Reversal of Attitude: The Influence of Counter-Attitudinal Information

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Abstract: Problem statement: Research has shown that both positive and negative information can alter a neutral attitude towards an unknown person, with negative information having, in general, a larger impact. Though this positive-negative asymmetry has received considerable attention, it has, to our knowledge, not been tested in more current and powerful social media, such as *youtube*. Although attitudes are not fixed, literature on the reversal of a recently established attitude by providing counter-attitudinal information is sparse. Therefore, the main aims of the present study were to examine positve-negative asymmetry in attitude formation using *youtube* fragments and to test the permanence of the establihed attitude by providing counter-attitudinal information. **Approach:** A total of 89 persons received either a positively (P) or a negatively (N) valued *youtube* fragment concerning a neutral target person. Subsequently, half of each group received positive written information (groups PP and NP) regarding the target person; the other half received negative written information (groups PN and NN). **Results:** The results indicate that it is indeed possible to change a neutral attitude using *youtube* fragments, with a larger attitude change after negative than positive material. Textual information reversed this attitude, with an equal effect for positive and negative information. **Conclusion/Recommendations:** It is possible to quickly change an attitude towards a neutral person using *youtube* fragments, this formed attitude can easily be reversed by providing textual counter-attitudinal information. These findings can contribute to gaining a better understanding of the effect of modern social media on attitude formation and its transiency.

Key words: Counter-attitudinal information, positive information, negative information

INTRODUCTION

Attitude and change in attitude is one of the most extensively researched topics among social psychologists. Attitudes are general positive or negative evaluations of someone or something and contain affective, behavioral and cognitive correlates. Attitudes exert a profound influence on information processing including attention, encoding, interpretation and memory,(see for a review Bohner and Dickel, 2011).

Attitudes are not fixed and can be altered by exposure to information. In general, negative information receives more processing and gives a stronger contribution to an impression or attitude than does positive information (Baumeister *et al.*, 2001; Fiske, 1980; but see Peeters and Czapinski, 1990, for a positivity bias). For example, Richey *et al*. (1975) have shown that one negative event about an unknown person is neutralized by presenting five positive events

This positive-negative asymmetry seems to be an evolutionary adaptive response and has been repeatedly confirmed (Baumeister *et al.*, 2001).

Changing a recently formed attitude has received considerably less attention. There is reason to assume that negative counter-attitudinal information, that is providing negative information after initial positive information, has a stronger impact on explicitly changing an attitude than vice.versa For example, Rydell and McConnell (i.e., explicit measures, 2006) carried out a series of experiments in which either a positive or negative attitude towards a fictitious person was established. Subsequently, counter-attitudinal information about this person was provided. Both the positive and negative attitude changed in line with the provided, additional information. However the impact of the negative information on the positive attitude was larger than the influence of the positive information on the negative attitude, confirming the positive-negative asymmetry.

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In most studies that have examined the influence of counter-attitudinal information, learning occurred gradually via presenting peaces of information (e.g., adjectives or behaviors) of a fictitious target person or group (Kerpelman and Himmelfarb, 1971; Rydell and McConnell, 2006). Though this can establish and change an attitude, in day to day reality attitudes towards an unknown person are often formed after one single block of information (e.g., reading a blog or watching a *youtube* fragment). It is indeed possible to establish and change an attitude in such way. In two experiments carried out by Richey *et al.* (1967) adults received written, blocked information about an unknown person. This resulted in a positive or negative attitude towards this target person. Subsequent counter-attitudinal information changed this attitude, with a stronger and more permanent effect when the change was in the negative direction. This indicates that it is possible to establish and explicitly change an attitude using only one single block of written information.

A lot of studies have been carried out to assess the influence of positive or negative information on the formation of an attitude towards an initial neutral person or group. However, only a few studies have examined a subsequent change in attitude after this initial formation (Kerpelman and Himmelfarb, 1971; Richey *et al.*, 1967; Rydell and McConnell, 2006). Of these studies only one study presented the information block wise. Therefore, the main aim of the present study is to extend the knowledge on attitude establishment and subsequent change in attitude using a blocked information paradigm. Additionally, the formation of attitude was accomplished using a more current and powerful medium, namely film fragments obtained from *youtube* (www.youtube.com). Based on previous studies it was expected that negative information would have a larger impact on the initial attitude formation towards a neutral person than positive information. A similar positive-negative asymmetry was expected after providing counter-attitudinal information about the target person.

