Stories and the self: Assimilation, contrast, and the role of being transported into the narrative world

Stefan Krause & Markus Appel

University of Würzburg, Germany

Abstract

Two experiments examined the influence of stories on recipients' self-perceptions. Extending prior theory and research, our focus was on assimilation effects (i.e., changes in self-perception in line with a protagonist's traits) as well as on contrast effects (i.e., changes in self-perception in contrast to a protagonist's traits). In Experiment 1 ($N = 113$), implicit and explicit conscientiousness were assessed after participants read a story about either a diligent or a negligent student. Moderation analyses showed that highly transported participants and participants with lower counterarguing scores assimilate depicted traits of a story protagonist, as indicated by explicit, self-reported conscientiousness ratings. Participants who were more critical towards a story (i.e., higher counterarguing) and with a lower degree of transportation showed contrast effects. In Experiment 2 ($N = 103$), we manipulated transportation and counterarguing, but we could not identify an effect on participants' self-ascribed level of conscientiousness. A mini meta-analysis across both experiments revealed significant positive overall associations between transportation and counterarguing on the one hand and story-consistent self-reported conscientiousness on the other hand.

Key Words: Self, Transportation, Narratives, Assimilation, Contrast

Stories and the self: Assimilation, contrast, and the role of being transported into the narrative world

The impact of stories on recipients has been a topic of many empirical studies in the recent years. Stories possess the power to take us out of our own everyday realities. We become transported into narratives (Gerrig, 1993), and we encounter characters in these narratives with a diverse range of personalities and perspectives (Cohen, 2001; Kaufman & Libby, 2012). For the most part, research on story effects has been focused on recipients' views about the outside world, with attitudes and beliefs as the main dependent variables (van Laer, Ruyter, Visconti, & Wetzels, 2014). Much less is known about the influence of stories on recipients' view of themselves (Gabriel & Young, 2011). The existing empirical evidence on this topic showed that participants' self-perceptions tend to temporally change in line with the story protagonists' characteristics. In other words, recipients' self-perceptions become similar to the traits displayed by the character. These *assimilation effects* were strengthened by recipients' transportation into the story world (Richter, Appel, & Calio, 2014). However, do we always perceive ourselves to share a protagonist's characteristics? This manuscript explores effects of stories on the self, taking into account the possibility that recipients' self-perceptions may change but deviate from a protagonist's traits (*contrast effects*), particularly if transportation into a narrative world is low and counterarguing is high.

Two studies are presented that examine the influence of stories on assimilation versus contrast effects on the self, for individuals who were more or less transported into the narrative and who were more or less engaged in counterarguing. Extending prior research designs, we used two different stories with protagonists that displayed opposite characteristics. Moreover,

effects on explicit self-ratings and on implicit trait associations were investigated (Nosek, Banaji, & Greenwald, 2002).

Being lost in a story world and the effects of stories on the self

Gerrig (1993) described the concept of transportation with the metaphor of a mental journey of a "traveler", who is transported into a story world. Transportation is characterized by an integrative melding of attention, imagery, and feelings, focused on story events (Green, 2005). Narrative influence and transportation have primarily been investigated in the context of changing attitudes, beliefs, and worldviews. Transported recipients do not critically process story claims, and thus, they are persuaded in line with the story (Green & Brock, 2000). Indeed, transportation is connected to a reduction in *counterarguing* of story assertions. Particularly highly transported recipients devote most of their mental capacity to imagining story events, and therefore do not have the cognitive capacity to critically question aspects of a story (e.g. Moyer-Gusé, 2008). Likewise, transportation should also reduce recipients' motivation to counterargue, because interrupting the narrative flow to disagree with the author's claims would likely destroy the pleasure of the experience (Green, Brock, & Kaufman, 2004).

Based on these findings from narrative persuasion research, this manuscript deals with the influence of stories on perceptions about ourselves. For the most part, prior studies on the influence of stories on the self have been guided by the assumption of *assimilation* as the effect to be expected (Richter et al., 2014). The term assimilation applies whenever a recipient's self-concept becomes more similar to the central theme of a story, protagonists' characteristics, or both. Accordingly, recipients temporarily assimilate depicted aspects of a story and its protagonists into their self-concept (Sestir & Green, 2010). Kaufman and Libby (2012) showed that participants can simulate the experience of fictional story characters by assuming their

identities, which subsequently changed participants' self-perception. Self-concept accessibility, narrative voice, and the story character's group membership were important factors in this process. In another study by Richter and colleagues (2014), an experimental story about a young mother and her daily struggles with parenthood (vs. a gender-neutral control story) increased self-rated femininity among highly transported readers.

Implicit measures and story effects on the self

Implicit measures have been used in different areas of media psychology and communication science in order to provide additional insights on media effects (Payne & Dal Cin, 2015). In contrast to explicit measures, such as questionnaires, implicit indicators, like the Implicit Association Test (IAT), do not rely on conscious self-reports. Rather, implicit indicators assess automatic responses which are difficult, if not impossible, to control (Hofmann, Gawronski, Gschwendner, Le, & Schmitt, 2005).

Regarding the influence of stories on the self, few studies examined self-views on an implicit level. Gabriel and Young (2011) presented participants a passage from either a book about wizards or from a book about vampires. Afterwards, participants were asked how vampire- or wizard-like they perceived themselves. As the second dependent variable, an implicit measure, the *identity IAT* (Nosek et al., 2002) was administered. For the identity IAT, "me" words (e.g., myself,), "not me" words (e.g., they), "wizard" words (e.g., broomstick), and "vampire" words (e.g., fangs) were used. On average, participants showed higher implicit and explicit scores in line with the presented fantasy characters they had read about. Dal Cin, Gibson, Zanna, Shumate, and Fong (2007) presented different video clips in which the main protagonist was smoking or not. Non-smoking participants, who strongly identified themselves with the main protagonist, showed stronger associations between the self and smoking on an identity IAT.

Sestir and Green (2010) showed participants different trait words in line with the protagonist's traits before and after watching a movie clip. As the dependent variable, participants rated in an implicit reaction time task (i.e., me/not me task) whether they believed the trait described themselves or not. Moreover, transportation into the story world and identification with the main protagonist were manipulated through brief written instructions right before watching the movie clip. One central result was that the transportation manipulation led to a greater proportion of switches from the implicit not-me-judgments to me-judgments concerning protagonist's traits from the pretest to the posttest.

Are we always becoming similar to a story character?

Most of the existing empirical evidence points to assimilation effects as default for possible effects of stories on the self (Appel, 2011). Considering reading/watching stories as a highly immersive process (transportation; cf. Green, 2005) and the intense connection between recipients and story characters (identification; cf. Cohen, 2001) rather foster assimilation effects. However, we assume that stories can also influence recipients' self-concept in the reverse direction. Recipients may, at times, compare themselves with others to gain self-relevant information (Vorderer, Klimmt, & Ritterfeld, 2004). We therefore suggest that recipients could perceive themselves to be opposite or in *contrast* to specific traits of a story protagonist. Mares and Cantor (1992) showed that lonely, elderly people preferred watching a portrayal of a depressive, isolated elderly person, rather than watching a happy, socially integrated person. The authors suggested that an unhappy protagonist provides a target of downward social comparison. Thus, the participants perceived themselves to be less lonely after watching a socially isolated person.

