached reappraisal* (Kross et al., 2014; Ochsner et al., 2004; Shiota & Levenson, 2012). Specifically, positive reappraisal refers to a strategy that leads people to reappraise a potentially negative situation to be positive or neutral (Ochsner & Gross, 2005). Detached reappraisal, on the other hand, is a strategy to deny the personal relevance of a potentially negative situation, which consequently makes the person feel psychologically detached from the situation and hence be emotionally less affected by the situation (Beauregard, Lévesque, & Bourgouin, 2001; Ochsner et al., 2004).

Prior works have documented several forms of detached reappraisal strategy. The most typical one involves cueing participants to appraise an emotion-eliciting event from an uninvolved, third-person perspective. For example, Kross et al. (2014) show that cueing people to use their names (rather than first-person pronouns) to refer to themselves in recalling an angry experience (e.g., “Why did *Jane* feel this way?” as opposed to “Why did *I* feel this way?”) induces a feeling of detachment, which thereby reduces people’s experienced anger. Similarly, Gross (1998) finds that participants instructed to adopt a “detached attitude” when watching a disgusting film report less disgust than those who receive no instructions. Another interesting study by Kalisch et al. (2005) shows that participants who visualized themselves “in a safe place where the disturbing feeling of anxiety could not reach them” report feeling more detached and experiencing less anxiety. In sum, the common theme of the existing detached reappraisal strategies is that they encourage people to think of their role in

the situation to be observers rather than actors, hence creating a feeling of distancing and detachment (Gross, 2015; Ochsner et al., 2004).

We propose that anthropomorphic thinking can serve as a new antecedent of detachment. Specifically, we argue that anthropomorphic thinking will endow a sense of independence to the target emotion, making it seem more detached from the self. Findings from the extant literature provide supporting evidence for our hypothesis. For example, previous literature shows that when nonhuman entities (e.g., brands) are anthropomorphized, consumers are likely to treat them as independent entities with agency (Epley et al., 2007; Waytz et al., 2010). As a result, consumers view an anthropomorphized brand as a threat to consumers' agency in self-expression and therefore decrease their brand preference when they have a salient distinctiveness goal (Puzakova & Aggarwal, 2018). Similarly, because anthropomorphism increases the independence of a non-human entity, consumers perceive an anthropomorphized brand as responsible for the brand's wrongdoing (Puzakova et al., 2013). Integrating these findings with research on emotion regulation and detachment, we predict that thinking of sadness as a person will create an independent image of sadness that leads people to feel detached from it. Such feelings of detachment will result in a reduction of sadness intensity, as suggested by prior research on detachment (Kalisch et al., 2005; Kross et al., 2014). More formally, we hypothesize as follows:

H1: Anthropomorphizing (vs. not anthropomorphizing) sadness reduces the intensity of sadness.

H2a: The effect of anthropomorphic thinking on sadness reduction is mediated by the psychological process of detachment.

We further propose that the effect of anthropomorphic thinking on sadness reduction depends on the type of person portraying that sadness. If, as we contend, the proposed effect is driven by the sense of detachment from the anthropomorphized emotion, the effect should be attenuated or eliminated if consumers anthropomorphize the sadness emotion as a dependent (vs. independent) person who is closely attached to the consumer. Testing this qualification not only sheds light on the underlying process of the proposed effect but also allows us to identify the conditions under which the anthropomorphic thinking strategy holds (vs. not). More formally, we propose the following hypothesis:

H2b: The alleviating effect of anthropomorphic thinking on sadness will be attenuated when sadness is anthropomorphized as a dependent (vs. independent) person.

Downstream Consequences on Consumption. If the anthropomorphic thinking of sadness can make people feel less sad, how would that influence their subsequent consumption behavior? Previous research has robustly shown that sadness is associated with a desire for urgent reward (Lerner et al., 2004; Lerner, Li, & Weber, 2013). Therefore, people who feel sad (vs. not) are more likely to succumb to hedonic temptations (Garg et al., 2007) or engage in impulsive purchases (Lerner et al., 2004), both are signals of poor self-control. Given that we propose that anthropomorphizing sadness will lead to a reduction in sadness, we expect that the poor self-control associated with sadness will also be reduced.

Specifically, we predict that when sad consumers choose between an enjoyable option with

fewer long-term benefits (i.e., a more indulgent option) and a less enjoyable option with more long-term benefits (i.e., a healthier option), those who have regulated sadness using anthropomorphic thinking will be more likely to resist short-term temptations and choose the option that offers more long-term benefits. Formally, we denote our final hypothesis:

H3: In a subsequent choice task, sad consumers who anthropomorphized sadness in a prior task (vs. not) will be more likely to choose a healthier option that is superior in long-term benefits over a more indulgent option that is superior in short-term benefits.

Overview of Studies

We conducted six studies to test the proposed hypotheses. Studies 1, 2A, and 2B test the basic effect. Study 1 shows that for people who experienced sadness, engaging in anthropomorphic thinking reduces the intensity of sadness to a greater extent than engaging in non-anthropomorphic thinking. Study 2A replicates this effect using a pre- and post-task measure and a no-task control condition. Study 2B follows our proposed mechanism to extend the findings to happiness, the opposite of sadness, and shows that anthropomorphic thinking dilutes happiness.

Study 3 tests the role of detachment as an underlying mechanism via both measurement and moderation. Results show that the effect of anthropomorphic thinking on sadness reduction was attenuated when sadness was seen as a dependent (vs. independent) person; the effect was mediated by a self-reported feeling of detachment. Study 4 further reveals the underlying mechanism using a visual measure of detachment. Study 4 also finds that consumers who anthropomorphize the sadness emotion are more likely to choose a healthier

food option (salad) over a more indulgent food option (cheesecake). Finally, Study 5 shows that the sadness alleviation effect holds when anthropomorphic thinking is activated before a potentially sad event. This study also expands the implications of our findings to consumer behavior by inducing sadness in the marketing environment and examining the consequences of sadness anthropomorphism on consumer self-control in the non-food domain.

Study 1

Study 1 sought to test the basic effect of anthropomorphic thinking on the experience of sadness. Participants first completed an autobiographical recall task designed to induce sadness. After that, they engaged in a writing practice in which they either wrote about “*who* sadness is” or “*what* sadness is.” We predicted that participants in the “*who*” (i.e., anthropomorphic thinking) condition would report feeling less sad after the writing practice than those in the “*what*” (i.e., non-anthropomorphic thinking) condition.

Method

This study used a one-factor, two-level (style of thinking: “*who*”/anthropomorphic vs. “*what*”/non-anthropomorphic) between-subjects design. One hundred and twenty adult consumers (48 males; $M_{\text{age}} = 37.3$ years) from Amazon Mechanical Turk participated in this study online in return for a nominal payment.

