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# Joy, Schadenfreude, Sorrow and Resentment as Responses Restoring Balance in Cognitive Units

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**Abstract**

Based on Heider's (1958) balance theory we hypothesize that emotional responses to other persons' outcomes depend on attitudes towards these persons. Positive attitudes towards others lead to empathic responses to their outcomes– joy after a success and sorrow after a failure. Negative attitudes result in paradoxical responses – negative to a success (resentment) and positive to a failure (schadenfreude). These emotions function as responses restoring balance within cognitive units consisting of the perceiver, other persons and their outcomes. Three studies supported these hypotheses and showed that deservingness considerations play a weaker role in shaping emotional responses of joy and sorrow to others' outcomes when strong interpersonal attitudes are involved. However, deservingness plays an independent role in shaping the emotional response of resentment.

*Keywords:* schadenfreude, resentment, sorrow, joy, balance, deservingness

**Joy, Schadenfreude, Sorrow and Resentment as Responses Restoring Balance in**

**Cognitive Units**

Humans are ultra-social beings. Whatever we do, we do it together with other people and so our thoughts and actions are deeply social in nature. The same is true of emotions, which in a broad sense are all social, though some of them are also social in a narrower sense as responses to other people and their outcomes. The present work is devoted to others' successes and failures as antecedents of global and specific affective responses. Basing on Heider (1958), we develop a balancing model of emotional responses to others' successes and failures and we review the deservingness model which is now the dominating account for these responses. We present two studies aimed at testing the balancing model and resolving discrepancies between the balancing and deservingness accounts of emotional responses to others' outcomes.

**Responses to Successes of Others: Joy and Resentment**

In individualistic societies, self-centered values are important (Oyserman & Lee, 2008) and people strive for successes in a variety of domains. Own success gives pleasure and a boost in self-esteem. Others' successes also lead to joy and pride, especially when the perceivers do not strive to enhance their own results. This way, others' successes are void of threat and enable increases in the perceivers' self-esteem due to basking in reflected glory (Tesser, 1988). However, they may also lead to resentment and envy. Envy is "an unpleasant, often painful emotion characterized by feelings of inferiority, hostility, and resentment caused by an awareness of a desired attribute enjoyed by another person or group" (Smith & Kim, 2007, p. 46). Resentment is a bitter feeling following successes of others who are perceived as not deserving their lot (Feather & Sherman, 2002). Both emotions are usually correlated and emerge in similar conditions of others' successes.

## Responses to Failures of Others: Sorrow and Schadenfreude

Just as successes are cherished, failures are shunned in individualistic societies. Own failure results in a general dejection syndrome (as it is discrepant with the ideal-self; Higgins, 1989) and negative responses to own failures are stronger than responses to own immoral behavior (Wojciszke & Dowhyluk, 2003). Failures of others also lead to unpleasant emotions, especially when seen as undeserved (Feather, 2006) and happening to in-groups (Leach & Spears, 2009) and well-liked people. However, others' misfortunes may also cause positive emotions, especially schadenfreude, which is a pleasure at another person's misfortune. Schadenfreude is especially strong among those who feel inferior (Leach & Spears, 2008) and is observed when failures are suffered by somebody responsible for them (e.g., van Dijk, Ouwerkerk, Goslinga, & Nieweg, 2005). The postulated link between schadenfreude and envy appeared most volatile. Whereas some studies showed the causal or correlational link between the two emotions (e.g., van Dijk, Ouwerkerk, Goslinga, Nieweg, & Gallucci, 2006), other studies failed to do so (e.g., Feather & Nairn, 2005), although even those studies found a link between resentment and schadenfreude (Feather & Sherman, 2002).

In our reading, resentment and schadenfreude are emotional responses to different situations – others' successes or failures respectively. A stable link between the two emotions cannot be predicted unless they involve a psychological similarity, for example, the perceived others are disliked by the perceiver.

## Deservingness Theory

According to the deservingness theory the judgment of another's outcome as deserved results in "satisfaction or pleasure about the outcome, accompanied by a feeling that justice has been done" (Feather, 2006, p. 46). This applies both to successes and failures resulting in pleasure and schadenfreude respectively. Undeserved outcomes lead to positive sympathy or resentment. The perception of deservingness is also influenced by personal responsibility.

For example, a student who has studied hard would be perceived to deserve a high grade, in contrast to one that has not studied at all.  Similarly, personal responsibility for failures leads to schadenfreude, while lack of such responsibility results in sympathy.

The deservingness theory received substantial empirical support.  In addition, several studies showed that deservingness is crucial in eliciting schadenfreude, which is stronger after misfortunes perceived as deserved (e.g., Feather, 1999, van Dijk et al., 2005).

