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The Sweet Taste of Revenge:
Gustatory Experience Induces Metaphor-Consistent Judgments of a Harmful Act

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Abstract

Metaphors are common transfer devices that map concrete experiences onto abstract target concepts. We investigated whether a specific gustatory sensation (sweet taste) affects social judgments (here, of harmful acts) via indirect activation of an idiomatic metaphor (“Revenge is sweet”). After reading about a harmful act motivated (*vs.* not motivated) by revenge, participants judged the avenger and her action more leniently when they had a sweet (*vs.* neutral) taste in their mouths (Experiment 1). In Experiment 2, we disentangled the activation of target concept and judgment by priming participants with revenge before they read about a harmful act. Only after being primed with the concept revenge, but not after being primed with the similar concept *schadenfreude*, a concurrent sweet (*vs.* fresh) taste led to more lenient judgments. We discuss the role of idiomatic (*vs.* conceptual) metaphors in effects of concurrent bodily experience on social judgments.

[144 words]

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A vital human faculty is to represent social events at an abstract level of thought, and to proceed to further inferences and judgments. For instance, when we learn about a harmful or aggressive act, we can quickly form mental models and judgments about the act and the actor. To explain such social thought, seminal approaches in social cognition have invoked general knowledge structures such as cognitive schemata and concepts, which abstract from modality-specific input information (e.g., Kunda, 1999). Taking a different view, burgeoning research has emphasized the situated, context-sensitive nature of these processes in general (Smith & Semin, 2007), and their responsiveness to concurrent bodily experiences in particular (Niedenthal, Barsalou, Winkielman, Krauth-Gruber, & Ric, 2005).

By now, there are numerous demonstrations of the influence of bodily experiences on social judgments. For instance, study participants perceive an individual as more friendly when they experience physical warmth (Williams & Bargh, 2008), and judge moral transgressions more severely when they experience physical disgust versus no disgust (Schnall, Haidt, Clore, & Jordan, 2008) or taste a disgusting (bitter) versus pleasant (sweet) beverage (Eskine, Kacirik, & Prinz, 2011). We investigated whether a specific gustatory sensation (sweet taste) affects social judgments (here, of harmful acts) via the indirect activation of a conventional, idiomatic metaphor (“Revenge is sweet”).

While some explanations of embodiment effects have emphasized the similarity-based association between the concrete (physical, sensory) experiences and the concepts involved in abstract thought (Williams & Bargh, 2008), others have highlighted their dissimilarity and the resulting need of transfer mechanisms that create these associations in the first place (Landau, Meier, & Keefer, 2010). A ubiquitous transfer device that brings together seemingly dissimilar concepts is found in human language: *Metaphors*, such as “Life is a box of chocolates” or “Revenge tastes sweet”, often map concrete source domains onto abstract target domains (Aristotle, 1965; Landau et al., 2010; McGlone, 2003). In an application to

human cognition, cognitive linguists have proposed the existence of so-called *conceptual* metaphors in our minds, which allow us to construe abstract concepts based on superficially dissimilar, more concrete concepts (Gibbs, 1994; Lakoff & Johnson, 1980; Sweetser, 1990).

Conceptual metaphors are not used in speech and language but represent general mappings that are assumed to underlie and organize our thinking. A growing body of research is consistent with the notion that conceptual metaphors, such as “Morality is cleanliness” (Schnall et al., 2008) or “Weight is importance” (Jostmann, Lakens, & Schubert, 2009; Schneider, Rutjens, Jostmann, & Lakens, 2011), guide people’s thinking and judgment (Landau et al., 2010). Conceptual metaphors are primarily present in people’s cognitions. They are not part of everyday language, but rather represent inferences as guiding our thinking.