Sadness Induction. After providing consent, participants were told that they would be participating in a consumer research study consisting of several unrelated tasks. The first task, titled “Life Event Recalling Task,” was described to study how well people could remember their past experiences. Under this pretense, participants were instructed to recall a

time when they felt very sad, such as a time when they lost someone close to them.

Participants then described the experience in writing and were ensured that their identity would not be connected to their responses in any way (Adaval, 2001; see also Hung & Mukhopadhyay, 2012; Garg & Lerner, 2013, for a similar approach).

Anthropomorphic Thinking Manipulation and Measures. After completing the life event recall task, participants moved on to the second task, which was ostensibly designed to understand the feeling of sadness they experienced in the first task but was in fact a manipulation of anthropomorphic thinking. Participants were randomly assigned to one of two conditions. Those in the *anthropomorphic thinking condition* were told to conceive of their feeling of sadness in terms of “who it is” and write about the kind of person that sadness might be if it came to life. In contrast, participants in the *non-anthropomorphic thinking condition* were told to conceive of their feeling of sadness in terms of “what it is” and write about the kind of the affective and emotional impacts it has (adapted from Wan et al., 2017). Participants in both conditions spent an equivalent amount of time ($p = .821$) writing their thoughts. After that, participants rated the extent of experiencing sadness at that moment. They indicated the extent to which they were feeling sad, as well as filler items about anger, confusion, embarrassment, and fear, on 7-point scales (1 = *none*, 7 = *very much*; Ray et al., 2008). The session ended with demographic information.

Results

Prior to analysis, six participants who did not follow the writing instructions (i.e., provided irrelevant responses) were excluded (Chen, Lee, & Yap, 2016; Nikolova,

Lamberton, & Haws, 2015). Screening based on this exclusion criterion left us a final sample of 114.

Sadness Intensity. A one-way ANOVA on sadness intensity with style of thinking (1 = anthropomorphic, -1 = non-anthropomorphic) as the independent variable revealed the main effect predicted by H1, $F(1, 112) = 5.38, p = .022, d = .43$. Participants reported lower levels of sadness after thinking of sadness in an anthropomorphic way ($M = 3.75, SD = 1.48$) than after thinking of sadness in a non-anthropomorphic way ($M = 4.43, SD = 1.65$). This finding held when gender and age were controlled (with the covariates, $p = .033$).

To rule out the possibility that engaging in anthropomorphic thinking (vs. non-anthropomorphic thinking) provides greater relief of sadness because it directs participants' attention away from their emotion, we counted the number of times that the word *sadness* was mentioned in participants' responses. No systematic difference was found between conditions ($M_{\text{anthro}} = 1.66, M_{\text{non-anthro}} = 1.34, p = .272$), casting doubt on the potential alternative explanation that participants in the anthropomorphic thinking (vs. non-anthropomorphic thinking) condition focused less on their emotion. In addition, the negativity of participants' writings was coded on a 7-point scale (1 = *very negative*, 7 = *very positive*). Again, no systematic difference was found in terms of the negativity of participants' writing between conditions ($M_{\text{anthro}} = 2.70, M_{\text{non-anthro}} = 2.83, p = .385$).

Other Negative Emotions. Furthermore, the practice of anthropomorphizing sadness had no impact on non-sadness negative emotions. A one-way ANOVA on the composite score of non-sadness negative emotions ($\alpha = .79$) showed no systematic difference between

conditions ($M_{\text{anthro}} = 2.05$, $M_{\text{non-anthro}} = 2.15$, $p = .623$); therefore, we do not discuss the effect of anthropomorphic thinking on non-target emotions in subsequent studies.

Discussion

The results of Study 1 offered initial support for our central argument (i.e., H1) that engaging in anthropomorphic thinking reduces people's experience of sadness. There was no significant difference between conditions regarding the amount of time people spent on the writing tasks, the number of times the word *sadness* was used, and the tone of negativity.

Study 2A

Although Study 1 showed support for the basic hypothesis that sad people feel less sad after anthropomorphizing their sadness, as compared to after engaging in non-anthropomorphic thinking, it did not provide evidence as to whether the effect is driven by the decreased sadness intensity in the anthropomorphic thinking condition or the increased sadness intensity in the non-anthropomorphic thinking condition. We aimed to address this issue in Study 2A. To detect the absolute change in sadness, we assessed participants' level of sadness twice, both after the initial manipulation of sadness and then once again after the intervening task. Such a pre- and post-measurement method allowed us to observe the absolute change in people's level of sadness across conditions while "controlling for broad individual differences in the tendency to experience and express emotions" (Rick, Pereira, & Burson, 2014, p. 376). In addition, we used a different control group in Study 2A to enhance the validity of our findings: Participants in the control group engaged in no activity and instead simply waited to move on to the subsequent measures (adapted from Wang, Hong, &

Zhou, 2017). We predicted that people's feeling of sadness would diminish to a greater extent when they anthropomorphized their sadness compared to when they engaged in no activity.

Method

This study used a 2 (style of thinking: anthropomorphic vs. control) between-subjects design. One hundred and twelve Hong Kong undergraduate students (31 males, $M_{age} = 19.8$ years) participated in this study in exchange for partial course credit.

Sadness Induction. Upon arrival, participants were told that they were participating in a consumer research study consisting of several unrelated parts. The first study, entitled "The Interplay of Music and Memory," was in fact an induction of sadness. Participants were told that the researchers were interested in the role of music in people's memory recall. Under this pretense, participants were asked to recall and describe a past experience in which they felt very sad. While they were describing the experience, a piece of sad-themed music (Barber's *Adagio for Strings*) was played to facilitate their recall (Morrow & Nolen-Hoeksema, 1990). Afterward, participants rated the extent of experiencing angry, sad, embarrassed, confused, and fearful emotions at that moment from 1 (*none*) to 7 (*very much*) as in Study 1.

Intervening Task and Feeling of Sadness at Time Two. After the sadness induction and first measurement, participants were randomly assigned to either the anthropomorphic thinking condition or the control condition. In the *anthropomorphic thinking condition*, participants were told to imagine the sadness emotion they experienced as coming to life as a person and to write about what kind of person sadness might be. In contrast, participants in the *control condition* were given a vacant waiting task. Specifically, they were told that the

next study took some time to load, so they were left waiting without any activity to engage with. A loading image displayed for 60 seconds before the system automatically directed them to the next screen (Wang et al., 2017). Afterward, participants in both conditions for the second time reported their level of sadness among the other four filler emotions, using the same scales as before. The session ended with demographic information.