## Balancing Model

Although responses to others' successes and failures have been proposed to have different antecedents, there is one model predicting both positive and negative reactions to others' outcomes within the same theoretical framework.  The model is the balance theory (Heider, 1958) assuming that when separate entities are perceived as belonging together, they constitute a cognitive unit involving strong forces to balance the affective relations between its elements.  Hence, we extend this model and apply it to emotions.  In line with Heider, we presume that the perceiver (P), the other person (O), his or her outcome (X) and the three possible relations among them constitute a unit.  Three-element units are balanced when all relations between the elements are positive or two are negative.  The perceiver assumes that others always like their successes and dislike their failures, so the O-X relation is always given.  The P-O relation may vary as the perceiver may have a positive or negative attitude towards the other.  Finally, affective responses towards others' outcomes are seen as complementary relations emerging in a way that makes the units balanced.

As illustrated in Figure 1, when the perceiver dislikes the other (who likes his or her success), a negative affective response emerging on the side of the perceiver can balance the unit.  When the perceiver has a positive attitude towards a succeeding other, a positive response balances the unit.  When the perceiver dislikes a failing other (who dislikes his or her outcome), positive affect appears as the balancing response.  Finally, when the perceiver

likes a failing other, empathic negative response emerges as the complementary reaction bringing about balance within the unit. Generally speaking, affective responses to others' outcomes are the most transient relations within the cognitive unit and these relations emerge in a way which brings about balance within units.

This balancing account of affective responses to others' outcomes has never been formulated nor tested. However, it has received some initial support in a substantial number of previous studies showing the important role of pre-existing attitudes in shaping emotional reactions to the plight of others. For example, it is well-documented that positive and negative attitudes toward others strongly moderate empathic responses (Lanzetta & Englis, 1989; Vaughn & Lanzetta, 1980). Our work expands this approach. For the first time, we test empirically if the balancing account can be applied to schadenfreude and other related emotions. Simultaneously, we present an alternative explanation to deservingness theory that has dominated schadenfreude research recently.

### The Present Research

This simple thinking based on the balancing model allows the development of clear-cut hypotheses about the affective responses to another's outcomes. Success results in negative affect (e.g. resentment) when won by a disliked person and in positive affect (e.g. joy) when secured by a well-liked person. When failure befalls a disliked person, it results in positive affect (schadenfreude), but for well-liked persons the result is negative affect (sorrow). Interpersonal attitudes are the major moderator of affective responses to others' outcomes operating independently of deservingness considerations. We tested these hypotheses in a pretest study aimed at showing that balance principles predict emotions following successes and failures of liked or disliked others and two studies which allowed to discern between the effects of balancing and deservingness as explanations of interpersonal emotions.

**Pretest Study**

The pretest study tested whether the balance principles can predict emotions following others' outcomes. It tested the basic hypothesis that the perceiver's attitude toward others is a moderator of the former's affective responses to the perceiver's outcomes.

**Method**

**Participants and Design.** The participants were 196 Polish students (138 women, $M_{age}$= 20.4, $SD$ = 6.37 years). They were randomly assigned to one of the four conditions of a 2 (attitude: positive vs. negative) x 2 (outcome: success vs. failure) between-participants design.

**Procedure.** The participants were asked to recall and describe a situation in which someone they liked or disliked succeeded or failed in an action. Then they were asked to list and describe the emotions they experienced in the recalled situation.

**Dependent Measures.** Emotion descriptions given in answers to open-ended questions were compiled into an alphabetical list of 103 items. Each item on the list was rated for its global positivity-negativity by five independent judges using seven-point rating scales from -3 (*definitely negative*) to 3 (*definitely positive*). Because the judges were consistent (Kripendorff's α = .76), we averaged their ratings and then computed the index of global affect reported by each participant.

**Results and Discussion**

An analysis of variance performed on the index of global affect yielded the predicted interaction between attitude and outcome, $F(1, 188) = 227.01$; $p < .0001$, $\eta^2= .55$. As shown in Figure 2, failures resulted in a clearly negative affect when they had happened to well-liked persons ($M$ = -1.15, $SD$ = 0.81), but in a clearly positive affect for disliked persons ($M$ = 1.02, $SD$ = 1.40), $t(94)$=-9.43, $p<.0001$; $d$ = 1.96. Furthermore, successes led to a positive affect

when they had happened to liked persons ($M = 1.58$, $SD = 1.42$), but to a negative affect for

disliked persons ($M = -1.45$, $SD = 1.09$), $t(94)=11.78$, $p<.001$; $d = 2.41$.

Because affect is a bipolar measure with 0 as a neutral value, we were able to test

whether the mean affective state in the four conditions differed significantly from 0 using

single sample $t$ tests. These analyses showed that all four means differed significantly from 0

at $p < .001$. The $t$ values were 4.96 (positive affective response to failures of disliked

persons), -10.10 (negative affective response to failures of well-liked persons), -9.42 (negative

affective response to successes of disliked persons) and 7.54 (positive affective response to

successes of well-liked persons).

To summarize, successes of well-liked persons bring positive affective states which

are strikingly similar in valence to those reported after failures of disliked persons. Similarly,

both failures of well-liked others and successes of disliked others result in a negative affective

state. This is in line with our hypothesis derived from the balance theory – that emotional

responses to others' outcomes restore the balance within cognitive units consisting of the

perceiver, the other and the latter's outcome. Hence, the results suggest that the balancing

model can be applied to predictions of affective reactions following a success or a failure of

liked and disliked others.