However, social cognition research has not yet gone back to the “roots” of the study of metaphor: It has not yet examined whether metaphors that are actually used in speech and discourse can also affect social judgments by mapping concrete, bodily experience and abstract thought. We focus here on the metaphor “Revenge is sweet” because it is a *conventional* or *idiomatic* metaphor (Burbules, Schraw, & Trathen, 1989; Holland, 1982), commonly used in several language communities. Equivalents to the English formulation include “wraak is zoet” in Dutch or “Rache ist süß” in German. For French-speaking people revenge is sweeter than honey: “La vengeance est plus douce que le miel.” Whereas revenge, in legal terms, is a base motive, the metaphor stresses the avenger’s pleasant feeling afforded by the retribution of harm inflicted by an earlier offender (see Stuckless & Goranson, 1992). In a pragmatic context, the metaphor can either justify or trivialize a harmful act or forewarn prospective offenders about the victim’s likely and understandable desire to pay back.

The role of specific idiomatic metaphors in mediating the influence of bodily experience on social judgment deserves scientific scrutiny for the following reasons. There are more cognitive constraints for an idiomatic metaphor like “Revenge is sweet” than for a

general conceptual metaphor (e.g., “Weight is importance”) to affect pertinent judgments (for instance, a harmful act *vs.* currencies’ value). Conceptual metaphors are presumably based on strong, direct and stable associations (e.g., between weight and importance) and have a wide applicability (Lakoff & Johnson, 1999). Also, it has been found that the relation between target and source concept involved in conceptual metaphors is often bidirectional or reversible (Landau et al., 2010). For instance, not only can importance (the abstract target concept) be construed in terms of weight (the concrete source concept), but physical heaviness can also yield, or support, perceptions of social importance (Jostmann et al., 2009; for a demonstration of bidirectionality, see Schneider et al., 2011). Finally, conceptual metaphors are chronically accessible as a result of long-term learning (IJzerman & Koole, 2011).

In contrast, idiomatic metaphors involve weaker and less direct associations (e.g., between sweetness and revenge) and have more limited applicability (e.g., to judgments of harmful acts). Moreover, the relation between target and source concept in idiomatic metaphors is typically directional or nonreversible (Glucksberg, McGlone, & Manfredi, 1997; Ortony, 1979). For example, the metaphor “Alcohol is a crutch” becomes nonsensical when reversed (“A crutch is alcohol”; Glucksberg et al., 1997; also see Landau et al., 2010). Similarly, the reversal of the metaphor examined here (“Sweetness is vengeful”) does not yield any immediately plausible meaning. Finally, idiomatic metaphors are also likely to need additional activation to be applied to a judgment object. Thus, specific idiomatic metaphors can have effects only when both the source concept (sweetness) and the target concept (revenge) are concurrently activated and associated at the time of judgment.

In our studies, we wanted to examine whether the activation of the source concept *sweetness* in conjunction with the activation of the target concept *revenge* leads to more lenient judgments of harmful acts. We predicted that only a vengeful act and not just any aggressive act is evaluated more leniently when participants experience a sweet (*vs.* control) taste.

Experiment 1

Method

Participants and Design. Participants were $N = 60$ German undergraduate students (11 female, 49 male). Their mean age was 25.22 years ($SD = 2.41$). Five participants correctly guessed the purpose of the experiment in a post-experimental suspicion check. Their data were not included in the analyses, resulting in the sample described above. Participants were recruited for a study ostensibly on the “effects of specific digestive enzymes on judgments and attitudes” and received course credit.

Materials and Procedure. Participants first received information about the procedure of the experiment and its alleged purpose. They filled out a short questionnaire on their usual eating behaviors to keep up the cover story. After having rinsed their mouths with water, the experimenter asked them to take a sip from “Container B” in front of them and to keep the beverage in their mouths for 10 seconds. Participants in the *sweet* condition received sweetened water, whereas participants in the *neutral* condition received flavorless water.¹ After 10 seconds, participants swallowed the liquid. This manipulation constituted the factor *taste*.

Next, the factor *motive* was manipulated: We asked $n = 28$ participants to read a story including a practical joke. Participants learned that the protagonist of the story changed an important business plan presentation of a colleague for the worse. In the *revenge* condition, this practical joke was the protagonist’s response to an initial act of aggression by the colleague. The remaining participants ($n = 32$) read the identical story, except that they did not learn about the initial aggression. Thus, in this *no revenge* condition, the joke could not be construed as revenge to the same extent as in the *revenge* condition. Experiment 1 consisted of a 2 (*taste*: sweet vs. neutral) x 2 (*motive*: revenge vs. no revenge) between-participants design.