Contrast effects are expected when recipients have a mindset that leads them to compare themselves with a story protagonist (Appel, 2011; Mussweiler, 2003). In an experimental study (Appel, 2011) participants read a story about a stupid and aggressive soccer hooligan. In the experimental group, the mindset of the participants was manipulated by receiving a reading goal instruction to find dissimilarities between oneself and the main protagonist. These participants performed better in a knowledge test after reading the story about the stupid hooligan compared to participants who received no instruction at all. In sum, story characters' traits can work as a standard of comparison. Contrast effects based on media persona have been found mainly in a non-narrative context, such as media portrays of thin and beautiful people. Experimental and correlative research on this topic suggest that exposure to very thin bodies is linked to perceiving oneself as rather unattractive and overweight (Grabe, Ward, & Hyde, 2008).

Study overview and predictions

The main aim of this manuscript was to shed light on the influence of stories on the self with a particular emphasis on the direction of influence. Most of the existing empirical evidence points to assimilation effects, indicating that recipients become more similar to a main protagonist's traits after reading a story or watching a movie clip. Assimilation effects are expected whenever transportation into a narrative is high and counterarguing is low.

However, we believe that stories can as well affect recipients' self-concept in the opposite direction of a main protagonist's traits. These contrast effects are likely when recipients have a more distant or critical stance towards a story and its protagonists (Appel, 2011; Mussweiler, 2003). We expect this distant view to be reflected by a lower degree of transportation (Green, 2005) and a higher amount of counterarguing of story assertions (Moyer-Gusé, 2008).

Two experiments were conducted. Extending prior research, we used two parallel experimental stories in Experiment 1, which differed in the central trait of the main protagonist. In addition to explicit self-ratings, we included an implicit measure of the self-concept. As a further extension of prior findings, counterarguing (in addition to transportation) was included as a key moderating factor. In a second study, transportation was manipulated rather than measured to further investigate causal processes underlying the effects of stories on the self.

In our first experiment, we presented one out of two experimental stories. The main difference between the stories was the central trait of the protagonist. The protagonist was either very diligent or very negligent about his/her schoolwork. Two dependent measures were applied to capture assimilation vs. contrast effects on recipients' self-perception. The first dependent variable was an explicit self-rating of conscientiousness (Ostendorf & Angleitner, 2004) and we expected the following:

Hypothesis 1a (H1a): Participants reporting high levels of transportation during reading rate themselves to be more conscientious after reading the diligent student story as compared to the negligent student story (assimilation effect).

Hypothesis 1b (H1b): Participants reporting low levels of transportation during reading rate themselves to be less conscientious after reading the diligent student story as compared to the negligent student story (contrast effect).

Hypothesis 2a (H2a): Participants reporting low levels of counterarguing rate themselves to be more conscientious after reading the diligent student story as compared to the negligent student story (assimilation effect).

Hypothesis 2b (H2b): Participants reporting high levels of counterarguing rate themselves to be less conscientious after reading the diligent student story as compared to the negligent student story (contrast effect).

The second dependent variable was an implicit identity IAT, which measures the association between the self and the concept of conscientiousness (Nosek et al., 2002) and we expected the following:

Hypothesis 3a (H3a): Participants reporting high levels of transportation during reading show stronger association between their self and conscientiousness after reading the diligent student story as compared to the negligent student story (assimilation effect).

Hypothesis 3b (H3b): Participants reporting low levels of transportation during reading show less association between their self and conscientiousness after reading the diligent student story as compared to the negligent student story (contrast effect).

Hypothesis 4a (H4a): Participants reporting low levels of counterarguing show stronger association between their self and conscientiousness after reading the diligent student story as compared to the negligent student story (assimilation effect).

Hypothesis 4b (H4b): Participants reporting high levels of counterarguing show less

association between their self and conscientiousness after reading the diligent student story

as compared to the negligent student story (contrast effect).

Experiment 1

Method

Participants. Our procedure included a main experimental session and a prior online

survey of different trait measures[1]. Since these trait measures had no effect on our dependent

measures and moderating variables, related results are not reported here. One hundred thirteen

individuals (99 women, age in years $M = 22.54$, $SD = 4.19$) were recruited in different social

science classes at the University of Koblenz-Landau. The participants received partial course

credit and participated in a lottery to win one 50€ or one out of four 10€ amazon coupons. The

experiment took place in a laboratory with one to seven participants per session.

Procedure and stimulus text. Participants were randomly assigned to read one of two

stories (diligent student story: $n = 57$, 1968 words; negligent student story: $n = 56$, 1726 words),

which were presented as a paper booklet. Both stories were developed for the sake of this study

and included a first-person narrator. There was no indication of the main protagonist's gender.

The setting and topic of both stories were similar, but the main personality trait of the protagonist

differed. In both stories, the main protagonist had to prepare a presentation. In the first story, the

protagonist was very excited about the task and finished the presentation early (diligent student

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[1] These measures were the Personal Expansion Questionnaire, "Kind of Person" Implicit Theory—Others Form For Adults, and the German Private Self-Consciousness Scale (see the online appendix for references to these questionnaires).

story). In the other story, the protagonist was just doing as much as needed for the presentation and preferred to spend some time with a friend (negligent student story).

Measures

Identity Implicit Association Test (Identity IAT). After reading the story, participants worked on an identity IAT (Nosek et al., 2002) on a computer using Inquisit 3. The entire procedure and the words used were adapted from Steffens and Schulze König (2006). The identity IAT was an indirect measure of participants' associations between their self and conscientiousness. Participants had to categorize five *self*-words (e.g., I, me), five *other*-words (e.g., you, your), five *conscientiousness* words (e.g., persistent, organized) and five *negligence* words (e.g., aimless, chaotic) to the respective categories. The identity IAT score was calculated using the improved scoring algorithm (Greenwald, Nosek, & Banaji, 2003). Accordingly, error trials were handled by the build-in error penalty, which required participants to correct their response after wrong categorization. The additional response time was included in the final analysis (*D*-score = .48; *SD* = 0.36). A higher (positive) identity IAT score indicated stronger associations between the self and conscientiousness. The internal consistency was calculated by examining the correlations of the two quotients composing the overall identity IAT *D*-score Accordingly, the identity IAT score had an odd-even split-half reliability of *r* = .65 (Spearman-Brown corrected). After finishing the identity IAT, participants received a paper booklet containing the following measures:

Transportation. Participants' immersion into the story world was measured with the Transportation Scale – Short Form (Appel, Gnambs, Richter, & Green, 2015). The six items went with a seven-point scale (e.g., "I wanted to learn how the narrative ended.", *1 = not at all; 7 = very much*). The reliability was satisfactory (α = .78); the overall mean was 4.94 (*SD* = 1.05).