Results

Manipulation Check. One-sample t-tests with the scale midpoint “4” as the critical value showed that writing about a sad experience made participants feel strong sadness (grand $M = 4.41$, $t(111)_{\text{differ from 4}} = 2.27$, $p = .025$) but not much of the other negative emotions ($M_{\text{pooled}} = 1.89$, $t(111)_{\text{differ from 4}} = -22.06$, $p < .001$), confirming the effectiveness of the sadness induction. In addition, the amount of time people spent in the anthropomorphic thinking versus control condition showed no significant difference ($p = .24$).

Change in Sadness. The initial measurement of participants’ experienced sadness did not show a difference between the anthropomorphic thinking and control conditions ($F(110) = 2.72$, $p = .10$). We then analyzed the *change* in experienced sadness (pretest score minus posttest score; a larger number indicated a greater reduction in experienced sadness). A one-way ANOVA on the change scores revealed the predicted difference between conditions, $F(1, 110) = 5.35$, $p = .023$, $d = .44$. Participants instructed to anthropomorphize sadness reported a greater reduction in experienced sadness ($M_{\text{sadness reduction}} = 1.12$) than participants who did not perform any activity ($M_{\text{sadness reduction}} = 0.53$).

Discussion

Using a repeated measure and a neutral control condition that did not involve any thinking of the induced emotion, Study 2A confirmed that engaging in anthropomorphic thinking led to a greater reduction in experienced sadness. Study 2B continued to investigate this basic effect with the opposite of sadness: namely, happiness.

Study 2B

Although Studies 1 and 2A provided evidence that consumers' experience of sadness lessened when they anthropomorphized sadness (vs. not), these studies did not explore the underlying mechanism. Study 2B started to speculate on the mechanism underlying this effect by testing the effect of the opposite of sadness, namely, happiness. If, as we contend, anthropomorphic thinking reduces the experience of sadness due to a detachment process, one would expect that a positive emotion (such as happiness) would also lessen when it is anthropomorphized. We tested this possibility in Study 2B.

Method

This study used a 2 (emotion: sadness, happiness) \times 2 (style of thinking: anthropomorphic vs. non-anthropomorphic) between-subjects design. Two hundred and fifty-four adult consumers (53.5% males, $M_{\text{age}} = 36$ years) from Amazon Mechanical Turk completed this experiment online in exchange for nominal pay.

Sadness/Happiness Induction. Participants first completed a life event recall task as in Study 1 for emotion induction. Participants in the *happy condition* were asked to recall a personal experience in which they felt very happy while those in the *sad condition* recalled a personal experience in which they felt very sad. After completing the recall task, participants

rated the extent of feeling sad and happy, among filler items such as angry and calm at that specific moment on 7-point scales (1 = *none*, 7 = *very much*), as in previous studies.

Anthropomorphic Thinking Manipulation. The second task manipulated anthropomorphic thinking. Under the cover story that the researchers were interested in knowing more about people's feelings regarding the event they had just recalled, participants in the *anthropomorphic thinking condition* were asked to imagine the sadness/happiness emotion they experienced as coming to life as a person and to describe "who it is." Participants in the *non-anthropomorphic thinking condition*, however, were told to write about "what sadness/happiness is" (i.e., the specific feelings involved in the sadness/happiness experience). All participants were given the same amount of time to describe their thoughts. Upon finishing the second task, participants reported their level of sadness and happiness, as well as other filler items, for the second time, using the same scale as before. The session ended with demographic information.

Results

Manipulation Check. As expected, writing about a sad experience made people feel strongly sad ($M = 5.40$, $SD = 1.65$; $t(116)_{\text{diff from } 4} = 9.21$, $p < .001$); this sadness manipulation did not elicit other negative emotions ($M_{\text{pooled}} = 3.17$, $t(116)_{\text{diff from } 4} = -8.07$, $p < .001$). On the other hand, writing about a happy experience made people feel strongly happy ($M = 5.96$, $SD = 1.29$; $t(136)_{\text{diff from } 4} = 17.77$, $p < .001$); this happiness manipulation did not elicit other positive emotions ($M_{\text{pooled}} = 3.08$, $t(136)_{\text{diff from } 4} = -9.02$, $p < .001$).

Change in Sadness. For the sadness emotion conditions, participants' initial experienced sadness did not differ between conditions ($F(1, 115) = 1.45$, $p = .231$). We then

analyzed the change in experienced sadness (pretest score minus posttest score). A one-way ANOVA on the change scores revealed a main effect of the condition, $F(1, 115) = 4.69, p = .032, d = .40$. Replicating past results, participants reported a greater reduction in experienced sadness in the anthropomorphic thinking condition ($M_{\text{sadness reduction}} = 0.97$) than in the non-anthropomorphic thinking condition ($M_{\text{sadness reduction}} = 0.33$).

Change in Happiness. Similarly, for the happiness emotion conditions, participants' initial experienced happiness did not differ between conditions ($F(1, 135) < 1$). A one-way ANOVA on the change scores revealed that participants reported a greater reduction in experienced happiness in the anthropomorphic thinking condition ($M_{\text{happiness reduction}} = .46$) than in the non-anthropomorphic thinking condition ($M_{\text{happiness reduction}} = 0.13; F(1, 135) = 3.75, p = .055, d = .33$).

Discussion

The results of Study 2B showed that the effect of anthropomorphic thinking holds for both sadness and its opposite, happiness. Anthropomorphic thinking of sadness attenuated this negative emotion while anthropomorphic thinking of happiness diluted this positive emotion. Importantly, the results of this study suggest that a detachment mechanism is likely to drive the observed effect. Study 3 further tested the role of detachment as an underlying mechanism through mediation and moderation approaches.

Study 3

Based on the findings of Study 2B, the current study was intended to examine further the proposed underlying mechanism—detachment—by directly measuring it. In addition, we

manipulated the personality trait of the anthropomorphized sadness and tested how it influenced the extent to which sadness was detached, and consequently the extent to which people's experience of sadness was reduced. Specifically, we predict that when sadness is thought of as an independent person who is easy to separate from, the alleviating effect of anthropomorphism on sadness should be evident; however, when sadness is thought of as a dependent person who is hard to separate from, the effect should be less evident.

Method

This study used a 3 (style of thinking: anthropomorphic/a dependent person vs. anthropomorphic/an independent person vs. non-anthropomorphic) between-subjects design. Three hundred and six adult consumers (137 males; $M_{\text{age}} = 41.1$ years) from Amazon Mechanical Turk participated in this study online in return for nominal pay. The focal dependent variables were self-sadness detachment and sadness reduction.

Sadness Induction. The procedure for Study 3 began with the life event recall task as in Study 2B. All participants wrote about a past life experience that made them feel very sad. Following the recall task, participants reported how much they felt anger, confusion, embarrassment, fear, and sadness at that specific moment along five 7-point scales (1 = *none*, 7 = *very much*) as a manipulation check.