MATERIALS AND METHODS

Participants: A total of 89 participants was recruited. (27 males, 62 females, age range 18-26 years) Exclusion criteria were: studying psychology and/or reported anxiety problems. The first exclusion criterion was set as psychology students might identify the main aim of the research. The second criterion was applied as the negative film fragment (see below) might enhance the anxiety problems. The experiment was carried out in line with the declaration of Helsinki and approved by local ethical committee of the Faculty of Psychology and Neuroscience, at the Maastricht University (ECP-205-R).

Experimental design: Figure 1 gives an overview of the experimental conditions and procedure. A split-plot design was used, with two between-subjects factors and one within-subjects factor. The between-subjects factors were the emotional valence of the film fragments (positive, P, or negative N) and the emotional valance of the written information (positive, P, or negative, N). The within-subjects factor was time of the measurement (3 levels: before onset of the attitude manipulation, after the film and after the written information). This design resulted in four experimental conditions: PP, PN, NP and NN. Participants were randomly assigned to one of the four conditions resulting in the following distribution: 21 participants (6 men and 15 women) in the PP condition, 24 participants (7 men and 17 women) in the PN condition, 23 participants (8 men and 15 women) in the NP condition and the NN condition consisted of 21 participants (6 men and 15 women).
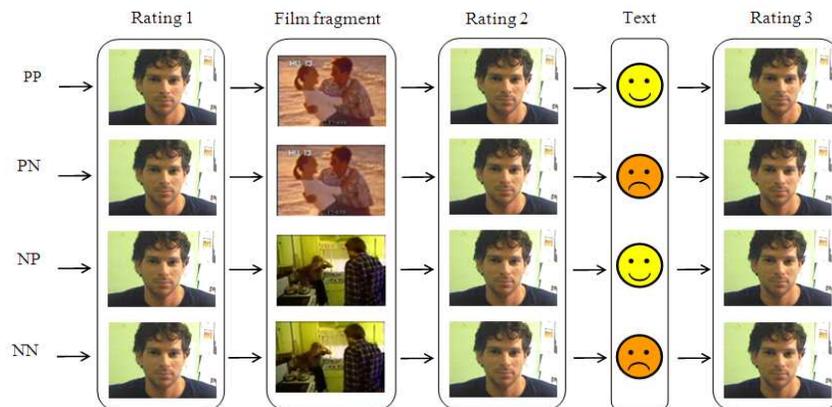

Fig. 1: Overview of the four experimental conditions and procedure

Questionnaire: The questionnaire used for the present experiment was printed out on paper and contained five visual analogue scales, VAS and four open-ended questions. The length of each VAS scale was ten centimeters and ranged from very negative to very positive (i.e., Very unkind-Very kind, Very threatening-Very safe, Very asocial-Very social, Very negative-Very positive and Very unreliable-Very reliable). Scores differentiated between 0.0 indicating highly negative and 10.0 representing highly positive. The open-ended questions referred to the age, civil status, profession and nationality of the target person on the picture. Only the scores on the 'Very negative-Very positive' VAS scale were used in the data analyses of the present study. The intention of the remaining VAS scales was to distract the participants from the main aim of this study; the open-ended questions were included to check experimental commitment (see below).

Picture target person: A neutral photo of a male was printed out and served as target picture (see also Fig. 1). The picture was blurred in order to match the persons in the *youtube* fragments (see 2.3.3). A separate pilot study indicated that the target person was rated as neutral.

Youtube film fragments: Two different *youtube* fragments were used, a positive and a negative fragment. The content of the positive film fragment (http://www.youtube.com/watch?v=q2tDTvJcN_Q) was a couple making a romantic walk on the beach. The negative *youtube* film (http://www.youtube.com/watch?v=ZobGvCcitOQ) contained scenes from a man who is physically abusing his wife. Both films were edited and recognizable face to face shots were removed. The physical appearance of both males was highly similar to the target person. The positive and negative film had each a length of 49 seconds and appeared to be home-made videos.

Textual information: Four different printed texts were used. Two texts were based on the positive film fragment: one text with a positive content (PP condition) and one text with a negative content (PN condition). Similarly, two different texts were used after the negative film fragment: one with a positive (NP) and one with a negative (NN) content. The texts provided additional information about the target person. In the positive informative texts, the participants were informed that the man either asked his girlfriend to marry him (PP condition) or was an actor in commercials against domestic violence (NP condition). In the negative informative texts, the participants were informed that the target person was either beating up

his girlfriend after they returned home (PN condition) or had been abusing his wife since several months (NN condition). Note that the negative texts were highly similar and contained similar elements (e.g., criminal record of physical abuse, same profession as a car mechanic and the woman in the video became permanently handicapped due to the physical abuse). Similarly, both positive texts contained a large overlap in information (e.g., man is an actor, donating a large sum of money to a benefit against domestic violence). Additionally, all four texts also contained the name, civil status and profession of the target person. The open-ended questions about civil status and profession were used to check experimental commitment.