Counterarguing. Four items assessed the extent to which participants generate thoughts which dispute what is being presented in the story (Moyer-Gusé, 2007), for example: "While reading the text, I sometimes found myself thinking of ways I disagreed with what was being presented", *1 = strongly disagree; 5 = strongly agree*). The reliability of the counterarguing scale was acceptable (α = .67) and the overall mean was 2.44 (*SD* = 0.85).

Explicit Self-Ratings of Conscientiousness. As the second dependent measure, participants self-ascribed their level of conscientiousness (Ostendorf & Angleitner, 2004). Participants were briefly instructed to spontaneously rate themselves on ten adjectives (e.g., I am: persistent; aimless) on a seven-point Likert scale from *1 = not at all* to *7 = very much*. These ten adjectives were identical to the trait adjectives used in the identity IAT. The scale showed satisfactory reliability (α = .80) and the overall mean was 5.33 (*SD* = 0.81). Finally, participants answered demographic questions.

Results

Since two stories were used as experimental manipulation, the study followed a one-factorial between-subjects design (treatment: story condition). In these and the following analyses, the experimental treatment was dummy-coded (*negligent student story = 0; diligent student story = 1*). Furthermore, all other variables were z-standardized to facilitate the interpretation of findings for variables with different scaling.

Explicit Self-Rating of Conscientiousness as DV. The story factor did not exert a significant overall effect on participants' explicit self-ratings of conscientiousness, $t(111) = 0.27$, $p = .79$. However, a moderated regression analysis showed a significant interaction between story condition and transportation on participants' explicit self-rating of conscientiousness, $b_{Int} = .75$, $SE = .19$, $t(109) = 4.02$, $p < .001$, $\Delta R^2 = .13$.

In order to test for the effect of story condition on explicit self-ratings of conscientiousness for low and high transportation scores (H1a and H1b), we conducted a simple slope analysis (Aiken, West, & Reno, 1991). Both conditions were compared at a high degree of transportation (+1 *SD* above the sample mean) and a low degree of transportation (-1 *SD* below the sample mean). In line with H1a, participants reporting high levels of transportation rated themselves as more conscientious after reading the diligent student story as compared to the negligent student story, indicating an assimilation effect, $b = .68$, $SE = .27$, $p = .01$. The effect was reversed for participants reporting low levels of transportation, which supported H1b: They rated themselves as less conscientious after reading the diligent student story compared to the negligent student story condition, indicating a contrast effect, $b = -.81$, $SE = .25$, $p < .001$ (Figure 1).

< Figure 1 around here>

The simple slopes of transportation and explicit self-ratings of conscientiousness differed between both experimental story conditions. The slope was negative, $b = -.34$, $SE = .14$, $p = .02$ in the negligent student story condition (higher transportation yielded less conscientiousness), whereas the effect was positive in the diligent student story condition, $b = .41$, $SE = .12$, $p < .001$ (higher transportation yielded higher conscientiousness).

The interaction between story condition and counterarguing on explicit self-ratings of conscientiousness was also significant, $b_{Int} = -.73$, $SE = .18$, $t(108)^2 = -4.08$, $p < .001$, $\Delta R^2 = .13$. In order to test for the effect of story condition on explicit self-ratings of conscientiousness for low and high counterarguing scores (H2a and H2b), we again conducted a simple slope analysis (Aiken et al., 1991). Both conditions were compared at a high degree of counterarguing (+1 *SD*

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[2] Degrees of freedom for t-values of counterarguing are different from transportation, because one participant did not answer the counterarguing scale.

above the sample mean) and a low degree of counterarguing (-1 *SD* below the sample mean). In line with H2a, participants reporting low levels of counterarguing during reading rated themselves as more conscientious after reading the diligent student story compared to the negligent student story condition, indicating an assimilation effect, $b = .67$, $SE = .25$, $p = .01$. The effect was reversed for participants reporting high levels of counterarguing, which was in support of H2b. They rated themselves as less conscientious after reading the diligent student story compared to the negligent student story condition, indicating a contrast effect, $b = -.79$, $SE = .25$, $p < .001$ (Figure 2).

< Figure 2 around here>

Likewise, the simple slopes of counterarguing and explicit self-ratings of conscientiousness were different in both experimental story conditions. The slope was positive, $b = .30$, $SE = .13$, $p = .03$ in the negligent student story condition (higher counterarguing yielded higher conscientiousness), whereas the slope was negative in the diligent student story condition, $b = -.43$, $SE = .12$, $p < .001$ (higher counterarguing yielded less conscientiousness). Finally, it should be noted that the three-way interaction of story condition, transportation, and counterarguing on explicit self-ratings of conscientiousness was not significant $b_{Int} = -.19$, $SE = .19$, $t(104) = -1.00$, $p = .32$.

Identity IAT scores as DV. There was no significant effect of the story condition on the identity IAT, $t(111) = .35$, $p = .73$. Moreover, the results of a moderated regression analysis of the story condition and transportation on the identity IAT did not show a significant interaction effect, $b_{Int} = .21$, $SE = .20$, $t(109) = 1.04$, $p = .30$. However, an outlier analysis of the identity IAT score revealed two extreme values, one above +2 *SD* and another below -2 *SD*. When the

analysis was repeated with these two participants excluded (Miller, 1991) a significant interaction was observed, $b_{Int} = .41$, $SE = .20$, $t(107) = 2.10$, $p = .04$, $\Delta R^2 = .04$.

We estimated the effect of the story condition on the identity IAT at high and low levels of transportation (1 SD above and below the mean). At high levels of transportation, there was no significant effect of the story condition on the identity IAT, $b = .26$, $SE = .28$, $p = .34$ (in contrast to what was expected in H3a), but we found a significant effect, $b = -.56$, $SE = .27$, $p = .04$, at low levels of transportation. This result provides tentative supported for H3b, indicating a contrast effect on the identity IAT (Figure 3). Simple slope analyses revealed that transportation was positively related to the identity IAT scores only for the diligent student story, $b = .34$, $SE = .13$, $p = .01$, whereas there was no significant effect on participants who had read the negligent student story, $b = -.07$, $SE = .14$, $p = .63$. We wish to add that these effects on the identity IAT scores need to be considered with caution since they were only present after excluding the two outliers.

<center>< Figure 3 around here></center>

The results of a moderation analysis of story condition and counterarguing on the identity IAT was not significant, $b_{Int} = -.20$, $SE = .19$, $t(108) = -1.05$, $p = .30$ (excluding the two outliers: $b_{Int} = -.24$, $SE = .19$, $t(106) = -1.28$, $p = .20$). Therefore, there was no support for H4a and H4b. The three-way interaction of story condition, transportation and counterarguing on the identity IAT was also not significantly different from zero, $b_{Int} = -.04$, $SE = .21$, $t(104) = -.27$, $p = .79$ (with excluding the two outliers: $b_{Int} = -.11$, $SE = .18$, $t(102) = -.60$, $p = .55$).