Anthropomorphic Thinking Manipulation. The second task asked participants to describe in more detail their feelings and emotions in the experience they just recalled. Participants in both the *anthropomorphic-thinking-dependent* and *anthropomorphic-thinking-independent conditions* were told to think of the sadness emotion as coming to life as a

person. The only difference between the two conditions was that participants in the first condition were asked to imagine sadness as a dependent person who clung to them wherever they went, was attached to them, and could not be separated from them easily while participants in the second condition were asked to imagine sadness as an independent person who did not cling to them, was not attached to them, and could be separated from them easily. Participants in the *non-anthropomorphic thinking condition* were told to describe the sadness in terms of the emotional experience as in Study 2B.

Measure of Sadness at a Second Time and Perceived Detachment. After completing the anthropomorphic thinking practice, participants reported their feeling of sadness and responded to filler items for the second time, using the same scales. We measured the perceived self-emotion detachment using six items adapted from Roger, Jarvis, and Najarian (1993). On 7-point scales participants indicated the extent to which they agreed with the following statements: “I feel that the sadness emotion is detached from me,” “I think about the sadness emotion as if it were an independent entity,” “I think about the sadness emotion as something out of my mind,” “The sadness emotion is closely attached to me,” “The sadness emotion is deep inside my mind,” and “The sadness emotion stuck with me.” Responses to the six items were averaged (with the last three items reversely coded) to form a self-emotion detachment index ($\alpha = .90$). The session ended with demographic information.

Results

Prior to analysis, 19 participants who did not follow the writing instructions (i.e., provided irrelevant responses) were excluded. This left us a final sample of 287.

Manipulation Check. As expected, writing about a sad experience made people feel strongly sad (grand $M = 4.65$, $SD = 1.81$; $t(286)_{\text{diff from 4}} = 6.09$, $p < .001$). The sadness manipulation did not elicit other negative emotions (the scores for all non-sadness negative emotions were significantly lower than the scale midpoint, $ps < .001$).

Changes in Sadness. Recall that we hypothesized that anthropomorphic thinking would alleviate the experience of sadness because of a heightened sense of detachment. Therefore, the effect should be attenuated or eliminated if the sadness feeling is portrayed as a dependent person who is hard to detach.

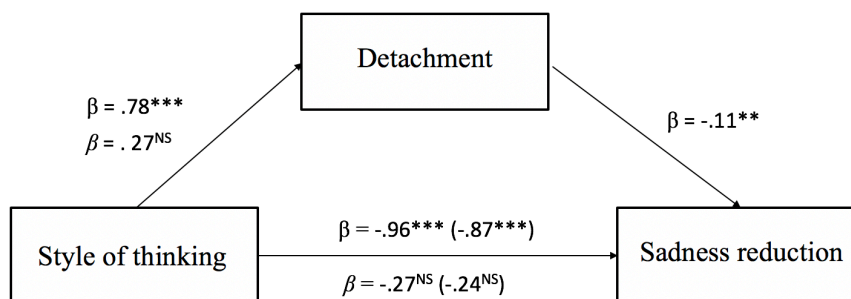
We first analyzed the initial level of sadness and found no significant difference across conditions, $F < 1$. We then analyzed sadness change (pretest score minus posttest score) using a one-way ANOVA with the condition as the IV and change scores as the DV. The result revealed that participants in different conditions showed significantly different rates of sadness reduction, $F(2, 284) = 11.93$, $p < .001$, $\eta_p^2 = .077$. As predicted, thinking of sadness as an independent person led to a greater reduction in experienced sadness ($M_{\text{sadness reduction}} = 1.09$) than thinking of it as a dependent person ($M_{\text{sadness reduction}} = .41$) or thinking of sadness as a mere emotional experience ($M_{\text{sadness reduction}} = .14$; $ps < .001$); the latter two conditions did not differ significantly ($p = .183$)¹.

Perceived Detachment. A one-way ANOVA on perceived detachment revealed the main effect predicted by H2a, $F(2, 284) = 6.66$, $p = .001$, $\eta_p^2 = .045$. Post-hoc LSD contrasts showed that imagining sadness as an *independent* person ($M_{\text{anthro-independent}} = 4.08$, $SD = 1.53$) induced a significantly greater sense of detachment than did imagining sadness as a

dependent person ($M_{\text{anthro-dependent}} = 3.57$, $SD = 1.60$; $p = .025$) or as a non-human being ($M_{\text{non-anthro}} = 3.30$, $SD = 1.43$, $p < .001$). The latter two did not differ significantly ($p = .206$).

Indirect Effect. To provide additional evidence for the mediating role of detachment, we conducted a mediation analysis (PROCESS model 4, Hayes, 2012) using a multi-categorical predictor. We first created two dummy variables to examine the relative effects of anthropomorphizing sadness (humanizing sadness as an independent person or as a dependent person, coded 1) relative to a reference group (non-anthropomorphic condition, coded 0; Kim, Chen, & Zhang, 2016). Detachment and sadness were used as the mediator and dependent variable, respectively. Results showed that perceived detachment exerted a significant indirect effect in the anthropomorphic-independent condition relative to the non-anthropomorphic condition (indirect effect = .09, $SE = .05$, $CI_{95} = [.0109, .2109]$). However, there was neither direct effect ($p = .236$) nor indirect effect through detachment (CI_{95} included zero) in the anthropomorphic-dependent condition relative to the non-anthropomorphic condition. See Figure 1 for detailed statistical reports of the mediation analyses. All mediation analyses reported in this research were conducted based on 5,000 bootstrapping resamples. These findings suggest that perceived detachment played a mediating role in the anthropomorphic-independent condition relative to the non-anthropomorphic condition, but not in the anthropomorphic-dependent condition relative to the non-anthropomorphic condition.

Figure 1. Detachment mediates the effect of style of thinking on sadness reduction for the anthropomorphic-independent condition, relative to the non-anthropomorphic condition



Note: * indicates $p < .1$; ** indicates $p < .05$; *** indicates $p < .001$; NS indicates not significant

For path with two coefficients, values in regular type show results for the anthropomorphic-thinking-independent person condition, and values in italic show results for the anthropomorphic-thinking-dependent person condition. For path from style of thinking to sadness reduction, parenthetical values represent the relative direct effects of anthropomorphic thinking on sadness reduction, while values outside parentheses represent the relative total effect of anthropomorphic thinking on sadness reduction.

Discussion

The findings of Study 3 not only replicated our earlier results but also provided direct evidence for the proposed underlying mechanism. Consistent with our theorizing, the effect of anthropomorphic thinking on sadness reduction is attenuated when sadness is anthropomorphized as a dependent (vs. independent) person. Further analysis demonstrated that such effect was mediated by perceived detachment.