Procedure: The participant received written information about the general task procedure and signed an informed consent before onset of the experiment. The task consisted of three parts: a baseline, attitude acquisition and attitude change.

Baseline: A practice VAS scale was presented before onset of the baseline rating. On this practice scale the participant had to indicate the temperature of that day, extremely cold (outer left end) or extremely hot (outer right end). Next, the picture of the target person was offered. The participant was asked to score this person on the questionnaire described above (rating 1).

Attitude acquisition: After the initial rating, half of the participants received the positive fragment (i.e., PP and PN groups), whereas the other half received the negative *youtube* fragment (i.e. NN and NP groups). Before onset of this fragment the participants were informed that they were going to watch a fragment of the target person. The participant was asked to score the target picture again after the fragment (rating 2).

Attitude change: After rating 2, either a positive (PP and NP groups) or a negative (NN and PN groups) text was provided and, subsequently, the target person was rated once more (rating 3). After the participant finished the experiment, the experimenter asked the participant if he/she noticed something particular about the person in the picture and the person in the film and, if so, to write this down (e.g., mismatch between target person and person in the film fragment).

Statistical analyses: Only the data of the valence scale (negative-positive) were incorporated into the data analyses (Note that the other measures kindness, reliability, safety and sociability yielded identical results). Valence was expressed in centimetres, with a

low score indicating a negative valence and a high score indicating a positive valence (range 0.0-10.0 cm). The ratings were analyzed using a General Linear Model (GLM) repeated measures with time as within-subjects factor (rating 1, 2 and 3) and group (PP, PN, NP and NN) as between-subjects factor.

Possible initial group differences regarding gender and group size were analyzed nonparametrically using a Kruskal-Wallis test and Chi-square, respectively. Differences concerning age were analyzed using an ANOVA. Effect sizes were expressed as partial eta squared ($p\eta^2$). In case of violations of sphericity, Greenhouse Geisser corrections were made. Bonferroni corrections were made in case of multiple or pairwise comparisons. The rejection criterion was set at $p < 0.05$.

RESULTS

Demographic variables: Seven persons were removed from the data analyses as they explicitly reported a mismatch between the person at the picture and in the film, even though they did score he target person as if he matched the person in the film fragment. The data of remaining 81 participants were included in the data analyses. No differences between the four experimental conditions were observed regarding age, $F(3, 78) = 1.21$, $p = 0.31$, group size, $X^2(3) = 1.02$, $p = 0.80$, or gender, $X^2(3) = 0.30$, $p = 0.96$. Regarding compliance, 82.9% of the civil status and profession was correctly answered during the open-ended questions at rating 3, with no difference between the conditions, $X^2(3) = 6.37$, $p = 0.10$.

Baseline: Rating 1: Table 1 gives an overview of the three ratings per group. No significant difference between the experimental conditions was observed at rating 1, $F(3, 78) = 1.38$, $p = 0.26$. The mean rating did not significantly differ from the neutral value five, one-sample t-test, $t(81) = 1.18$, $p = 0.24$. This indicates that at the onset of the experiment the picture was indeed rated as neutral.

Influence film on attitude: Rating 2: Figure 2 depicts the mean ratings of the four experimental conditions during the entire experiment. A GLM repeated measures with time (rating 1 and rating 2) as within-subjects factor and group (PP, PN, NN and NP) as between-subjects factor was carried out. This analysis revealed a significant time x group interaction, $F(3, 78) = 55.31$, $p < 0.001$, $p\eta^2 = 0.68$. This interaction was analyzed further using separate ANOVAs on rating 1 (see Rating 1) and 2 with group as factor. These analyses revealed only a main effect of group on rating 2, $F(3, 78) = 65.97$, $p < 0.001$. Post Hoc Tests showed

that the negative film conditions (NN and NP) did not differ, $p = 1.00$. Likewise, no difference was observed between the positive film conditions (PP and PN), $p = 0.23$. There were however significant differences between the experimental conditions which did not see the same film. Experimental conditions PP and PN gave higher ratings than NP and NN, $ps < 0.001$.

To assess a possible differential impact of the negative and positive film on the ratings, positive-negative asymmetry, difference scores were calculated (absolute value of rating 2 minus rating 1). An ANOVA yielded a significant effect of group, $F(3, 85) = 7.69$, $p < 0.001$. Post Hoc tests indicated that the groups that received the negative movie (NN and NP groups) showed a larger change in attitude than did the positive groups (PP and PN groups), $ps < 0.05$. In sum these results indicate that the attitude changed in line with the valence of the film fragments, with a larger impact of the negative fragment compared to the positive fragments, indicating positive-negative asymmetry.