**Study 1**

Study 1 aimed to test the differences between the balancing model (Heider, 1958) and

the deservingness theory (Feather, 2006). According to the balancing model, schadenfreude

is a response to failures and resentment is a response to successes of disliked persons,

independently of whether these outcomes are deserved or not. We hypothesize that

deservingness perceptions play only a secondary role and are derived from the relations

between interpersonal attitudes and the outcome valence. But according to the deservingness

model, schadenfreude is evoked by a deserved failure of persons who have not tried hard

enough, while resentment is evoked by an undeserved success, independently of whether these persons are liked or disliked by the perceiver. Liking-disliking plays only a secondary role and is derived from deservingness considerations. To test these contradictory predictions we used the method similar to that of the pretest study and extended it by introducing a third factor of deservingness.

**Method**

      **Participants and Design.** The participants were 151 Polish students aged 18-19. They were randomly assigned to one of the eight conditions of a 2 (attitude: positive vs. negative) x 2 (outcome: success vs. failure) x 2 (deservingness: outcome deserved vs. undeserved) between-participants design.

      **Procedure and Measures.** The procedure was identical to the pretest study. Additionally, participants rated the degree of deservingness of the outcome (failure or success) on a scale from 1 (*definitely undeserved*) to 7 (*definitely deserved*) and their attitude toward the target person on a scale from -7 (*definitely dislike*) to 7 (*definitely like*).

**Results and Discussion**

      **Manipulation Checks.** Two separate analyses of variance in a 2 (outcome) x 2 (attitude) x 2 (deservingness) design were performed on liking and deservingness as dependent variables. The analysis of liking ratings showed the predicted effect of attitude, $F(1, 148) = 1740.65$; $p < .0001$, $\eta^2 = .92$. In the liking group the target was indeed liked to a higher degree ($M = 5.42$, $SD = 1.16$) than in the disliking group ($M = -4.38$, $SD = 1.67$). The analysis of deservingness ratings yielded the predicted difference between the deserved and undeserved group, $F(1, 143) = 79.62$; $p < .001$, $\eta^2 = .36$. Outcomes in the deserved condition were perceived as deserved to a much higher degree ($M = 5.09$, $SD = 1.73$) than in the undeserved condition ($M = 2.8$, $SD = 1.77$). Additionally, the attitude by outcome interaction appeared significant, $F(1, 148) = 15.11$; $p < .0001$, $\eta^2 = .10$. Successes were perceived as

more deserved when won by a liked rather than a disliked person ($M = 4.41$ vs. 3.32), $t(73) =$ 2.59, $p = .012$; $d = 1.15$, but failures were perceived as less deserved when experienced by a liked rather than a disliked person ($M = 3.58$ vs. 4.47), $t(74) = -2.83$, $p = .006$, $d=-1.21$. This suggests that deservingness perceptions may be a rationalization rather than a precondition for affective relations within a cognitive unit.

**Global Affect.** First, the index of global affect was subjected to a 2 (outcome) x 2 (attitude) x 2 (deservingness) analysis of variance. This analysis revealed the main effect of deservingness, $F(1, 144) = 20.45$; $p < .001$, $\eta^2 = .12$. The deserved condition yielded generally positive affect ($M = 0.27$, $SD = 1.62$), while the undeserved condition resulted in generally negative affect ($M = -0.54$, $SD = 1.21$). However, this main effect was heavily constrained by the interaction between attitude and deservingness, $F(1,44) = 8.14$, $p = .005$, $\eta^2 = .05$. Only in the liking condition the index of global affect was significantly higher for the deserved outcomes ($M = 0.52$, $SD = 1.43$) than for the undeserved ones ($M = -0.73$, $SD = 1.05$), $t(74) = 4.40$; $p < .001$, $d = 1.05$. In the disliking condition, the deserved outcomes ($M = 0.03$, $SD = 1.77$) gave rise to affective responses which were similar to the undeserved ones ($M = 0.32$, $SD = 1.33$), $t(74) < 1$. This suggests that deservingness predictions did not fare very well in the present study.

Balancing predictions fared better. The strongest effect in this analysis was the predicted interaction between attitude and outcome, $F(1, 144) = 101.59$; $p < .001$, $\eta^2 = .41$, replicating the findings of the pretest study. In the failure condition, the index of global affect was much higher after the outcomes of disliked persons ($M = 1.07$, $SD = 1.22$) than after the outcomes of well-liked persons ($M = -0.62$, $SD = 0.96$), $t(75) = -6.79$; $p < .001$, $d = -1.69$. In the success condition, this index was much higher after the outcomes of well-liked persons ($M = 0.43$, $SD = 1.59$) than after the outcomes of disliked persons ($-1.36$, $SD = 0.70$), $t(73) = 6.33$, $p < .001$, $d = 1.79$. Most interestingly, the analysis of variance also yielded a significant

interaction of all three factors: outcome, attitude and deservingness, $F(1, 144) = 8.88$; $p < .01$, $\eta^2 = .06$, as illustrated in Figure 3.  Therefore, we conducted analyses of variance in an outcome by attitude design separately for each of the deservingness conditions.