Study 4

Study 4 was designed with three objectives. First, based on the findings of Study 3, the current study was intended to provide further evidence for detachment as the proposed underlying mechanism. To do so, this study used a more straightforward visual measure of detachment by presenting participants with different diagrams that depicted the self-sadness distance and asking them to choose the one that best described their relationship with

sadness. We predicted that engaging in anthropomorphic thinking could increase the perceived distance between the consumer and the sadness emotion.

In addition, Study 4 tested the potential alternative explanation that the anthropomorphic thinking practice (vs. non-anthropomorphic thinking) might have been more involving and that higher task involvement could lead to a greater sadness reduction (Bowman & Tamborini, 2012). The current study directly measured participants' task involvement and showed no significant difference between conditions.

Finally, Study 4 tested the downstream consequence of the observed sadness reduction on consumption. Prior work has shown that sad people have a strong desire for urgent reward and therefore tend to engage in indulgent consumption (i.e., have poor self-control; Garg et al., 2007; Salerno, Laran, & Janiszewski, 2014). We predicted that since anthropomorphic thinking attenuates people's experienced sadness, in a subsequent product choice task people should display better self-control as manifested by choosing a healthier option over a more indulgent option.

Method

This study consisted of two experimental conditions: an anthropomorphic thinking condition and a non-anthropomorphic thinking condition. One hundred forty-six Hong Kong undergraduates (51 males; $M_{\text{age}} = 21$ years) participated in this study for a nominal pay.

Sadness Induction. Under the pretense that they were participating in a consumer research study consisting of unrelated parts, participants first described a past sad experience

while listening to a piece of sad-themed music, as in Study 2A. Then participants reported the extent to which they felt sad at that moment as in previous studies.

Anthropomorphic Thinking Manipulation and Feeling of Sadness at Time Two.

The second task of the experiment manipulated anthropomorphic thinking. As in Study 2B, participants in the anthropomorphic thinking (vs. non-anthropomorphic thinking) condition were asked to imagine the sadness emotion they experienced as coming to life as a person and to describe “who it is” (vs. “what it is”). After that, participants reported their level of sadness along with other emotions for the second time, using the same scales as before.

Measure of Self-Control and Perceived Detachment. The third task was ostensibly asking participants to evaluate experimental stimuli to be used for future studies but actually was a standard measure of self-control ability used in prior research (Chen & Sengupta, 2014; Wilcox, Vallen, Block, & Fitzsimmons, 2009). Specifically, participants were told to imagine that they were choosing a side dish to accompany a lunch entrée and they had to choose between cheesecake (an indulgent option) and salad (a healthy option; see Appendix A, part a). They indicated their inclination to choose one or the other along a 9-point scale that ranged from 1 (*definitely cheesecake*) to 9 (*definitely salad*). A greater tendency to choose the salad reflected better self-control.

After completing the snack choice task, participants reported the extent to which they felt detached from the emotion of sadness. Different from Study 3, this study used a visual tool to measure the perceived self-sadness distance. Specifically, participants were shown Venn diagrams depicting the relationship between oneself and the sadness emotion, ranging

from far apart to completely overlapping. They were asked to select the diagram that best described the distance between themselves and their sadness emotion (see Appendix A, part b). This measure originated from the interpersonal literature (Levinger, 1980) to assess one's closeness with others in interpersonal relationships and was adapted to measure consumer-brand identification (Lam, Ahearne, Mullins, Hayati, & Schillewaert, 2013). Finally, participants indicated how involved, engaged, and interested they were when they were describing the emotion in the second task on 7-point scales (1 = *not at all*, 7 = *very much*; Dong, Huang, & Wyer, 2013). The session ended with demographic information.

Results

Prior to analysis, 14 participants who did not follow the writing instructions (i.e., provided irrelevant responses) were excluded. This left us a final sample of 132.

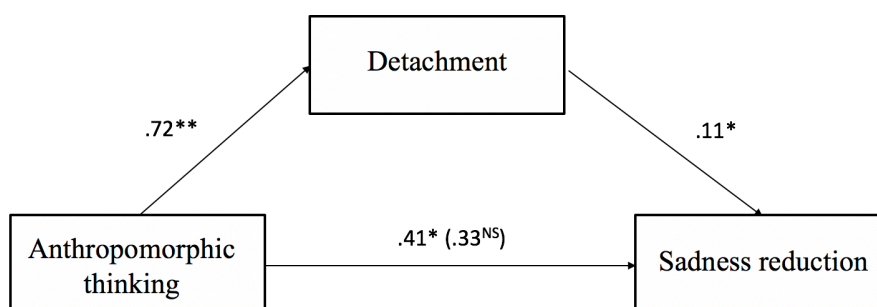
Manipulation Check and Control. As expected, writing about a sad experience made participants feel strong sadness (grand $M = 4.46$; $SD = 1.49$; $t(131)_{\text{differ from 4}} = 3.56$, $p = .001$), but not other negative emotions ($M_{\text{pooled}} = 2.57$, $t(131)_{\text{differ from 4}} = -13.80$, $p < .001$). No systematic difference was found in participants' self-report of task involvement ($p = .762$), casting doubt on task involvement as the potential alternative explanation.

Changes in Sadness. Participants in the two conditions did not differ in their initial experienced sadness (i.e., pretest score), $F(1, 130) = 1.36$, $p = .246$. We then analyzed the sadness change (pretest score minus posttest score). Replicating past results, we found that writing about sadness as a person led to a greater sadness reduction ($M_{\text{sadness reduction}} = .79$)

than writing about the emotional details of sadness ($M_{\text{sadness reduction}} = .38$), $F(1, 130) = 3.65$, $p = .058$, $d = .33$).

Underlying Process of Detachment. Recall that detachment was measured via an implicit graphic measure, with a higher number indicating a greater self-sadness distance (i.e., greater detachment). Consistent with our hypothesis, participants in the anthropomorphic condition ($M_{\text{anthro}} = 5.07$, $SD = 1.76$) indicated feeling more distant/detached from the sadness feeling compared to participants in the non-anthropomorphic condition ($M_{\text{non-anthro}} = 4.35$, $SD = 1.57$), $F(1, 130) = 6.16$, $p = .014$, $d = .43$. Importantly, a bootstrapping mediation analysis confirmed that the effect of anthropomorphic thinking leading to a lower level of sadness was mediated by detachment (indirect effect = .08, $SE = 0.05$, $CI_{95} = [0.0065, 0.2287]$; Model 4 of Hayes [2013]). See Figure 2 for details.