Dependent measures. After reading the story, participants indicated their current

mood (from 1 = *very bad* to 9 = *very good*), and evaluated the action and the protagonist on seven different items (see Appendix) on 9-point rating scales. After recoding the item referring to punishment, the items were aggregated into a single index of action evaluation (Cronbach's $\alpha = .763$). We hypothesized that the ratings would be most positive in the *sweet revenge* condition compared to all other conditions.

As a manipulation check for the factor *motive*, we assessed participants' answers to an open question concerning the protagonist's assumed motives. Blind to the respective condition, the answers were coded according to the criterion whether revenge was mentioned (coded with 1) or not (coded with 0). Moreover, participants rated the taste of the beverage on various dimensions (likability, sweetness, saltiness, bitterness) on 9-point rating scales. Afterwards, participants could comment on the study. Finally, they were fully debriefed and thanked.

Results and Discussion

All results reported are based on two-tailed significance tests.

Manipulation Check: Taste. As a manipulation check for factor *taste*, a two-way analysis of variance (ANOVA) with *taste* (sweet vs. neutral) and *motive* (revenge vs. no revenge) as between-participants factors revealed the expected main effect of *taste*, $F(1, 56) = 196.981, p < .001, \eta_p^2 = .779$, on the judged sweetness of the beverage. Participants who had tasted sweetened water judged the liquid as sweeter ($M = 7.724, SD = 1.667$) than participants who had pure water in their mouths ($M = 2.000, SD = 1.461$). No main effect of the factor *motive* and no interaction effect emerged on the sweetness rating, $F_s < 1$, and no main or interaction effects were found on the other ratings related to taste, $F_s < 2.500, p_s > .119$, or the likability of the beverage, $F < 1$.

Manipulation Check: Motive. Our manipulation check for the factor *motive* revealed that participants indicated revenge as an assumed motive for the protagonist's action significantly more often in the *revenge* than in the *no revenge* condition, $\chi^2(1, N = 60) =$

21.459, $p < .001$, $\phi = .598$. There was no significant effect of the factor *taste*, $\chi^2(1, N = 60) = 2.546, p = .154$.

Mood. There were no significant effects of *taste*, $F = 1.022, ns$, *motive*, $F < 1$, or the interaction, $F = 1.792, p = .186$.

Action Evaluation. A between-participants ANOVA with *taste* and *motive* as independent variables and the evaluative index as dependent variable (DV) revealed a main effect of *motive*, $F(1, 56) = 33.289, p < .001, \eta_p^2 = .373$. Participants who learned that an initial act of aggression preceded the action rated it more positively ($M = 4.311, SD = 1.399$) than participants who did not know of this previous incident ($M = 2.718, SD = 0.789$). A marginally significant effect of *taste* on the evaluation of the protagonist's action was observed, $F(1, 56) = 2.869, p = .096$. Importantly, we found the predicted interaction effect, $F(1, 56) = 4.743, p = .034, \eta_p^2 = .078$ (see Figure 1).

As an additional test of possible mood influences, we added mood as a covariate to the analysis. Importantly, the *taste* X *motive* interaction remained significant, $F(1, 55) = 6.125, p = .016, \eta_p^2 = .100$. As in the initial analysis, a main effect of *motive* emerged, $F(1, 55) = 34.219, p < .001, \eta_p^2 = .384$. *Taste* had no significant effect, $F(1, 55) = 2.192, p = .144$.

Participants in the *sweet/revenge* condition judged the harmful act more positively ($M = 4.847, SD = 1.165$) than participants in the *neutral/revenge* ($M = 3.776, SD = 1.445$), in the *sweet/no revenge*, and in the *neutral/no revenge* conditions ($M = 2.648, SD = 0.795$, and $M = 2.781, SD = 0.802$, respectively). To test our specific hypothesis that the act would be evaluated more leniently in the *sweet/revenge* condition than in any other condition, we conducted a contrast analysis to examine the predicted pattern: The condition *sweet/revenge* received a weight of $\lambda = 0.9$, whereas all other conditions received the weight of $\lambda = -0.3$. The results of this analysis were in line with our prediction, $t(56) = 5.450, p < .001$.