The analysis performed for the deserved outcome condition yielded the outcome by attitude interaction showed in the left-hand panel of Figure 3, $F(1, 73) = 75.59$; $p < .001$, $\eta^2 = .51$.  In the failure condition, the index of global affect was much higher after the outcomes of disliked persons ($M = 1.40$, $SD = 1.28$) than after the outcomes of well-liked persons ($M = -0.28$, $SD = 1.19$), $t(37) = -4.27$, $p < .001$, $d = 1.68$.  In the success condition, global affect was much higher after the outcomes of well-liked persons ($M = 1.32$, $SD = 1.20$) than after the outcomes of disliked persons ($M = -1.43$, $SD = 0.72$), $t(36) = 8.57$, $p < .0001$, $d = 2.88$.  Two-factor analysis of variance performed for the undeserved outcome condition also yielded an attitude by outcome interaction, $F(1, 71) = 29.17$; $p < .001$, $\eta^2 = .29$, though somewhat weaker, as illustrated in the right-hand panel of Figure 3.  In the failure condition, the average affective state was higher after the outcomes of disliked persons ($M = 0.70$, $SD = 1.06$) than after the outcomes of well-liked ones ($M = -0.95$, $SD = 0.52$), $t(36) = -6.17$, $p < .001$, $d = 2.09$. In the success condition, global affect was relatively higher after the outcomes of well-liked ($M = -0.52$, $SD = 1.41$) rather than disliked persons ($M = -1.29$, $SD = 1.41$), $t(35) = 2.13$, $p = .04$, $d = 0.50$.

To summarize, these results support our hypothesis that affective reactions appear in a manner predicted by the balance theory.  Positive affective reactions to a failure and negative affective reactions to a success emerged in the manner predicted on the basis of Heiderian principles of balancing the P-O-X unit, when others' outcomes were both deserved or not. Interestingly, deservingness served as a moderator of the basic outcome by attitude interaction which was stronger in the deserving ($\eta^2 = .51$) than undeserving condition ($\eta^2 = .29$).  While the balancing hypothesis tapped by the basic interaction between outcome and attitude

received strong support ($\eta^2 = .41$), the deservingness hypothesis tapped by the main effect of deservingness received weak support ($\eta^2 = .12$). Moreover, support for the latter was restricted to the positive attitude condition (there was no effect of deservingness in the negative attitude condition). We conclude, then, that the balancing model received more support than the deservingness model.

**Study 2**

Study 2 was designed to corroborate previous findings and to extend them in three ways. First, we manipulated both the outcome and the attitude toward other persons. To do this, we presented our participants with an audio recording of a job interview ending with a success (job granted) or a failure (job refused). Independently, the interviewee uttered a flattering or disapproving remark about the participants' group (psychologists), which we expected to result in the participants' positive or negative attitude toward the interviewee. In contrast to the previous studies, within a condition all participants received exactly the same information about the target person's performance and outcomes.

Second, we manipulated the deservingness of the interviewee's outcome. To do so, the applicant was asked a few questions by the interviewer aimed at evaluating her suitability for the position. She answered correctly (positive action) or incorrectly (negative action). In accordance with Feather (1999, 2006), if she got the job as a result of her correct answers or lost the job opportunity because of her incorrect answers, we expected that her outcome would be perceived as deserved. On the other hand, if she was not offered the job after answering correctly or got the job after answering incorrectly, the outcome would be perceived as undeserved.

Third, we measured specific emotional reactions to the target's outcomes. Based on the content of scales used by other authors studying emotional reactions to others' lots (Feather & Sherman, 2002; Hareli & Weiner, 2002; van Dijk et al., 2005), as well as on our own pilot

study, we developed three multi-item scales measuring joy, resentment and sorrow. Finally, we measured the attitude towards the target person and the perceptions of her outcomes. These ratings served as manipulation checks but they also allowed direct and specific comparisons of attitude and deservingness perceptions as predictors of the emotional responses of joy, resentment and sorrow.

**Method**

**Participants and Design.** The participants were 166 Polish students of psychology (126 women, $M_{age} = 24.07$, $SD = 3.85$), randomly assigned to one of the eight conditions of a 2 (attitude: positive vs. negative) x 2 (outcome: success vs. failure) x 2 (deservingness: deserved vs. undeserved) between-participants design.

**Procedure and Manipulations.** The participants were asked to listen to an audio recording of a job interview with a young woman, form an impression of her and answer several questions. The sequence of events was identical for each participant: listening to the job interview (one of eight versions), measuring emotions, measuring attitude towards the applicant and perceived deservingness of the outcome.

The recording lasted two minutes and concerned a position of an "assistant with advanced English language skills". The applicant answered the recruiter's questions and at the end was informed that she was going to be offered the job or not. During the interview (and before the information about the outcome), the applicant was also asked whether she would ever consider additional postgraduate training, for example in psychology. She answered either clearly negatively or positively. Since our participants were students of psychology, this way the attitude toward the applicant was manipulated.