Figure 2. Detachment mediates the effect of anthropomorphic thinking on sadness reduction



Note: * indicates $p < .1$; ** indicates $p < .05$; NS indicates not significant

Self-Control in Subsequent Consumption. Finally, we hypothesized that if individuals feel less sad after anthropomorphizing their sadness (vs. not), they should also demonstrate better self-control in a subsequent task, as manifested by choosing a healthier option with superior long-term benefits over a more indulgent option with superior short-term

benefits. Results supported our prediction: Participants were more likely to choose the healthy option (salad) as the side dish in the anthropomorphic thinking condition ($M = 4.87$, $SD = 2.71$) than in the non-anthropomorphic thinking condition ($M = 3.94$, $SD = 2.53$), $F(1, 130) = 4.13$, $p = .044$, $d = .35$.

Discussion

Overall, Study 4 provided support for H1, H2a, and H3. People who were led to think of sadness as a person perceived it to be more detached from them; the heightened sense of detachment consequently reduced sadness intensity; as sadness was ameliorated, participants exhibited better self-control in subsequent food choice.

Study 4 also ruled out the possibility that the observed effect is driven by a difference in task involvement. We tested two other possible alternate explanations—perceived control and level of abstractness—in a follow-up study, which is reported briefly here in the interest of space (full details available from the authors). In that study, sad participants were asked to write about their sadness either as a person or as emotional feelings, as in Study 4. Then participants answered two questions measuring their perceived control over sadness (“To what extent do you feel that you have control over your emotions?” “To what extent do you feel powerful in dealing with your emotions?” 1 = *not at all*, 7 = *very much*; correlation $r = .81$). They also answered one question measuring the level of abstractness of their emotions (“How abstract or concrete do you find your emotions are to you?” 1 = *very concrete*, 7 = *very abstract*). No systematic differences were found in the measures of perceived control and abstractness between conditions ($F_s < 1$).

Study 5

The last study aimed to extend our findings by testing whether the regulation effect holds when the anthropomorphic mindset is activated at the *pre*-emotion stage. Past research suggests that a cognitive procedure that people use to process information in one situation is likely to be applied in a later situation due to cognitive accessibility (Shen & Wyer, 2008; Xu & Wyer, 2007). Following this logic, we predict that if people are induced to think of sadness as a person *before* they encounter a potentially sad event, the primed anthropomorphic mindset (and the resultant feeling of detachment from sadness) is likely to carry over and affect how people would feel in a later situation.

To test this, we first asked participants to read an article about how emotions can be thought of as a person (vs. to perform a neutral task). We then exposed all participants to a product disposition scenario that usually caused people to feel sad (i.e., to say goodbye to a product that one has used for a long time). We predicted that participants who were primed with the anthropomorphic mindset before encountering the sad scenario would feel less sad compared to their counterparts in the control condition. We also tested the downstream consequence of anthropomorphizing sadness on consumer self-control in a non-food domain.

Method

This study used a 2 (style of thinking: anthropomorphic vs. control) between-subjects design. One hundred and twenty-one adult consumers (68 males, $M_{\text{age}} = 38$ years) from Amazon Mechanical Turk participated in this online study in return for nominal pay.

Anthropomorphic Thinking Induction. Similar to previous studies, participants were instructed that this research study consisted of several unrelated parts. Under this cover story, participants first completed a feeling measure on sadness along with a few filler items as in previous studies. Next, participants were led to a task described as pretesting stimuli for future studies. Participants in the *anthropomorphic thinking condition* read a passage on “What Would Your Sadness Be If It Were a Person?” The passage introduced the idea of how sadness can be thought of as a human being (see Appendix B). Conversely, participants in the *control condition* completed a neutral task, namely, to describe a typical day of theirs (Sheldon & Lyubomirsky, 2006). To rule out the possibility that participants in the anthropomorphic thinking condition (vs. the control condition) might feel more tired, which could influence their feelings and subsequent self-control performance, we measured participants’ feeling of tiredness right after they finished the first task using a 7-point scale (1 = *not tired at all*, 7 = *very tired*).

A Sad Scenario. The second task of this experiment was titled “Imagination Study.” Participants were asked to imagine themselves in a scenario in which they were going to send their old laptop to be recycled and so felt very sad (see Appendix C, part a). Participants were asked to imagine, as vividly as possible, how they would feel in that situation. Then they indicated how much they feel sad in that situation, among some filler items, as before.

Self-Control in Subsequent Consumption. After the second sadness measurement, participants were given a decision-making task between an indulgent option and a practical option (i.e., computer perfect for entertainment vs. computer perfect for productivity; see

Appendix C, part b) as a measure of self-control (adapted from Chen & Sengupta, 2014; Wang, Novemsky, Dhar, & Baumeister, 2010). Participants then indicated their inclination to choose one or the other along a 9-point scale that ranged from 1 (“I would definitely choose computer A”) to 9 (“I would definitely choose computer B”).

Results

Changes in Sadness. Participants’ baseline level of sadness did not differ between conditions ($M_{\text{anthro}} = 2.26$, $M_{\text{nonanthro}} = 1.94$, $F(1, 119) = 1.11$, $p = .295$). We then analyzed the change in experienced sadness (posttest score minus pretest score with a larger number indicating greater increase in experienced sadness). A one-way ANOVA on the change scores revealed a main effect of the condition. Participants reported a significantly smaller increase in experienced sadness in the anthropomorphic thinking condition ($M_{\text{sadness increase}} = 1.47$) than in the control condition ($M_{\text{sadness increase}} = 2.30$, $F(1, 119) = 4.89$, $p = .029$, $d = -.40$, see Table 1 for a summary of all pre-, post-scores, and the change scores in Studies 1 to 5).

Self-Control in Subsequent Consumption. Participants’ self-control also showed a significant difference between conditions, $F(1, 119) = 3.99$, $p = .048$. $d = .36$. Replicating the results from Study 4, participants in the anthropomorphic thinking condition were more likely to choose the more practical product than those in the control condition, indicating better self-control ($M_{\text{anthro}} = 6.38$, $SD = 2.43$; $M_{\text{nonanthro}} = 5.49$, $SD = 2.46$). It is worth noting that no significant difference was found in participants’ feeling of tiredness after the priming task ($M_{\text{anthro}} = 3.62$, $M_{\text{nonanthro}} = 3.63$, $F < 1$, $p = .966$), suggesting that the sadness regulation effect and improved self-control was not likely to be driven by depletion.

Discussion

In sum, Study 5 replicated our earlier findings using product disposal to elicit sadness. More interestingly, this study showed that separately priming anthropomorphic mindset can lead to the same process of detachment that helps people regulate subsequent sadness. This finding suggests that consumers can prepare to regulate their emotion using anthropomorphic thinking if they foresee sad events. This study also showed the consequences of sadness anthropomorphism on consumer self-control in the non-food domain.