Only when the source concept (sweetness) and the target concept (revenge) of the

specific metaphor were jointly activated, participants were prone to evaluate a particularly vengeful act more leniently. One weakness of Experiment 1 might have been that the taste was induced early in the procedure and participants may not have experienced the sweet taste while they *evaluated* the act. To address this potential issue, we decided to provide participants with a drop inducing a sweet (*vs.* control) taste in Experiment 2 to ensure the gustatory experience would be present while participants evaluated the act.

Additionally, we wanted to test the specificity of the metaphor more thoroughly: We introduced a very similar concept as control motive, namely, *schadenfreude*. To disentangle source and target concepts, we primed the target concept first and then presented the story about a harmful act from Experiment 1 without the initial aggression by the harmed person. Thus, the story could be, but did not have to be, construed in terms of the target concept (revenge). Furthermore, we focused on the action of the vengeful act by assessing the affective and behavioral components of revenge as DV.

Experiment 2

Method

Participants and Design. Participants were $N = 83$ undergraduate students (61 female, 20 male, 2 participants did not indicate their gender). Their mean age was 23.05 years ($SD = 4.80$). No participant fully guessed the true purpose of the experiment. The data of four participants who indicated that German was not their mother tongue were excluded from the analyses, resulting in the sample described above. Participants received course credit or € 4 for their participation.

Materials and Procedure. Participants learned they would be presented with a target story they should judge at a later point in the experiment. To ostensibly prepare the participants for the target story, three short stories before the actual target story were shown. For about half of the participants, these three stories included a vengeful act against an aggressor by the person who suffered from the initial harm (*revenge priming*). The other

participants read versions of these stories in which the protagonists happily learned about the harm against an initial aggressor while not harming the aggressor themselves. Therefore, with this latter manipulation we primed the concept of *schadenfreude*. The terms revenge or *schadenfreude* were not mentioned in this manipulation of the factor *motive*.

After having read the three stories, participants learned from an instruction on the screen that they should ask the experimenter for a drop before proceeding. Participants in the *sweet* condition received a sweet drop, whereas participants in the *control* condition received a fresh drop. This manipulation constituted the factor *taste*. Next, participants read the target story which was identical to the one we used in the *no revenge* condition in Experiment 1.

Taken together, Experiment 2 consisted of a 2 (*motive*: revenge vs. *schadenfreude*) x 2 (*taste*: sweet vs. fresh) factorial between-participants design. The experiment was administered at a computer, using the software MediaLab (Jarvis, 2010).

Dependent measures. After reading the story, participants indicated their current mood (“How do you feel at the moment?” from 1 = *very bad* to 9 = *very good*). For two reasons, we primarily focused on the action in Experiment 2. First, it might not have been entirely clear from our measure in Experiment 1 whether participants based their evaluations either on more positive judgments of the avenger or the vengeful act. Second, the motive priming in Experiment 2 employed other targets that may have been perceived as more or less likable and their evaluation could have carried over to the protagonist in the target story (see Walther, 2002). We wanted to assess the affective and behavioral aspects of the action evaluation and, consequently, used these two items: (1) “How much did you like the act?” and (2) “How justified was the action?” each on a 9-point scale with anchors indicating (1) weak to (9) strong action approval. The mean of these two items (Cronbach’s $\alpha = .564$) comprised the index of action approval and served as the main DV in the subsequent analyses.

As manipulation check for the factor *motive*, we asked participants to indicate the common motive of the three initial studies. Blind to the respective condition, answers were

coded according to the criterion whether revenge was mentioned (coded with 1) or not (coded with 0). We coded whether schadenfreude was explicitly stated (1) or not (0) in an additional variable. Furthermore, participants rated the sweetness of the drop in general and the sweetness they experienced while evaluating the act on 9-point scales (1 = *not at all* to 9 = *very much*). At the end of Experiment 2, participants could make comments on the study. They were then debriefed and thanked.