The particular recordings differed in how the candidate answered the recruiter's questions regarding the skills required for the vacancy (e.g., knowledge of English). Half of the participants heard the candidate answer in a way that showed her suitability for the job,

the remaining half heard answers showing her lack of the competencies needed. In this way we manipulated the perceived deservingness of the outcome.

**Measures.** After listening, the participants rated their 15 specific emotions experienced in response to the interview on a scale from 1 (*I did not experience this emotion at all*) to 7 (*I experienced this emotion very much*). These emotions were gathered based on Pretest Study, Study 1 and the studies of other authors cited in the introduction. This way an initial pool of 41 emotions was developed. This was given to a pretest study of 271 students who rated all the emotions in response to the successes or failures of others who were liked or disliked. A principal component analysis revealed three dominant factors; 15 items (five per factor) were recruited for the present study.

A factor analysis of the present emotion ratings yielded a clear three-factor solution. Five items (joy, happiness, satisfaction, content and cheerfulness) loaded highly on the first factor (eigenvalue = 5.77, 38.57% of variance). The next five items (anger, rage, indignation, agitation and sense of injustice) loaded highly on the second factor (eigenvalue = 4.06, 27.07% of variance). The final five items (unhappiness, sadness, depression, suffering and humiliation) loaded highly on the third factor (eigenvalue = 1.66, 11.22% of variance). We interpreted these factors as joy, resentment, and sorrow. After averaging the appropriate items we obtained highly reliable scales (Cronbach's alphas were .94, .91 and .84). Sorrow correlated highly with resentment ($r = .54$, $p < .001$), joy correlated slightly with resentment ($r = -.23$, $p < .003$), and there was no correlation between joy and sorrow ($r = -.04$, ns.). The present scales are very similar in content to the findings of other authors, for example the schadenfreude scale of Hareli and Weiner (2002), which consists of joy, happiness, content and pleasure, and the resentment scale of Feather, McKee, and Bekker (2011) (consisting of resentment, feeling of injustice, and indignance). Our sorrow scale contains similar items as the sympathy scale (sympathy, feeling sorry, pity) of the latter-mentioned authors.

Finally, the participants evaluated their attitude towards the target person and the deservingness of her outcome on seven-point scales. They also rated the extent to which they thought the outcome was a failure or a success.

### Results and Discussion

**Manipulation Checks.** To check the efficiency of the manipulations, we performed three separate analyses of variance in a 2 (outcome) x 2 (attitude) x 2 (deservingness) design on liking, deservingness and outcome perceptions, serving consecutively as dependent variables. The analysis of liking showed the predicted effect of attitude (approving–disparaging remarks on the participants' group), $F(1, 158) = 40.23$; $p < .001$, $\eta^2 = 0.20$. The target in the positive-attitude group was liked more ($M = 4.48$, $SD = 1.42$) than in the disliking group ($M = 3.22$, $SD = 1.25$). The analysis of deservingness perceptions yielded the predicted main effect of manipulated deservingness, $F(1, 158) = 93.58$; $p < .001$, $\eta^2 = .37$. The outcomes in the deserved condition were perceived as more deserved ($M = 5.48$, $SD = 1.67$) than in the undeserved condition ($M = 3.21$, $SD = 1.64$). Additionally, the attitude by outcome interaction appeared significant, $F(1, 158) = 9.65$; $p < .005$, $\eta^2 = .06$. Similarly to Study 1, failures were perceived as less deserved when happening to a well-liked rather than a disliked person and the opposite tended to be true for successes. Finally, the analysis of outcome perceptions yielded a strong main effect of the manipulated outcome, $F(1, 158) = 171.84$; $p < .001$, $\eta^2 = .52$. The participants evaluated positive outcomes as successes ($M = 5.38$, $SD = 1.47$) and negative outcomes as failures ($M = 2.65$, $SD = 1.30$). These analyses show the efficiency of all three manipulations employed in the present design.

**Joy.** A 2 (outcome) x 2 (attitude) x 2 (deservingness) analysis of variance on the joy index revealed no main effect of deservingness, $F(1,158) = 2.52$, $p = .12$, nor its interaction with the outcome, $F < 1$. However, the expected interaction between the attitude and outcome appeared significant, $F(1,158) = 14.53$, $p < .001$, $\eta^2 = .06$. In the failure condition, joy was

much higher after the outcomes of disliked persons ($M = 3.50$, $SD = 1.89$) than after the outcomes of well-liked ones ($M = 2.03$, $SD = 1.20$), $t(83) = 4.24$, $p < .001$. In the success condition, joy was lower after the outcomes of a disliked person ($M = 3.12$, $SD = 1.47$) than after the outcomes of a well-liked one ($M = 3.45$, $SD = 1.56$), although this difference was not significant, $t(79) = 1$. The attitude by outcome interaction was driven by joyful responses to failures rather than to successes, consistently with the meaning of the schadenfreude concept (which refers to responses to failures rather than successes).