Discussion

Study 1 supported some of our expectations. Highly transported participants as well as participants with lower counterarguing values showed higher explicit self-ratings of

conscientiousness after reading the story centering on a studious protagonist. An assimilation effect was also found in the negligent student story condition. In this condition, highly transported participants, as well as participants low on counterarguing, showed lower self-ratings of conscientiousness. Importantly, recipients low in transportation and high in counterarguing rated themselves as less conscientious after reading a story with a diligent protagonist than after reading a story with a negligent protagonist (contrast effect).

The results regarding the moderating effects of transportation and counterarguing on the identity IAT were mixed. Only after excluding two outliers, the identity IAT scores revealed a significant effect. Participants with low transportation values showed lower implicit associations between the self and conscientiousness after reading the diligent student story compared to the negligent student story. The results (with excluded outliers) indicated only a contrast effect on the identity IAT.

One of the main limitations of this study was that transportation and counterarguing were included as measured variables. This is in line with the great majority of research on experiential states during media use. However, this methodological approach is limited: The moderating variables are assumed to cause changes in the effect of the experimental treatment on the dependent variable, but the causal agent is measured, rather than manipulated, opening the possibility of alternative interpretations. To corroborate the causal effect of transportation and counterarguing on the self, we aimed at manipulating these states in a subsequent study.

Experiment 2

We manipulated transportation and counterarguing by presenting positive or negative reviews about a story prior to reading the story itself. While reading a review about a story, people form expectations in line with the review, which subsequently impact on transportation

while reading, listening, or watching a story (Gebbers, de Wit, & Appel, 2017; Shedlosky-Shoemaker, Costabile, DeLuca, & Arkin, 2011). Shedlosky-Shoemaker et al. (2011) manipulated reviews by either presenting favorable or unfavorable written evaluations of a story before presenting the actual story. The results indicated that the valence of the review influenced transportation: the group with a positive, favorable review showed significantly higher transportation ratings, as compared to the group that read a negative, unfavorable review.

Since transportation and counterarguing are related concepts (Moyer-Gusé, 2008), we expected effects of the review manipulation on counterarguing as well. This is a somewhat novel approach as there are no empirical studies - at least to our knowledge - which examined counterarguing measures after applying a review manipulation. We expected that participants, who read a positive review about our experimental story (the diligent student story from Experiment 1), showed higher transportation and lower counterarguing scores than participants who read a negative review. Positive changes in transportation and negative changes in counterarguing were in turn expected to contribute to an increase of participants' explicit self-perceptions of conscientiousness (assimilation). We included only explicit self-perceptions of conscientiousness as the DV, because Experiment 1 showed stronger support for assimilation and contrast effects on this explicit scale, whereas the results for the identity IAT were rather mixed.

Method

Participants. The initial sample consisted of $N = 105$ participants. One participant had already participated in Experiment 1 and another participant did not correctly answer the control items regarding the content of the experimental story. Therefore, both participants were excluded from the final sample. The final sample consisted of $N = 103$ students (85 women) with a mean

age of $M = 22.24$ years ($SD = 3.33$). Participants were recruited in different social science classes at the University of Koblenz-Landau and received partial course credit. The computer-based experiment took place in a laboratory with one to seven participants per session.

Procedure. After arriving at the laboratory, participants were welcomed and randomly assigned to one of two review conditions. They either read a negative (n = 54) or a positive review (n = 49) of the story. Both reviews were supposed to be from an online literature community (leselupe.de), and were supposed to be written by an experienced community member. Both reviews were similar in word count (positive review: 154 words, negative review: 170 words) and layout design. The main difference between the reviews was the valence of the evaluation regarding the short story that followed. The negative review emphasized the "rather repulsive and unpretentious story setting", whereas the positive review described that "the reader is carried away by the pleasant flow of the story". Moreover, there was a five-star rating of the story by 94 community members at the end of both reviews: (negative: 1.21 stars; positive: 4.78 stars). After reading the review, participants were asked to state the main content of the review into a text field as a control measure. All participants stated correctly the content and valence of the review that was allocated. Next, participants read the diligent student story from Experiment 1, and afterwards they worked on the Transportation Scale – Short Form ($\alpha = .86$; $M = 4.67$; $SD = 1.24$) and the counterarguing scale ($\alpha = .78$; $M = 2.32$; $SD = 0.94$), like in Experiment 1. Subsequently, participants rated their conscientiousness on the scale from Experiment 1 ($\alpha = .70$; $M = 5.10$; $SD = 0.72$). Finally, participants answered three control items regarding the story's content and whether or not they had participated in Experiment 1. The final page of the questionnaire consisted of demographic information.

Results

To examine the effects (assimilation vs. contrast) on participants' explicit ratings of conscientiousness, we conducted two bootstrapping analyses with 1) transportation and 2) counterarguing as mediators (Hayes, 2013; model 4). In these and the following analyses, the experimental treatment was dummy-coded (*negative review = 0; positive review = 1*). Furthermore, all other variables were z-standardized.

Transportation. The analysis with transportation as a mediator yielded a non-significant *total effect* of the review manipulation on the explicit self-rating of conscientiousness, $b = .16$, $SE = .20$, $t(101) = .79$, $p = .43$. However, the analysis yielded a significant effect of the review manipulation on transportation, $b = .45$, $SE = .19$, $t(101) = 2.32$, $p = .02$. Thus, the manipulation of the reviews had the expected effect on participants' transportation levels, but the effect was rather small with Cohen's $d = .46$ (negative review: $M = 4.40$, $SD = 1.31$; positive review: $M = 4.96$, $SD = 1.11$). Likewise, there was no *direct effect* of the review treatment on participants' explicit self-rating of conscientiousness, $b = .10$, $SE = .20$, $t(101) = .48$, $p = .63$. Moreover, the results did not show an effect of transportation on explicit self-ratings of conscientiousness, $b = .13$, $SE = .10$, $t(100) = 1.28$, $p = .20$. Following these findings, and against our expectations, there was no *indirect effect* of our review manipulation on explicit ratings of conscientiousness through transportation (see Figure 4). A bias-corrected bootstrap confidence interval (CI) for this indirect effect based on 10000 bootstrap samples was not significant with an *estimate* of .06, 95% CI [-.03, .24].

< Figure 4 around here>

Counterarguing. The analysis for counterarguing as a mediator also yielded a non-significant *total effect* of the review manipulation on self-reported conscientiousness, $b = .16$, SE

= .20, $t(101)$ = .79, p = .43. There was no *direct effect* of the review manipulation on

participant's conscientiousness, b = .15, SE = .20, $t(101)$ = .74, p = .46. The manipulation of the

review had no effect on counterarguing, b = -.15, SE = .20, $t(101)$ = -.78, p = .44, and there was

no effect of counterarguing on the explicit self-rating of conscientiousness, b = -.06, SE = .10,

$t(100)$ = -.59, p = .56. Following these results, there was no indication of an *indirect effect* of the

review manipulation on conscientiousness mediated by counterarguing. A bias-corrected

bootstrap confidence interval (CI) for this indirect effect based on 10000 bootstrap samples was

not significant with an *estimate* of .01, 95% CI: [-.02, .12].