Influence of textual (counter-attitudinal) information: Rating 3: The influence of textual information on the established attitude was analyzed using a GLM Repeated Measures with time (rating 2 and rating 3) as within-subjects factor and group (PP, PN, NN and NP) as between-subjects factor. This analysis revealed a time x group interaction, $F(3, 85) = 102.40$, $p < 0.001$, $p\eta^2 = 0.80$.

Table 1: Mean ratings (+SD) of the experimental conditions

Group	Rating 1	Rating 2	Rating 3
PP (n = 20)	4.60 (1.87)	6.49 (2.07)	7.33 (2.11)
PN (n = 23)	5.60 (1.54)	7.29 (2.11)	2.25 (1.76)
NN (n = 17)	5.33 (1.70)	1.12 (.90)	0.71 (0.76)
NP (n = 22)	5.30 (1.55)	1.75 (1.55)	6.84 (2.00)

Note: P and N indicate positive and negative, respectively. First character indicates the valence of the youtube film fragment; second character represents the valence of the textual information
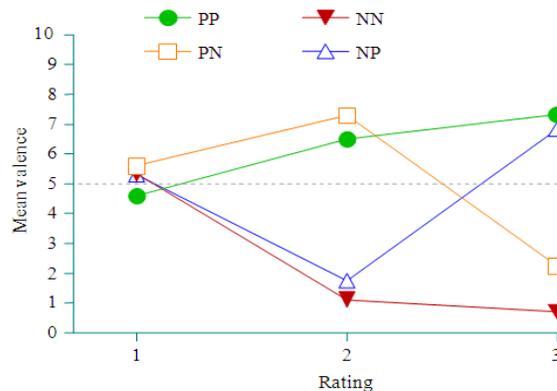

Fig. 2: Mean ratings across the experiment of the four experimental conditions

This interaction was analyzed further with separate ANOVAs on rating 2 (see Rating 2) and rating 3. For both analyses a main effect of group was observed, $F_s(3, 85) > 65.97$, $ps < 0.001$. However, the group differences did vary across ratings. At rating 2 the group differences can be summarized as follows: PN = PP > NP = NN. At rating 3 all groups significantly differed from each other ($ps < 0.05$), except for the PP and NP group ($p = 1.00$). This pattern can be summarized as follows: PP = NP > PN > NN.

To compare the influence of the positive and negative text on the change in attitude, an absolute difference score between rating 3 and rating 2 was calculated. This differences score was included as dependent variable in an ANOVA and group was included as factor (PP, PN, NP and NN). The ANOVA revealed an effect of group, $F(3, 78) = 33.22$, $p < 0.001$. Post Hoc tests indicated that the change in attitude was larger for the groups that received counter-attitudinal information (NP and PN) than for the groups that received information in line with the film fragments (PP and NN), $ps < 0.001$. However, no difference in change of attitude was observed after presenting positive or negative counter-attitudinal information (PN versus NP), $p = 1.00$. These amount of change results can be summarized as PN = NP > PP = NN. This indicates that the negative information did not have a larger impact on a change in attitude than did the positive information.

Differential effect film fragments versus textual information: In a last analysis the influence of visual versus textual information was assessed. To this end, only the difference scores of the NP and PN groups were included. In an ANOVA the change in attitude after positive visual information (group PN rating 2 minus rating 1) versus positive textual information (group NP rating 3 minus rating 2) was examined. Likewise, the effects of negative visual (group NP rating 2 minus 1) and negative textual (group PN rating 3 minus 2) information was incorporated in the analysis. This analysis indicated that in case of a positive change in attitude, textual information had a larger impact (mean change: 5.09, SD: 2.35), $F(1, 43) = 22.10$, $p<0.001$, than did visual information (mean change: 2.25, SD: 1.64) on a change in attitude. In case of negative change in attitude, textual information also tended to result in a stronger change in attitude (mean change: 5.04, SD: 2.67) than presentation of visual information (mean change: 3.69, SD: 1.89), though this difference just failed to reach significance, $F(1, 43) = 3.82$, $p = 0.057$.

DISCUSSION

The main aim of the present study was to examine the influence of positive and negative information on the establishment of an attitude and subsequent change in this established attitude. For this purpose participants rated an, initially neutral, picture of the target person. Next, either a positive (P) or negative (N) film fragment was linked to this person, resulting in a respectively, more positive or negative attitude towards the target person. Then textual information about this person was provided, that either confirmed the attitude (PP or NN group) or contained counter-attitudinal information (PN or NP group). Indeed the attitude either remained positive (PP), remained negative (NN) or switched (PN or NP).