Results and Discussion

Manipulation Check: Taste. Participants in the *sweet* drop condition rated their drop as sweeter ($M = 6.125$, $SD = 1.884$) than those participants in the *fresh* drop condition ($M = 3.262$, $SD = 1.849$), $F(1, 79) = 47.713$, $p < .001$, $\eta_p^2 = .380$. There was no effect of *motive*, $F = 1.080$, *ns*, and no interaction effect, $F = 1.496$, *ns*. A similar pattern emerged for the sweetness in participants' mouths while they evaluated the act: A main effect for *taste* was observed: Participants in the sweet (*vs.* fresh) drop condition judged the taste as sweeter also while evaluating the act ($M_s = 5.600$ *vs.* 3.738 and $SD_s = 1.630$ *vs.* 1.951, respectively), $F(1, 79) = 21.385$, $p < .001$, $\eta_p^2 = .215$. No other effects were significant, $F_s < 1.245$, *ns*.

Manipulation Check: Motive. Participants indicated revenge as the common motive significantly more often after revenge (*vs.* schadenfreude) was primed, $\chi^2(1, N = 83) = 20.174$, $p < .001$, $\phi = .493$. The opposite was true for schadenfreude: Participants in the schadenfreude conditions mentioned schadenfreude significantly more often than participants in the revenge conditions, $\chi^2(1, N = 83) = 28.291$, $p < .001$, $\phi = .598$. There were no significant effects of *taste*, $\chi^2_s < 1$.

Mood. There were no main effects on mood of *taste* or *motive*, also the interaction between these variables was not significant, all $F_s < 1$.

Action Approval. There were no main effects of *taste* or *motive* regarding the action approval in a 2 x 2 between-participants ANOVA, $F_s < 1$. However, we found a significant

interaction effect, $F(1, 79) = 4.475, p = .038, \eta_p^2 = .054$ (see Figure 2). The same pattern of results emerged when we included mood as a covariate: The Taste X Motive interaction effect remained significant, $F(1, 78) = 4.661, p = .034, \eta_p^2 = .056$, and there were no main effects, $F_s < 1$. To test the specific hypothesis that participants under *sweet/revenge* evaluated the action more leniently than in any other condition, we conducted a contrast analysis. The condition *sweet/revenge* received a weight of $\lambda = 0.9$, whereas all of the other conditions each received a weight of $\lambda = -0.3$. Again, our prediction was confirmed, $t(79) = 2.173, p = .033$. Participants in the *sweet/revenge* condition expressed higher approval ($M = 3.763, SD = 1.759$) than participants in the *fresh/revenge* ($M = 2.864, SD = 1.071$), in the *sweet/schadenfreude*, and in the *fresh/schadenfreude* conditions ($M = 2.909, SD = 1.368$, and $M = 3.250, SD = 1.045$, respectively).

General Discussion

While the metaphor of sweet revenge has been used to illustrate the pleasantness of vengeful acts (Gollwitzer & Denzler, 2009; Knutson, 2004), the present studies are the first to demonstrate the effect of taste experience on judgments of a vengeful act. Our findings allow several conclusions about the mechanisms underlying the present effects. First of all, because the effects were restricted to the sweet-taste conditions, it is clear that the gustatory experience of sweetness did not indiscriminately increase participants' willingness to rate just any (aggressive) story more leniently. The processing of prime words as literal or figurative depends on the context in which they are mentioned (Galinsky & Glucksberg, 2000). Consequently, when the story in the present experiments did not include the motive of revenge, participants did not make a connection between the (sweet) taste in their mouths and the action they evaluated. Only participants who had a sweet taste in their mouths could make this connection. Put differently, we did not find any evidence for a general effect of mere bodily experience. If bodily experience had such a direct effect, we would have also found relatively positive judgments in sweet-taste conditions paired with an alternative (non-

revenge) motive.