Discussion

As expected, we found a significant, but small effect of the review manipulation on

transportation, but there was no effect of our review manipulation on counterarguing. For our

reviews, we followed an approach successfully used in previous studies (Gebbers et al., 2017;

Shedlosky-Shoemaker et al., 2011) and varied the valence of the reviews. Therefore, most of the

reviews' statements focused on the dramatic and creative quality of the short story, rather than its

authenticity of story assertions and statements made by the main protagonist. Accordingly, our

reviews might have somewhat triggered emotional and imagery expectations regarding the story,

which are more related to transportation (Green & Brock, 2000). Future manipulations of

reviews and their impact on counterarguing could also emphasize authenticity or plausibility of

story assertions in their evaluations.

Most importantly, there was no significant association between transportation or

counterarguing and participants' self-ratings of conscientiousness. The latter finding was

unexpected, since we observed medium to large associations between transportation and

counterarguing and participants' self-reported conscientiousness in the equivalent diligent

student condition in Experiment 1, with zero-order correlations of $r(55) = .43$ and $r(55) = -.45$, respectively. This raises the question of power. Did this experiment have enough power (1-beta) to detect relationships of similar size as in Experiment 1? To answer this question, we conducted post-hoc power analyses with the help of g*power (Faul, Erdfelder, Lang, & Buchner, 2007). Given the effect sizes found in Experiment 1, $\alpha = .05$ (two-tailed) and a sample size of 103 in Experiment 2, we had a power of .998 (transportation) and .999 (counterarguing) to identify the focal relationships. Thus, it appears that the non-significant finding in Experiment 2 was not due to a lack of power to identify the relationships that were present in Experiment 1[3]. Although these power analyses were somewhat re-assuring with respect to the contribution of Experiment 2, the findings of Experiment 1 and Experiment 2 taken together remained somewhat inconclusive. In order to clarify the joint evidence of both experiments we conducted *mini meta-analyses* (cf. Goh, Hall, & Rosenthal, 2016).

Mini Meta-Analyses Across Both Experiments

Experimental researchers are faced with the challenge that within a series of studies the findings of single studies may differ substantially. In recent years it has become good practice to report studies, irrespective of the results (hiding inconsistencies by omitting imperfect studies would ultimately contribute to biased effect size estimates and a smaller likelihood of follow-up

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[3] Note that these power analyses are based on sample point estimates and not the unknown "true" population values. Sample point estimates are not always accurate, since they do not account for uncertainty in estimates of population effect sizes. Therefore, Perugini, Gallucci, and Costantini (2014) proposed a more conservative approach - the "safeguard power analysis" - that incorporates this uncertainty by using the lower boundary (60%, two-tailed confidence interval) of the effect size. Given the lower-bound effect sizes (transportation; 60% CI: .33, .52; counterarguing, 60% CI: -.54, -.35) found in Experiment 1, $\alpha = .05$ (two-tailed) and a sample size of 103 in Experiment 2, we would had a power of .940 (transportation) and .964 (counterarguing) to identify the focal relationships. We additionally calculated the needed sample size for identifying the crucial relationships in Experiment 2, given the correlations found in Experiment 1. Following Cohen's (1992) recommendations, the power was set to .80 (α-level = .05). Based on analyses with g*power (Faul et al., 2007), 37 (33) participants would have been sufficient in order to detect the relationship between transportation (counterarguing) and conscientiousness. Moreover, the power when analyzing mediation effects (as expected for Experiment 2) is usually larger than the power when analyzing single relationships (Kenny & Judd, 2014).

replications). One way to provide estimates and interpretations over a set of studies is to conduct mini meta-analyses (Goh et al., 2016). They summarize study results and increase statistical power. In past research, mini meta-analyses were applied with no more than two studies (e.g., Hugenberg & Bodenhausen, 2004; Lamarche & Murray, 2014; Williams & DeSteno, 2008).

For mini meta-analyses to be applicable, two or more experiments need to entail comparable measures and stimuli. In both of our experiments, the same story about a diligent student was presented and identical measures were used to examine the relationships between transportation and counterarguing and the story-related explicit self-ratings of conscientiousness. These associations represent two of the four simple slopes within the model tested in Experiment 1. Furthermore, Experiment 1 involved a second story with a negligent student and implicit measures were assessed, whereas Experiment 2 included an experimental manipulation of transportation. These features were specific to the single experiments and could not be meta-analyzed.

We focused on the fixed effects model in our mini meta-analyses which is recommended and general practice, assuming one underlying true effect size for the analyzed studies (Goh et al., 2016). We calculated estimates of the mean correlations between transportation and the conscientiousness ratings after reading the diligent student story using the *Comprehensive Meta-Analysis 2* software. In this process, the correlations were weighted by sample size. Across both experiments, we identified a significant positive association, $M r = .25$, $Z = 3.17$, $p = .002$. We conducted a second mini meta-analysis for the association between counterarguing and conscientiousness which yielded the expected negative association, $M r = -.21$, $Z = -2.64$, $p =$

.01[4]. These meta-analyses showed that, taken together the results from both experiments, transportation was positively related to story-consistent self-ratings whereas counterarguing was negatively related to story-consistent self-ratings, supporting the assumptions underlying the hypotheses.

General Discussion

Stories influence how we perceive the world and ourselves. Using a novel methodology that involved two parallel stories, we showed that recipients see themselves to be more conscientious after reading a story about a diligent protagonist than after reading a story about a negligent protagonist – but only when they were transported into the narrative world and showed little counterarguing. When transportation was low and counterarguing was high, recipients perceived themselves to be *less* conscientious after reading a story of a diligent protagonist than after reading a story about a negligent protagonist. These findings were consistent with previous work that identified *assimilation effects* on recipients' self-perceptions, particularly when transportation was high (e.g., Richter et al., 2014). Extending prior studies, we found a complementary effect carried by recipients' counterarguing.

This study is the first to show that when transportation is low (and counterarguing is high), reading the story elicited self-perceptions that are the opposite of the characters' attributes. Thus, our findings highlight the possibility of *contrast effects* in response to stories, a phenomenon that has attracted little attention so far. Contrast effects are theoretically relevant and may occur in many everyday settings in which stories are not compelling.

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[4] Goh and colleagues (2016) recommend reporting the random effects results for reasons of transparency: transportation, $M\ r = .28$, $Z = 1.80$, $p = .07$; counterarguing, $M\ r = -.26$, $Z = -1.26$, $p = .21$.