General Discussion

Bridging research on anthropomorphism and emotion regulation, the present research finds that individuals instructed to anthropomorphize sadness report less experienced sadness (Studies 1, 2A and 2B). The same result is observed for the opposite of sadness – namely, happiness (Study 2B). We further document that this effect is driven by enhanced detachment. Anthropomorphic thinking increases the perceived distance between the self and the sadness emotion, thereby creating a sense of detachment and reducing sadness intensity. Evidence for the proposed underlying mechanism is obtained via both measurement and a theory-guided moderation (Studies 3 and 4). By reducing people's experienced sadness, we also identify the impact of this strategy on consumer behavior. A notable amount of research has shown that sadness leads people to focus on the short term and a desire for urgent reward (Lerner et al., 2013). Because of their myopic focus, sad people (vs. non-sad people) are more likely to succumb to indulgent consumption (Garg et al., 2007; Lerner et al., 2004). The current research finds that when sadness is ameliorated by a prior anthropomorphic thinking

task, the poor self-control associated with sadness is also reduced such that people are more likely to choose a healthier (or more practical) option over a more indulgent option in a subsequent consumption (i.e., display better self-control; Studies 4 and 5). Study 5 also shows that the anthropomorphic thinking strategy can prepare consumers in advance to lessen sadness and influences subsequent product choice.

Theoretical Implications

This research makes three key contributions to the literature. First, this research contributes to the anthropomorphism literature by demonstrating, for the first time, how a specific emotion (e.g., sadness) can be anthropomorphized to help regulate the emotion and increase self-control in subsequent product choice. Although anthropomorphism has received a lot of attention from consumer researchers in the past few years (Aggarwal & McGill, 2007; Chandler & Schwarz, 2010; Puzakova et al., 2013; Wan et al., 2017), the majority of consumer literature has focused on the anthropomorphism of products, such as cars (Chandler & Schwarz, 2010), cookies (Hur et al., 2015), and shoes (Puzakova & Aggarwal, 2018), with a few exceptions looking at abstract entities such as time (May & Monga, 2014) and money (Zhou et al., 2018). The present work adds to the existing literature by showing that anthropomorphic thinking can be applied to specific emotion (e.g., sad, happy), a new entity.

More importantly, this research demonstrates important implications of anthropomorphic thinking to consumer behavior. Just as anthropomorphizing a product makes the product more of a mindful agent (Puzakova et al., 2013; Puzakova & Aggarwal, 2018), thinking of sadness as a person makes sadness more detached from the experiencer,

hence reducing the intensity of sadness. We further showed that by reducing sadness, anthropomorphic thinking increased sad consumers' self-control in different consumption domains. Specifically, reduced sadness through anthropomorphic thinking not only promoted healthier choice in the food domain but also increased choice of a more practical product (vs. an indulgent product) in the non-food domain. Taken together, these new findings enrich our understanding of the role of anthropomorphism in consumer psychology.

Finally, this work extends the research on emotion regulation (Kross et al., 2014; Ochsner et al., 2004) by identifying a new cause of the psychological process of detachment. Complementing prior research on emotion regulation, and detached reappraisal strategy in particular (Kalisch et al., 2005; Kross et al., 2014), this research shows that thinking of one's feeling of sadness as a person can enhance the distance between the self and sadness, thereby leading to a sense of detachment and a reduction of sadness intensity. Such a detachment-driven mechanism causes the effect to hold for happiness. More importantly, the process of detachment induced by anthropomorphic thinking and the desirable effects on consumer self-control can work when the anthropomorphic mindset is activated *before* a potentially sad event, which makes it novel compared to most existing emotion regulation strategies.

Practical Implications and Future Research

Anthropomorphic thinking as an effective emotion regulation strategy is easy to trigger in consumers' daily life. Nowadays marketers create more and more humanized products and brands in the marketplace advertisements, which might promote the thought of anthropomorphic thinking. Prior research (Wan et al., 2017) has suggested that anthropomorphic thinking can

be triggered by contextual cues (e.g., a humanlike product) and carried over to subsequent thoughts of other entities. After seeing product behaves like humans in the advertisements, sad consumers may be prompted to humanize their emotion, which helps reduce the intensity of this negative emotion. But it is worth noting that this strategy may backfire for positive emotions like happiness as our findings show that it dilutes the intensity of happiness.

Given that sadness is one of the key incidental causes leading to short-term indulgence (Garg et al., 2007; Wilcox, Kramer, & Sen, 2010), partly due to sad consumers' focus on instant reward, using anthropomorphic thinking to regulate sadness has important implications for consumers. For example, hedonic overeating of food and the resulting obesity problem have been plaguing U.S. society. According to the National Center for Health Statistics, obesity is found in more than one-third of adults and approximately 17% of youth. Our findings suggest that when consumers feel sad, or foresee a sad event to take place, they can humanize sadness to reduce its intensity as well as the potential undesirable consequences such as indulgent consumption.

While our results reveal that anthropomorphic thinking reduces the experience of sadness and happiness, whether or not this effect is evident for all emotions and for all individuals remains open to question. Past research has shown various individual differences in cultural backgrounds, cognitive thinking styles, and norms that may contribute to differences in the anthropomorphism tendency (Epley et al., 2007). Conceptually, the alleviating effect of anthropomorphism on sadness should be accentuated for individuals with

a higher anthropomorphism tendency, whereas the effect should be reduced for those with a lower anthropomorphism tendency. Future research can test these possibilities.

It would also be interesting to consider the effects of anthropomorphism thinking across different kinds of negative emotions. The current research focuses on one specific emotion – sadness (and its opposite, happiness) – as we would like to understand whether this strategy works, and if so, how it works (i.e., the process). Future research can test whether anthropomorphizing other emotions (e.g., guilt, embarrassment) makes them more detached from or attached to the experience, which then alleviates or intensifies the emotion. Past research on specific emotions has made a distinction between hedonic emotions (such as sadness and frustration) and self-conscious emotions (such as guilt, shame, and embarrassment) (Giner-Soralla, 2001; Hung & Mukhopadhyay, 2012). Compared to hedonic emotions, self-conscious emotions are more self-involved and thus might be more difficult to detach even though they are anthropomorphized. Future research exploring this question can deepen our understanding of how anthropomorphic thinking works for emotion regulation.

Another interesting direction for future work is to examine the long-term effect of anthropomorphic thinking on emotion regulation. While the current research has shown the effect of anthropomorphic thinking on reducing sadness in the short-term, it is possible that once people familiarize themselves with this strategy, it will no longer be effective. Future research is needed to test this question.