Not only are these results in line with previous research on attitude establishment and change in attitude, they also indicate that film fragments stemming from *youtube* can contribute to the establishment of an attitude towards a neutral person. As observed in previous research, negative information had a larger impact on the attitude formation than did positive information (Baumeister *et al.*, 2001; Kerpelman and Himmelfarb, 1971; Richey *et al.*, 1975; but see for a postive bias Peeters and Czapinski, 1990). However, contrary to our expectations and previous results (Richey *et al.*, 1967; Rydell and McConnell, 2006), this positive-negative asymmetry was not observed by presenting textual counter-attitudinal information. The impact of positive information on changing a negative attitude was just as effective as the impact of negative information on a positive attitude. Even more, the additional positive information resulted in an attitude that did not differ from the group that only received positive information about the target person, whereas providing additional negative information did not decrease the valence of the target to the level of the group that only received negative information. In the next paragraphs we will provide several explanations for the absence of this second asymmetry (i.e. after providing counter-attitudinal information) and the influence of visual (film fragments) versus verbal (textual) information.

One explanation for the absence of the second positive-negative asymmetry is that the valence of the film fragments and textual information was not equal, resulting in differential effects on attitude change. However, if any, we expected the *youtube* fragments to have a larger impact. Several researchers have indicated that the recall and recognition of visual information is superior to that of textual information (Childers and Houston, 1984; Paivio and Csapo, 1973) and that visual

information is more effective in (positively) changing an attitude than verbal information (e.g., advertisements Mitchell and Olson, 1981). This was not what we observed. Textual information had a significantly larger effect on the positive change in attitude and a marginally larger effect in case of a negative change.

A second explanation is that second-provided information has a more profound effect than the first-provided information (Miller and Campbell, 1959). This recency effect might have resulted in an attitude conform the last-provided information. However; this does not explain that the second information has larger impact on the change in attitude compared to the first-presented information. A more logical explanation is that more elaborate processing will result in a stronger attitude or change in attitude. One could argue that reading the textual information resulted in more elaborate processing than watching a 49 seconds film fragment. Especially in this case, with more elaborate processing succeeding low levels of processing, a strong change in attitude is expected (Haugtvedt and Wegener, 1994). This might explain the stronger change in attitude after the textual information compared to the visual information. However, this does not explain the absence of a positive-negative asymmetry on the last rating.

Another possible explanation for the absence of asymmetry can be found by the amount of change that was possible after the initial establishment of the attitudes. That is, the offset at rating 2 was not equal. The initial change in attitude was larger in the NP than PN group, resulting in a more negative offset. This lower offset leaves more space for change, resulting in a stronger change in attitude. When we compare the final ratings with the initial neutral ratings, we do observe, although not significant, a positive-negative symmetry. That is, the decrease in the PN group from rating 1 to rating 3 tends to be larger than the increase in the NP group, $F(1, 43) = 3.07$, $p = 0.087$. However, no group difference was observed comparing the absolute deviation from the neutral value 5 at rating 3 (mean PN: 2.82 below 5; mean NP: 2.36 above 5), $F(1, 43) = 1.05$, $p =. 31$. Neither did including rating 2 as a covariate change this pattern, $F < 1$.

Of course the present study has several limitations. First, we are aware that the order of the information presentation was not counterbalanced. This makes it difficult to separate order and time effects from type of medium (film versus text). Additionally, the information was provided within a short period of about 15 minutes. This time frame might have distorted memory and therefore attitude, consolidation processes. Initially memories are labile and sensitive to disruptions

(Nader, 2003). Especially in the time window we used, additional information can easily interfere with the (re)consolidation of the information (Schiller *et al.*, 2010). For future experiments we would recommend counterbalancing the order of type of information (visual and verbal), separating the several phases at least 24 hours to enhance memory consolidation and to include a follow up to examine the persistence of the effects observed.

Although the present study is not flawless, it does indicate that both negative and positive *youtube* fragments can easily change an explicit neutral attitude with the firmer having a larger effect on this change. This established attitude can be altered by providing counter-attitudinal textual information. Blocked information seems to be as effective in changing an (existing) attitude as gradually presented information. Therefore, it might be useful to (directly) provide a block of elaborate counter-attitudinal information to reverse unwanted attitudes.

CONCLUSION

To conclude, *youtube* fragments can quickly change an attitude towards a neutral person. This formed attitude can easily be reversed by providing counter-attitudinal information. These findings can contribute to gaining a better understanding of the effect of modern social media on attitude formation and its transiency.

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