Limitations and Future Research

Despite the importance of our findings, several limitations need to be acknowledged. As a major caveat, the causal assumptions underlying our approach could not be corroborated in full in our second experiment. Our review manipulation yielded a significant influence on transportation, but the effect size was small. Counterarguing was not affected by the manipulation at all. Importantly, there was no significant link between either transportation or counterarguing and recipients' self-ratings of conscientiousness in Experiment 2. Thus, we failed to replicate the basic relationships between the process measures and story-consistent self-ratings underlying the results of Experiment 1. We conducted two mini meta-analyses to increase the conclusiveness of our findings. We gained meta-analytical support for the expected associations between transportation and counterarguing on the one hand, and self-reported conscientiousness on the other. Still, we need to acknowledge that associations between transportation and counterarguing and recipients' selves appear to be rather variant. This needs to be taken into account in future research, for example by including theory-guided moderator variables. On a methodological note, researchers from communication science and media psychology are encouraged to consider mini meta-analyses when dealing with varying effects across multi-study papers.

We carefully developed two parallel stories for Experiment 1. Aimed at securing high internal validity, both stories only differed in the central trait of the protagonist. However, in order to generalize our findings, different media stimuli and trait measures should be examined in future research.

In our first experiment, the results for the identity IAT scores were rather mixed, which might be due to the low conceptual correspondence of different measurement methods and

underlying mental processes (Hofmann et al., 2005). The identity IAT measures associative processes, whereas the transportation and counterarguing scales require explicit judgments. Both of these mental processes are linked, but distinct from each other (Hofmann et al., 2005). Therefore, non-self-report measures of transportation (e.g., eyelid movements) might show stronger associations with the identity IAT.

Our findings are in line with prior research (e.g., Gabriel & Young, 2011; Kaufman & Libby, 2012; Sestir & Green, 2010) and support the hypothesis that narratives temporarily influence recipients' self-perceptions. However, is it possible that narratives can promote permanent changes in peoples' personality, a system that is supposed to be rather stable? Djikic and Oatley (2014) suggested that the artistic and emotional quality of stories open up recipients by temporally destabilizing their personality system. These singular fluctuations in one's personality repeatedly occur by reading different narratives. Consequently, stable personality traits may shift to a different level over time. Yet, in order to empirically support possible long-term effects of narratives on the self, longitudinal designs are needed.

Finally, neither of the two studies presented here contained a measure of social comparison, which might be an additional factor in order to explain contrast effects. Therefore, it might be valuable to include specific measures of social comparison processes for future research (Appel, 2011).

Conclusion

The presented research contributes to the literature on stories and the self. Consistent with previous work, we found *assimilation* effects when transportation was high and when counterarguing was low. As a result, participants temporally incorporated attributes of a story protagonist into their own self-concept. However, stories are no hypodermic needles, which

automatically inject different self-perceptions into the readers. Indeed, we found evidence that stories do not always elicit responses that are in line with the protagonist's traits. Unlike most media effect research in general, and research on stories and the self in particular, we showed changes in participants' explicit self-perception that were in *contrast* to the protagonist's characteristics, provided that participants showed low transportation or high counterarguing.

Research Transparency Statement

The authors are willing to share their data, analytics methods, and study materials with other researchers. The material will be available upon request.

References

Aiken, L. S., West, S. G., & Reno, R. R. (1991). *Multiple regression: Testing and interpreting interactions*. London, UK: Sage.

Appel, M. (2011). A story about a stupid person can make you act stupid (or smart): Behavioral assimilation (and contrast) as narrative impact. *Media Psychology*, *14*, 144–167. doi:10.1080/15213269.2011.573461

Appel, M., Gnambs, T., Richter, T., & Green, M. C. (2015). The Transportation Scale–Short Form (TS–SF). *Media Psychology*, *18*, 243–266. doi:10.1080/15213269.2014.987400

Appel, M., & Richter, T. (2010). Transportation and need for affect in narrative persuasion: A mediated moderation model. *Media Psychology*, *13*, 101–135. doi:10.1080/15213261003799847

Cohen, Ja. (1992). Statistical power analysis. *Current Directions in Psychological Science*, *1*, 98–101. doi:10.1111/1467-8721.ep10768783

Cohen, Jo. (2001). Defining identification: A theoretical look at the identification of audiences with media characters. *Mass Communication and Society*, *4*, 245–264. doi:10.1207/S15327825MCS0403_01

Dal Cin, S., Gibson, B., Zanna, M. P., Shumate, R., & Fong, G. T. (2007). Smoking in movies, implicit associations of smoking with the self, and intentions to smoke. *Psychological Science*, *18*, 559–563. doi:10.1111/j.1467-9280.2007.01939.x

Djikic, M., & Oatley, K. (2014). The art in fiction: From indirect communication to changes of the self. *Psychology of Aesthetics, Creativity, and the Arts*, *8*, 498–505. doi:10.1037/a0037999

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavior, and biomedical sciences. *Behavior Research Methods*, *39*, 175–191. doi:10.3758/BF03193146

Gabriel, S., & Young, A. F. (2011). Becoming a vampire without being bitten: The narrative collective-assimilation hypothesis. *Psychological Science*, *22*, 990–994. doi:10.1177/0956797611415541

Gebbers, T., Wit, J. B. F. de, & Appel, M. (2017). Transportation into narrative worlds and the motivation to change health-related behavior. *International Journal of Communication*, *11*, 4886–4906. 1932–8036/20170005

Gerrig, R. J. (1993). *Experiencing narrative worlds: On the psychological activities of reading*. New Haven, CT: Yale University Press.

Goh, J. X., Hall, J. A., & Rosenthal, R. (2016). Mini meta-analysis of your own studies: Some arguments on why and a primer on how. *Social and Personality Psychology Compass*, *10*, 535–549. doi:10.1111/spc3.12267

Grabe, S., Ward, L. M., & Hyde, J. S. (2008). The role of the media in body image concerns among women: A meta-analysis of experimental and correlational studies. *Psychological Bulletin*, *134*, 460–476. doi:10.1037/0033-2909.134.3.460

Green, M. C. (2005). Transportation into narrative worlds: Implications for the self. In A. Tesser, J. V. Wood, & D. A. Stapel (Eds.), *On building, defending and regulating the self: A psychological perspective* (pp. 53–75). New York, NY: Psychology Press.

Green, M. C., & Brock, T. C. (2000). The role of transportation in the persuasiveness of public narratives. *Journal of Personality and Social Psychology*, *79*, 701–721. doi:10.1037//0022-3514.79.5.701

Green, M. C., Brock, T. C., & Kaufman, G. F. (2004). Understanding media enjoyment: The role of transportation into narrative worlds. *Communication Theory*, *14*, 311–327. doi:10.1111/j.1468-2885.2004.tb00317.x

Greenwald, A. G., Nosek, B. A., & Banaji, M. R. (2003). Understanding and using the Implicit Association Test: I. An improved scoring algorithm. *Journal of Personality and Social Psychology*, *85*, 197–216. doi:10.1037/0022-3514.85.2.197

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. *Methodology in the social sciences*. New York, NY: Guilford Press.