Finally, the interaction between all three factors was marginally significant, $F(1,158) = 3.51$, $p = .06$, $\eta^2 = .02$, suggesting some role of deservingness. As shown in Figure 4 (top panel), failures of well-liked persons resulted in less joy than failures of disliked persons both for the deserved, $t(38) = 2.21$, $p = .034$, and undeserved outcome, $t(43) = 3.92$, $p < .001$. The only difference was that the latter effect was considerably stronger ($d = 1.29$) than the former ($d = .70$). Such attitude-dependent differences were not found for responses to successes whether deserved or not. The participants also responded with more joy to successes than failures of well-liked persons, both in the deserved, $t(39) = 2.11$, $p = .041$, and undeserved condition, $t(39) = 4.47$, $p < .001$. To summarize, joy mainly appears in response to successes of well-liked persons and in response to failures of disliked persons, independently of whether these outcomes are deserved or not. The emotional response of joy is better predicted by the balancing than the deservingness theory.

**Resentment.** A similar three-factor analysis (outcome x attitude x deservingness) of the resentment index revealed a main effect of deservingness, $F(1,158) = 18.70$, $p = .018$, $\eta^2 = .04$. Undeserved outcomes led to more resentment ($M = 2.67$, $SD = 1.65$) than deserved ones ($M = 1.77$, $SD = 1.06$). This is in line with the expectations of the deservingness theory and previous studies (e.g., Feather & Sherman, 2002). No interaction between outcome and deservingness was found. However, the balance-expected interaction between attitude and

outcome appeared significant, $F(1,158) = 5.76$, $p = .018$, $\eta^2 = .04$. In the success condition, resentment felt after a disliked person's outcome ($M = 2.55$, $SD = 1.72$) was stronger than that after a well-liked person's outcome ($M = 1.75$, $SD = 1.36$), $t(79) = 2.22$, $p < .001$. In the failure condition, resentment tended to be higher after the outcomes of disliked ($M = 2.42$, $SD = 1.27$) than well-liked persons ($M = 2,19$, $SD = 1.39$), although this difference was not significant, $t < 1$.

The attitude by outcome interaction predicted by the balancing theory was driven by changes in resentment in response to successes rather than failures. As shown in Figure 4 (middle panel), this was especially true for the deserved outcomes – the differential responding to successes of well-liked ($M = 1.06$, $SD = 0.13$) and disliked ($M = 2.16$, $SD = 1.42$) persons was significant only for the deserved outcome, $t(39) = 3.51$, $p = .001$. Figure 4 (middle panel) also illustrates that the main effect of deservingness held for both outcomes and both attitudes. To summarize, resentment was significantly predicted by both the deservingness and balance theory. These two antecedents (the deservingness main effect and the attitude by outcome interaction) were comparable in strength.

**Sorrow.** The sorrow index was also subjected to a 2 (outcome) x 2 (attitude) x 2 (deservingness) analysis of variance. No main effect of the deservingness manipulation, $F(1,158) = 1.65$, nor its interaction with the outcome, $F < 1$, was revealed. However, as expected by the balancing theory, the attitude by outcome interaction was significant, $F(1,158) = 8.48$, $p = .004$, $\eta^2 = .05$. In the success condition, sorrow was lower after the outcomes of well-liked persons ($M = 1.23$, $SD = 0.34$) than after the outcomes of disliked ones ($M = 1.74$, $SD = 0.90$), $t(79) = 3.16$, $p = .002$. In the failure condition, sorrow was higher for disliked ($M = 2.04$, $SD = 1.11$) than well-liked persons ($M = 1.74$, $SD = 0.09$), although this difference was not significant, $t(83) = 1.41$. Finally, the interaction between all three factors was insignificant, $F(1,158) = 2.92$, $p = .095$, though the trend suggests some role

of deservingness. As shown in Figure 4 (lowest panel), the previously identified differential responding to the success of well-liked and disliked persons remained significant only for deserved outcomes. The figure illustrates yet another simple effect: failures of well-liked persons evoked more sorrow ($M = 2.04$, $SD = 1.11$) than their successes ($M = 1.23$, $SD = 0.34$), $t(80) = 4.51$, $p < .001$, $d = 1.16$, and this effect held for both deserved and undeserved outcomes. Responses to disliked persons' outcomes showed a small level of sorrow independently of the outcome and its deservingness.

To conclude, all three specific emotions significantly depended on the outcome by attitude interaction which always remained significant. The vagaries of patterns depicted in three panels of Figure 4 are due to the changing role of deservingness rather than the quite stable role of the outcome by attitude interaction (when deservingness distinction is omitted). Emotional responses to successes were always more positive for well-liked persons and emotional responses to failures were more negative for such persons. On the other hand, deservingness was a substantial predictor of resentment, though it did not influence joy and sorrow. Both balancing and deservingness influenced the emotional responses toward outcomes of other persons, although the present study suggests that balancing is a more reliable predictor of these responses (significant for all three emotions) than deservingness (significant only for resentment but not for joy and sorrow).

**Relative Contribution of Balancing and Deservingness**. The present study manipulated and measured the perceived deservingness and attitudes towards persons who succeeded or failed. This allowed us to conduct more nuanced analyses of the relative contribution of attitudinal and deservingness considerations. The two perceptions were correlated – in the success condition this correlation was positive, $r(81) = .46$, $p < .001$, but in the failure condition this correlation was negative, $r(85) = -.27$, $p = .013$. Liking increased the perception of a success as being deserved and the perception of a failure as being

undeserved. Therefore, we performed a series of regression analyses where liking and deservingness served as predictors of joy, resentment and sorrow, consecutively.