Rather, our findings point to the role of specific idiomatic metaphors in the present effects. Apparently, the activation of both components of the idiomatic metaphor “Revenge is sweet” was necessary for the influence of sweet taste on social judgments. In other words, the effect occurred only when the judgment object could be construed as a vengeful act, which rendered the specific idiomatic metaphor applicable. Through the priming of revenge (*vs.* *schadenfreude*) in Experiment 2, we could also demonstrate the effect via the activation of the abstract target concept by means of semantic category priming.

Importantly, the effects are hard to explain unless one assumes the activation of the specific idiomatic metaphor of “sweet revenge”. This metaphor creates a unique association between the source concept of sweetness and the target concept of revenge. The metaphor is sweet revenge, not fresh revenge, and it is definitely not sweet *schadenfreude*. Given the methodology employed in the present studies, our findings also suggest that the critical association between the source concept and the target concept can be effectively made without direct reference to the specific metaphor. As we have argued, what is critical is the concurrent activation of the abstract target concept and the concrete source concept.

The sweet taste of a beverage was also employed in a study by Eskine et al. (2011). These authors found that perception of physical disgust from a bitter taste, compared to sensation of a sweet or neutral taste, led to increased levels of moral disgust, expressed in harsher judgments of moral transgressions. These authors did not find any differences between the sweet-taste *vs.* neutral-taste conditions. According to our rationale, this is not surprising. In our studies, sweet taste influenced judgments to which perceivers could apply an idiomatic metaphor that refers to sweetness. This was not the case in the study by Eskine et al.

Scholars in cognitive linguistics have maintained that the expression *sweet revenge* cannot be linked directly to the physical taste of sweetness (e.g., Ibarretxe-Antuñano, 2002).

However, our studies suggest that the source concept of sweetness can be activated by the taste sensation, which, in conjunction with the activation of the target concept, facilitates the incidental application of the metaphor in judging a harmful act.

Theorizing about embodiment in social cognition (see Landau et al., 2010) often invokes embodied simulation (Niedenthal et al., 2005; Williams & Bargh, 2008). Embodied simulation refers to the modality-specific reactivation of bodily or sensory experiences (e.g., of heaviness, size) that repeatedly co-occur with the activation of abstract concepts (social significance, power). Hence, embodied simulation relies on established and strong associations between concrete experiences and abstract concepts. We believe that the present effects cannot be easily understood in these terms. First, the idiomatic metaphor of sweet revenge does not invoke an intuitively common and strong association, but *creates* a relatively uncommon or unusual association between two concepts. As a result, the idiomatic metaphor has more specific and limited applicability (in the present case to harmful acts with a specific interpersonal history). Furthermore, the association involved in the present idiomatic metaphor is *not* acquired through direct bodily engagement with the abstract concept, as it is the case in embodied simulation (see Landau et al., 2010). That is, it would not make much sense to assume that the concept of revenge is grounded in bodily experiences of sweetness.

To conclude, the present effects apparently hinge on the concurrent activation of both the source concept (sweetness) and the target concept (revenge) that are associated through a specific idiomatic, or conventional, metaphor. The target concept was activated either by the quality of the stimulus material (including a plausible reason for revenge) or, independent of the stimulus material, by category priming. The source concept was concurrently activated by direct bodily experience. According to our psycholinguistic account, the association of the target and source concepts was sufficient to activate the idiomatic metaphor, which led to more lenient judgments of a harmful act. This leniency is related to common connotations and

the pragmatic force of the metaphor, which vindicate or trivialize a harmful act.

In contrast to conceptual metaphors, idiomatic metaphors involve a nonreversible relation between source and target concept (Glucksberg et al., 1997; Landau et al., 2010). Whereas the construal of the abstract target concept (revenge) in terms of the concrete source concept (sweetness) provides a surplus meaning and enriches the understanding of the target concept (Gibbs, 1994; McGlone, 2003), the construal of the target concept in terms of the source concept fails to have such effects. The reversed formulation does not inform our understanding of the source concept to the same extent as the original formulation informs our understanding of the target concept. Indeed, the reversal of the present metaphor (“Sweetness is vengeful”) would have no, or at least a very different, meaning.