Hofmann, W., Gawronski, B., Gschwendner, T., Le, H., & Schmitt, M. (2005). A meta-analysis on the correlation between the implicit association test and explicit self-report measures. *Personality and Social Psychology Bulletin*, *31*, 1369–1385. doi:10.1177/0146167205275613

Hugenberg, K., & Bodenhausen, G. V. (2004). Ambiguity in social categorization: The role of prejudice and facial affect in race categorization. *Psychological Science*, *15*, 342–345. doi:10.1111/j.0956-7976.2004.00680.x

Kaufman, G. F., & Libby, L. K. (2012). Changing beliefs and behavior through experience-taking. *Journal of Personality and Social Psychology*, *103*, 1–19. doi:10.1037/a0027525

Kenny, D. A., & Judd, C. M. (2014). Power anomalies in testing mediation. *Psychological Science*, *25*, 334–339. doi:10.1177/0956797613502676

Lamarche, V. M., & Murray, S. L. (2014). Selectively myopic?: Self-esteem and attentional bias in response to potential relationship threats. *Social Psychological & Personality Science*, *5*, 786–795. doi:10.1177/1948550614532377

Mares, M.-L., & Cantor, J. (1992). Elderly viewers' responses to televised portrayals of old age: Empathy and mood management versus social comparison. *Communication Research*, *19*, 459–478. doi:10.1177/009365092019004004

Miller, J. (1991). Reaction time analysis with outlier exclusion: Bias varies with sample size. *Journal of Experimental Psychology*, *43*, 907–912. doi:10.1080/14640749108400962

Moyer-Gusé, E. (2007). *Entertainment television and safe sex: Understanding effects and overcoming resistance*. Ann Arbor. Retrieved from http://search.proquest.com/docview/304882831?accountid=14490

Moyer-Gusé, E. (2008). Toward a theory of entertainment persuasion: Explaining the persuasive effects of entertainment-education messages. *Communication Theory*, *18*, 407–425. doi:10.1111/j.1468-2885.2008.00328.x

Mussweiler, T. (2003). Comparison processes in social judgment: Mechanisms and consequences. *Psychological Review, 110*, 472-489. doi:10.1037/0033-295X.110.3.472

Nosek, B. A., Banaji, M. R., & Greenwald, A. G. (2002). Math = male, me = female, therefore math ≠ me. *Journal of Personality and Social Psychology*, *83*, 44–59. doi:10.1037//0022-3514.83.1.44

Ostendorf, F., & Angleitner, A. (2004). *NEO-Persönlichkeitsinventar nach Costa und McCrae: NEO-PIR [NEO personality inventory according to Costa and McCrae: NEOPIR]*. Göttingen: Hogrefe.

Payne, B. K., & Dal Cin, S. (2015). Implicit attitudes in media psychology. *Media Psychology*, *18*, 292–311. doi:10.1080/15213269.2015.1011341

Perugini, M., Gallucci, M., & Costantini, G. (2014). Safeguard power as a protection against imprecise power estimates. *Perspectives on Psychological Science*, *9*, 319–332. doi:10.1177/1745691614528519

Richter, T., Appel, M., & Calio, F. (2014). Stories can influence the self-concept. *Social Influence*, *9*, 172–188. doi:10.1080/15534510.2013.799099

Sestir, M., & Green, M. C. (2010). You are who you watch: Identification and transportation effects on temporary self-concept. *Social Influence*, *5*, 272–288. doi:10.1080/15534510.2010.490672

Shedlosky-Shoemaker, R., Costabile, K. A., DeLuca, H. K., & Arkin, R. M. (2011). The social experience of entertainment media: Effects of others' evaluations on our experience. *Journal of Media Psychology*, *23*, 111–121. doi:10.1027/1864-1105/a000042

Steffens, M. C., & Schulze König, S. (2006). Predicting spontaneous Big Five behavior with Implicit Association Tests. *European Journal of Psychological Assessment*, *22*, 13–20. doi:10.1027/1015-5759.22.1.13

van Laer, T., Ruyter, K. d., Visconti, L. M., & Wetzels, M. (2014). The Extended Transportation-Imagery Model: A meta-analysis of the antecedents and consequences of consumers' narrative transportation. *Journal of Consumer Research*, *40*, 797–817. doi:10.1086/673383

Vorderer, P., Klimmt, C., & Ritterfeld, U. (2004). Enjoyment: At the heart of media entertainment. *Communication Theory*, *14*, 388–408. doi:10.1111/j.1468-2885.2004.tb00321.x

Williams, L. A., & DeSteno, D. (2008). Pride and perseverance: The motivational role of pride.

Journal of Personality and Social Psychology, *94*, 1007–1017. doi:10.1037/0022-
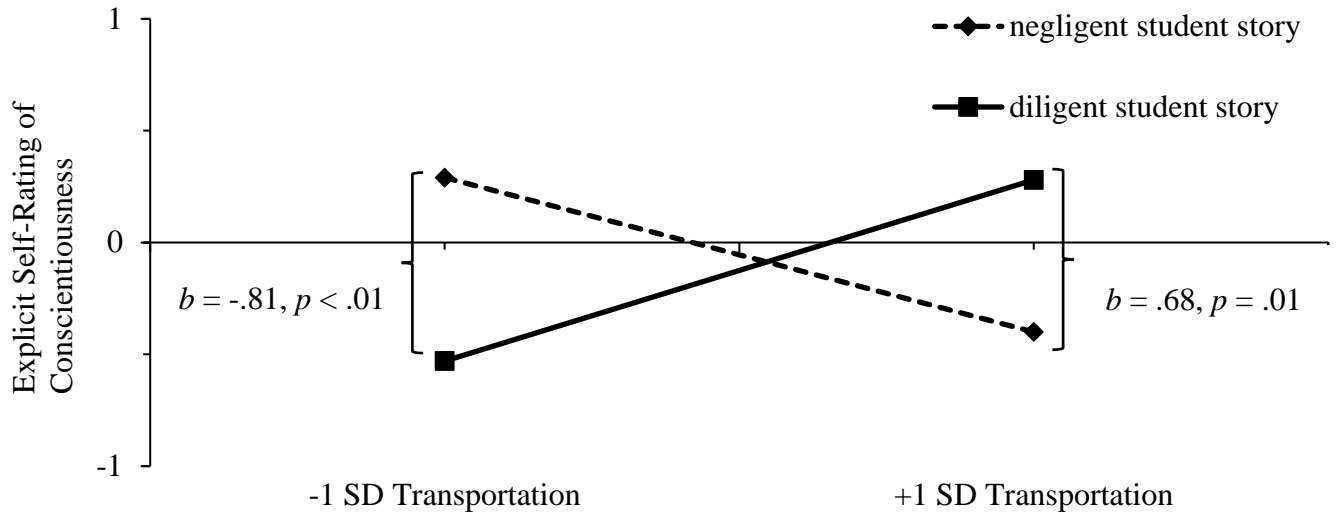
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Figures