As shown in Table 1, both liking and deservingness contributed to joy, resentment, and sorrow and this contribution was especially strong for joy in response to failures (adjusted $R^2 = .48$) and resentment following successes (adjusted $R^2 = .56$). However, the contribution of liking was typically stronger than that of deservingness, as evidenced by the comparisons between the standardized beta coefficients presented in Table 1. In four analyses out of six, the liking coefficient was significantly larger than the deservingness coefficient, and both coefficients were low in two cases where this difference disappeared. This suggests that in the present study balancing played a stronger role in shaping emotional responses to others' outcomes than deservingness considerations. However, this conclusion should be seen as tentative because the obtained pattern of results may be due to a lower reliability of the deservingness than liking measure. Having no indices of reliability of the single-item measures of liking and deservingness, we cannot rule out this possibility (although we do not see any a priori reasons why these two measures should differ in reliability).

The conclusion of a relatively greater role of balancing compared with deservingness is also corroborated by six separate analyses of mediation involving deservingness and balance. The balance factor was coded 1 for balanced conditions (success of a well-liked person or failure of a disliked one) and 2 for imbalanced conditions (success of a disliked person or failure of a well-liked one). In the first three analyses, balance was an independent variable, while the three emotions of joy, resentment and sorrow served as dependent variables consecutively, and the perceived deservingness was considered as a mediator. As shown in Figure 5 (left panel), the unmediated effect of balancing on emotions was significant for joy ($\beta = .24$, $p = .002$), resentment ($\beta = -.15$, $p = .05$) and sorrow ($\beta = -.21$, $p = .007$). Introducing deservingness as a mediator did not lead to significant decreases in these

coefficients. In the next three analyses, balance served as an independent variable, while the perceived deservingness was a dependent variable, and the three emotions were consecutively introduced as mediators. As shown in Figure 5 (right-hand panel), the results met the mediation criteria, and the unmediated effect of balance on deservingness was $\beta = .15$, $p = .05$, but it disappeared after the introduction of joy ($\beta = .08$) or resentment ($\beta = .10$) as mediators. These two mediators were significant as evidenced by Sobel tests ($z = 2.46$, $p < .05$ and $z = 1.78$, $p = .06$ respectively). Conducting the mediation analysis for sorrow as a mediator was impossible because this emotion was unrelated to deservingness.

### General Discussion

The present research yielded a reliable and consistent pattern of results showing that the balancing model can be successfully used to predict affective responses to other people's outcomes. Additionally, we documented that attitudes can play a major role in moderating these responses. These convergent results were obtained by means of diverging methods with complementary features. Memories analyzed in Study 1 involved strong interpersonal attitudes and emotionally involving outcomes, while they offered low control over the content of the investigated events. In Study 2, the events were identical for all participants (within a condition), though they were less involving emotionally. Nevertheless, the results were quite similar. Responses to others' successes may be either positive or negative and this valence is dependent on the perceiver's attitude towards others. Similarly, affective responses to others' failures are positive (schadenfreude) when the attitude toward the person is negative, but positive (joy) when the attitude is positive. This pattern of responses was predicted basing on the balancing principle and the assumption that responses towards another's outcomes are transient emotional reactions which restore balance within a cognitive unit (consisting of the perceiver who may like or dislike the other person, who always likes his or her success and

dislikes his or her failures). This pattern was obtained with global emotional states (pretest study and Study 1) and specific emotions (joy, resentment, and sorrow in Study 2).

The influence of pre-existing attitudes on responses to others' outcomes has been rarely studied in the context of schadenfreude and resentment, so the present results are novel in showing the crucial role of such attitudes in shaping emotional responses to other persons' successes and failures. Moreover, the results mesh well with previous theorizing and data. As already mentioned, there is a substantial amount of literature on the role of attitudes in the formation of empathic responses (e.g., Lanzetta & Englis, 1989). Hareli and Weiner (2002) found a relation between the intensity of negative emotions toward the other and schadenfreude. Singer and her colleagues (2006) showed that male participants empathized with people toward whom they had warm feelings and experienced schadenfreude for people towards whom their attitude was negative. Our studies extend these results by showing the major role of interpersonal attitudes in a comprehensive way for both positive and negative attitudes and for a variety of emotional responses.

As already mentioned, some research (e.g., Feather, 1999) has shown that the perception of deservingness is an important factor in eliciting schadenfreude – the more a failure is seen as deserved, the more schadenfreude will be experienced. However, not all studies support this role of deservingness in schadenfreude (e.g., Brigham, Kelso, Jackson, & Smith, 1997). Our studies suggest that in some conditions balancing can be a stronger predictor of schadenfreude than the perception of deservingness. Balancing may be reasonably expected if there is a strong (pre-existing, like in Study 1, or newly acquired, like in Study 2) attitude of the perceiver towards the target person, and this is probably the typical context in which schadenfreude and resentment are observed in real-life situations. In the majority of studies attitudes are not manipulated or even do not exist, as the standard design involves participants responding to imagined situations with fictitious characters. Such

imaginary emotions may be driven by norm-based judgments of deservingness to a higher

degree than by sheer affective responses resulting from balance pressures.  However, social

situations usually involve strong attitudes which may heavily influence both deservingness

judgments and the experienced emotions.