According to this psycholinguistic conceptualization the present effects should not be bidirectional, and our findings are consistent with this view. In both experiments, participants provided judgments of sweetness after having read about an aggressive act. If the effect were bidirectional, one would have expected greater ratings of sweetness by participants who construed the harmful act in terms of revenge (see Eskine, Kacirik, & Webster, 2012; IJzerman & Koole, 2011). However, we found no evidence for such effects. Furthermore, we found no effects of the taste manipulations on perceptions of the aggressor’s motive, which is also inconsistent with the notion of bidirectionality. This said, future studies should employ other (potentially more sensitive, and multi-item) measures of perceived motive, and examine directionality in the effects of other idiomatic metaphors.

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Footnote

¹ Following exploratory pilot testing, 180 g of sugar were added to 1 L of water, then heated at 80 °C, yielding a sweet suspension.

Figure Captions

Figure 1: Experiment 1: Evaluation of action and avenger as a function of taste and motive. Higher values indicate more positive evaluations of participants in the *sweet/revenge* condition ($n = 14$), *sweet/no revenge* condition ($n = 15$), *neutral/revenge* condition ($n = 14$), and *neutral/no revenge* condition ($n = 17$). Error bars indicate standard deviations.

Figure 2: Experiment 2: Evaluation of the harmful action as a function of taste and motive. Higher values indicate more positive evaluations of participants in the *sweet/revenge* condition ($n = 19$), *sweet/schadenfreude* condition ($n = 23$), *fresh/revenge* condition ($n = 21$), and *fresh/schadenfreude* condition ($n = 20$). Error bars indicate standard deviations.

Appendix

Wording of the items (translated from German) aggregated for the
Dependent Variable in Experiment 1

To what extent did you like the story that you just read?

To what extent did you think the story was funny?

How justified was the action in the story?

To what extent should Mrs. Krause [the avenger] be punished for her action? [Recoded]

How do you judge the action of Mrs. Krause?

To what extent can you identify yourself with Mrs. Krause?

How connected do you feel to Mrs. Krause?

Figure 1

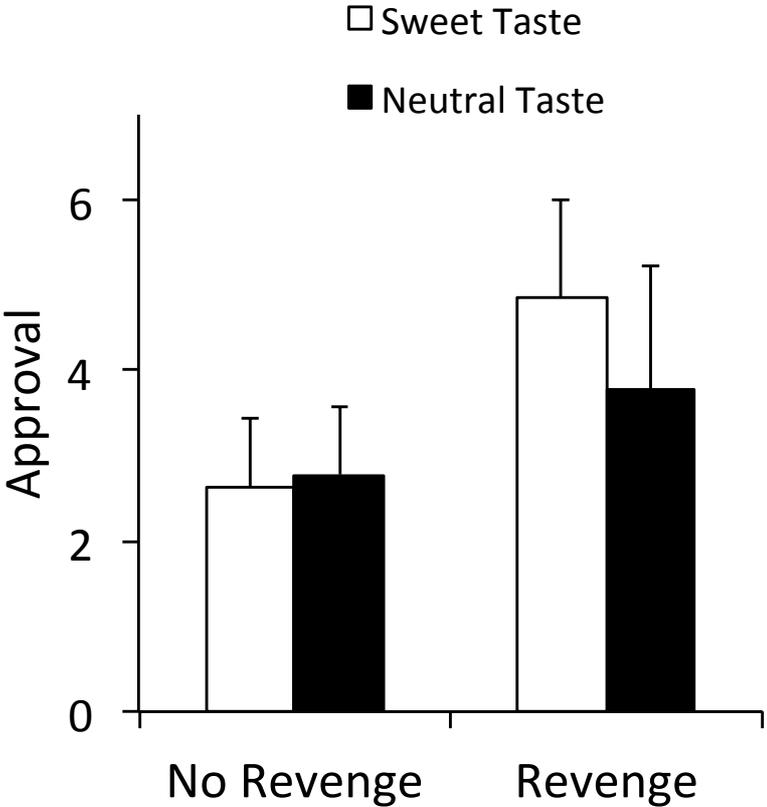


Figure 2