Figure 1. Moderation and conditional effects of the experimental stories on explicit self-rating of conscientiousness by transportation.
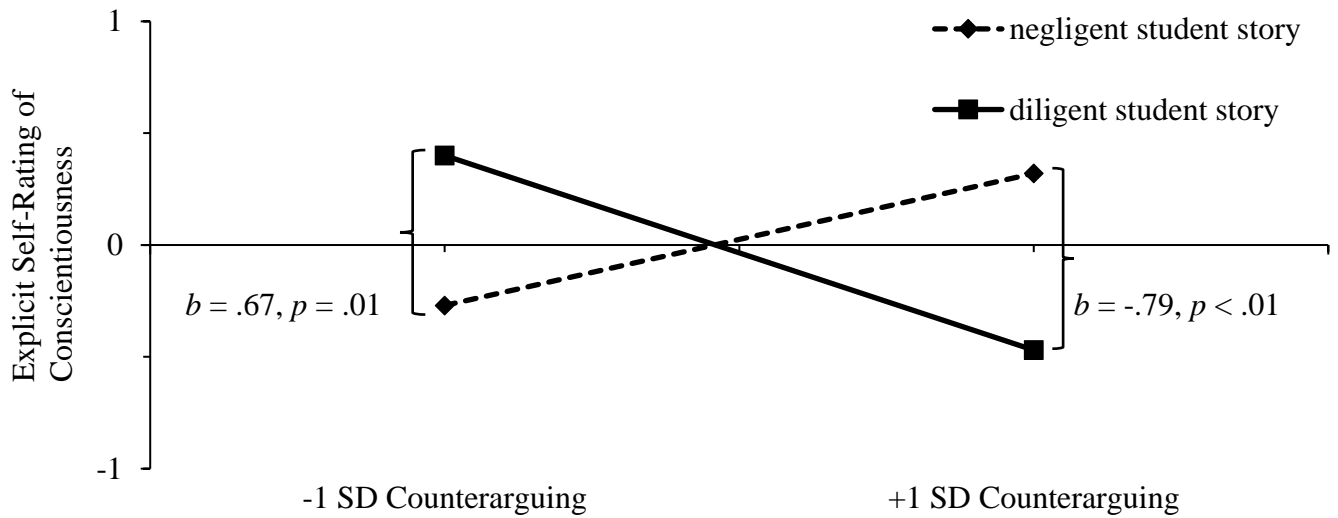

Figure 2. Moderation and conditional effects of the experimental stories on explicit self-rating of conscientiousness by counterarguing.
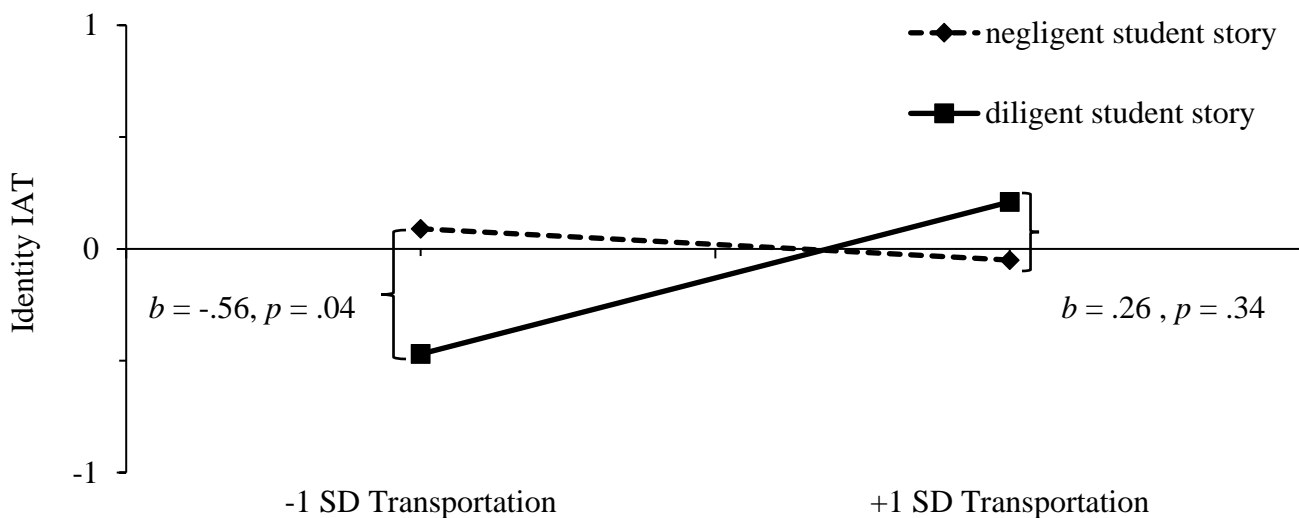
Figure 3. Moderation and conditional effects of the experimental stories on the identity IAT by
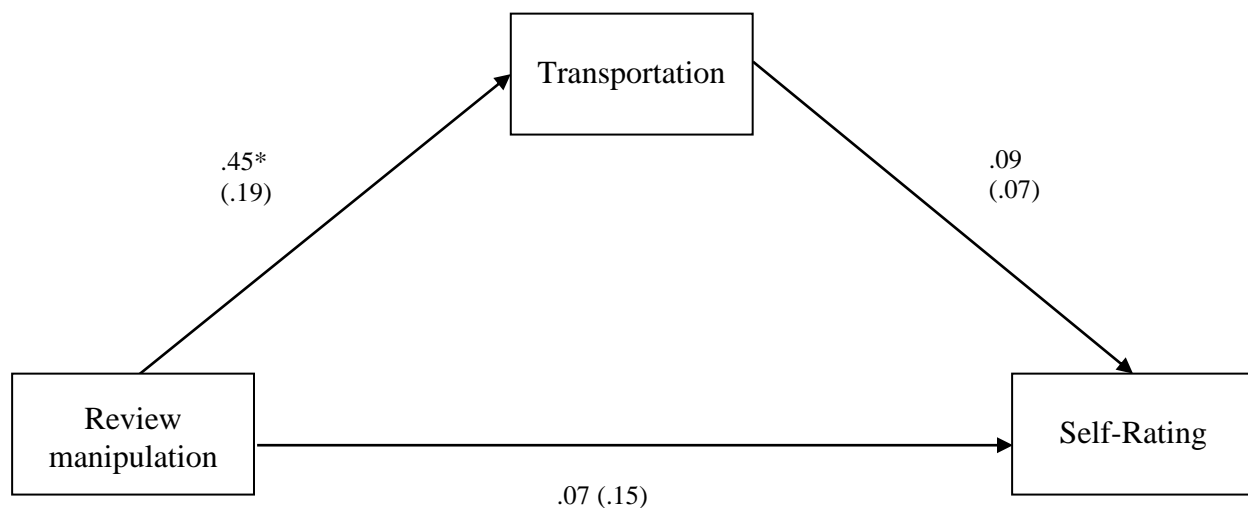
transportation (with excluding two outliers).

Figure 4. Mediation model for Transportation as mediator (Hayes, 2013, model 4); *p < .05