The present studies may be interpreted as suggesting that when strong interpersonal

attitudes are involved they shape emotional responses, and these, in turn, may affect

deservingness perceptions. In such situations deservingness considerations may play only a

secondary role as rationalizations of the emotions experienced for other reasons.

Deservingness, however, is not always a secondary rationalization and it can play an

independent role.  Study 1 documented that although the attitude by outcome interaction

predicted by the balance theory was statistically significant for both deserved and undeserved

outcomes, this interaction was stronger for the deserved than undeserved outcomes. Thus,

deservingness perceptions can moderate the impact of balance principles on emotional

reactions to others' outcomes.  Interestingly, this moderating role of deservingness is not

predicted by the present versions of the balance nor deservingness theory suggesting that both

models have merit but also require theoretical developments.  Moreover, Study 2 showed that

deservingness considerations form an independent and strong predictor of resentment, though

for joy and sorrow this predictor appears relatively weaker than balancing pressures.

Although the present data suggests that in most cases balancing is a more reliable

predictor of social emotions, the question is far from settled.  First, deservingness is an

independent predictor of resentment (Study 2) and of global affective states (Study 1,

although restricted by the interaction with attitudes).  Second, deservingness sometimes

moderates the role of balancing principles and this is not well-understood.  Third, even if

independently manipulated, perceptions of deservingness and attitudes remain correlated

(failures are perceived as less deserved when happening to a well-liked rather than a disliked

person and the opposite is true for successes). Clearly, there is a need for further research on how perceptions of deservingness depend on attitudes.

It remains to be seen what the relative strength of balancing and deservingness is in a broader range of situations involving pre-existing attitudes which tend to be neglected in the literature on schadenfreude and resentment. Our hunch is that deservingness perceptions resemble cognitive calculations based on responsibility and justice considerations. As such they require thought, effort, and availability of cognitive resources. On the other hand, balancing responses are basically intuitive, and they seem not to require much deliberation. While deservingness judgments may require the reflective system, balancing responses may be produced by the impulsive system (cf. Strack & Deutsch, 2004). This suggests that balancing responses may emerge automatically, but deservingness-based responses may appear only in conditions conducive to conscious thinking and deliberation. Dual-process theories of psychological functioning appeared fruitful in various areas of social psychology (Chaiken & Trope, 1999), and this success invites a suggestion that different kinds of psychological processes are involved in emotional responses based on balancing and deservingness. We think that this suggestion leads to several testable hypotheses. However, their discussion and testing is beyond the present work.

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Table 1.

*Perceived Deservingness and Liking as Predictors of Emotional Responses to Successes or Failures (Study 2)*

| Outcome/emotion | *F* (model) | Adjusted $R^2$ | Beta | *t* difference |
|---|---|---|---|---|
| **Failure/Joy** | 40.22*** | .48 | | 8.33*** |
| Deservingness | | | .20* | |
| Liking | | | -.63*** | |
| **Failure/Resentment** | 8.99*** | .16 | | < 1 |
| Deservingness | | | -.23* | |
| Liking | | | .30** | |
| **Failure/Sorrow** | 8.53*** | .15 | | 2.54* |
| Deservingness | | | .11 | |
| Liking | | | .43*** | |
| **Success/Joy** | 5.75** | .11 | | < 1 |
| Deservingness | | | .24* | |
| Liking | | | .18 | |
| **Success/Resentment** | 51.08*** | .56 | | 3.27** |
| Deservingness | | | -.18* | |
| Liking | | | -.65*** | |
| **Success/Sorrow** | 15.81*** | .27 | | 4.85*** |
| Deservingness | | | .29** | |
| Liking | | | -.61*** | |

*Notes. t* difference refers to the difference between the standardized beta coefficients for deservingness and liking as predictors within a panel.

* *p* < .05, ** *p* < .01, *** *p* < .001

**Figure captions**

Figure 1. Affective responses to successes and failures of a liked and disliked person as a restoration of cognitive balance within a cognitive unit involving P (perceiver), O (other person) and X (other's outcome).

Figure 2. Global affect reported in reactions to successes and failures of persons who were liked or disliked (Pretest study). Whiskers represent standard error of the mean. Higher scores indicate more positive affect.

Figure 3. Global affect reported in reactions to successes and failures of persons who were liked or disliked and deserved their outcomes or not (Study 1). Whiskers represent standard error of the mean. Higher scores indicate more positive emotions.

Figure 4. Average joy, resentment and sorrow reported as a function of the outcome, its deservingness and liking of the other person (Study 2). Whiskers represent standard error of the mean.

Figure 5. Mediation analyses in Study 2 (unmediated effects in parentheses).