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Table 1. Summary of the Key Results in Studies 1 to 5

Study	Emotion	Condition	M_{pre}	M_{post}	M_{diff}
Study 1	Sadness	Anthropomorphic thinking	N/A	3.75	N/A
		Non-anthropomorphic thinking	N/A	4.43	N/A
Study 2A	Sadness	Anthropomorphic thinking	4.74	3.62	1.12
		Control	4.13	3.60	0.53
Study 2B	Sadness	Anthropomorphic thinking	5.22	4.25	0.97
		Non-anthropomorphic thinking	5.59	5.26	0.33
	Happiness	Anthropomorphic thinking	5.97	5.51	0.46
		Non-anthropomorphic thinking	5.95	5.82	0.13
Study 3	Sadness	Anthropomorphic-thinking-dependent	4.58	4.17	0.41
		Anthropomorphic-thinking-independent	4.77	3.68	1.09
		Non-anthropomorphic thinking	4.61	4.47	0.14
Study 4	Sadness	Anthropomorphic thinking	4.31	3.52	0.79
		Non-anthropomorphic thinking	4.61	4.23	0.38
Study 5	Sadness	Anthropomorphic thinking	2.26	3.73	1.47
		Non-anthropomorphic thinking	1.94	4.24	2.30

Notes: For Study 2A through Study 4, M_{diff} represents the reduction in emotion ($M_{pre} - M_{post}$). For Study 5, M_{diff} represents the increase in sadness ($M_{post} - M_{pre}$).

Methodological Details Appendix

Appendix A.

Part a. Snack Choice Task as Self-Control Measure (Study 4)

Imagine that you are deciding which side dish to have with your lunch entrée. You have been given a choice between a rich and tasty cake and a healthy and fresh salad. The following photos are provided to assist you in making a decision. Please indicate which alternative you would like to choose.

A rich/tasty cake



Healthy/fresh salad



Please rate your intention toward these two alternatives on the following scales:

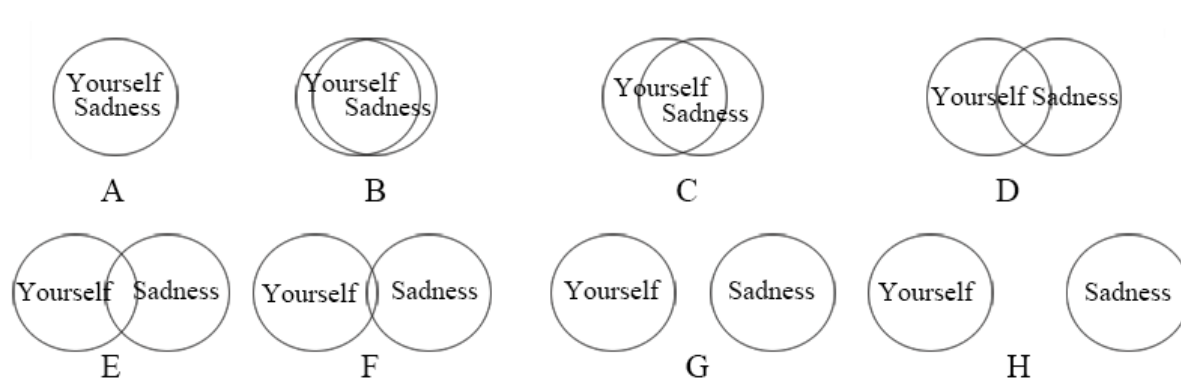
I would definitely choose cheesecake

I would definitely choose salad

1 2 3 4 5 6 7 8 9

Part b. Visual Measure of Detachment (Study 4)

Instructions: Different people view their emotions at different psychological distances. Imagine that the circle at the left represents you and the other circle, at the right, represents the sadness emotion that you just described. Please indicate which case (A, B, C, D, E, F, G, or H) best describes the distance between yourself and the sadness emotion that you just described.



Appendix B.
Anthropomorphic Thinking Manipulation (Study 5)

[Anthropomorphic Thinking Condition]

Emotions are sometimes described as human beings in books and movies. That is, you can endow your emotions with humanlike features and characteristics. Take sadness as an example; it can take up a unique physical appearance. It may also show its own personality. You could say “hi!” to sadness. You could also give sadness a humanlike name and “talk” with this guy in your mind.

Meanwhile, the sort of person that sadness is like is different in different people’s eyes. One’s sadness may be “*an introverted little girl who does not talk much, rarely receives attention from other people, and is always alone by herself,*” whereas another’s sadness may be “*a dark and gloomy guy who often moves slowly as well as clumsily and avoids making eye contact with people surrounding him.*”

In the next couple of minutes, please **close your eyes** and **imagine the sadness emotion you are currently experiencing as a living human being**. Think of the sort of person it would be like: for example, what would sadness look like? What would his or her personality and conversational style be like? How would he or she interact with you?

[Non-Anthropomorphic Thinking Condition]

In the space below, please describe to us a typical day of yours. Think about what you usually do on a typical day; then describe it to us in as much detail as possible.

Appendix C.

Part a. The Story Used to Induce Sadness (Study 5)

Please imagine yourself in the following scenario:

You are sending your laptop for recycling today. As you bring out your laptop covered with scratches, the staff greet you with a smile, but you can't smile back.

You backed up the laptop last night. Most of the photos and documents are in a hard drive back home and the laptop is merely a worn and empty machine now. But the memories with it these years keep flooding back in your mind.

This laptop was bought six years ago with your own savings. You still remember how excited you were when you first received this laptop and customized its settings. You remember the movies you watched and cried for on this laptop, and the projects you stayed up to work on. You also remember how frustrated you were when you carried it to repair the shattered screen. You remember the time when you were alone in another city and used this laptop to Skype your family every night.

This laptop has accompanied you almost every day in the past six years. However, it is time to say Goodbye! You feel heavy, sad, and a sense of loss as you watch the staff taking it away. It is so hard to say Bye!

Part b. Computer Choice Task as Self-Control Measure (Study 5)

Suppose you were to buy a new computer. Which one will you choose?

Computer A: Perfect for Entertainment
(e.g., games, movies)

Computer B: Perfect for Productivity
(e.g., work, business)



I would definitely choose computer A

I would definitely choose computer B

1 2 3 4 5 6 7 8 9

Footnotes

¹ To provide further support for the mechanism, we coded the perceived dependency of the anthropomorphized sadness in the two anthropomorphism conditions on a 7-point scale (1 = *very independent*, 7 = *very dependent*). Regressing the detachment measure on dependency rating yielded a significant effect, $b = -.17$, $p = .010$. Moreover, the regression of sadness reduction on dependency rating also revealed a significant effect, $b = -.16$, $p = .010$. These results provided further support for our theorizing, showing that the more participants anthropomorphize their sadness as independent, the more detached they were from the sadness emotion and the greater the reduction in sadness intensity they experienced.