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Research article

When compensation guides inferences: Indirect and implicit measures of the compensation effect

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Abstract

Research has found the dimensions of warmth and competence to be subject to a negative relation when two targets are compared, a phenomenon which has been called the compensation effect. However, all the available empirical evidence rests on direct traits ratings. The aim of the present work is to test whether compensation is merely a response strategy or whether it has larger implications. In two experiments, we show that the compensation effect is also obtained on indirect measures that rely on attribution theory (Experiment 1) and on implicit measures derived from the Linguistic Category Model (Experiment 2). Results are discussed in terms of the importance of the compensation effect and its consequences on the interpretation of newly acquired information about social targets. Copyright © 2010 John Wiley & Sons, Ltd.

Research on impression formation and group stereotyping has shown that two fundamental dimensions underlie social perception, i.e., warmth and competence (Abele & Wojciszke, 2007; Judd, Hawkins, Yzerbyt, & Kashima, 2005; Fiske, Cuddy, & Glick, 2007). These two dimensions have traditionally been conceived of as being positively related (Rosenberg, Nelson, & Vivekananthan, 1968), a relation that is at the heart of the classical halo effect (Thorndike, 1920). More recently, models of group perception (Fiske et al., 2007) and person perception (Abele & Wojciszke, 2007) have argued that the two dimensions may well be orthogonal. Our recent work shows that these two dimensions may also be negatively related. Both correlational and experimental evidence shows that this is especially likely to be the case when social perceivers are comparing two social targets to each other (Judd et al., 2005; Kervyn, Yzerbyt, Demoulin, & Judd, 2008; Kervyn, Yzerbyt, Judd, & Nunes, 2009; Yzerbyt, Kervyn, & Judd, 2008; Yzerbyt, Provost, & Corneille, 2005). This tendency to differentiate two social targets in a comparative context by contrasting them on the two fundamental dimensions in a compensatory direction has been called the compensation effect.

In one illustrative study, Yzerbyt et al. (2005) studied the stereotypes that French and Belgians hold about themselves and about each other. Both groups agreed that French are more competent than warm and that Belgians are warmer than competent. Using an experimental approach, Judd et al. (2005, Experiment 1) tested this compensation effect by presenting their participants with behaviors allegedly performed by members from two different groups. Whereas one group was presented as competent, the other was shown to be incompetent. Importantly, both groups were ambiguous on the warmth dimension. Participants' impressions revealed the presence of compensation in that the competent group was rated as colder than the incompetent group. Judd et al. (2005, Experiment 2) replicated this experiment using a warm and a cold group, both groups being ambiguous on competence. As predicted, the cold group was rated as more competent than the warm group (see also Kervyn et al., 2009; Yzerbyt et al., 2008).

Interestingly, the fact that compensation has repeatedly been found for artificial targets, be they groups (Judd et al., 2005; Kervyn et al., 2009; Yzerbyt et al., 2008) or individuals (Judd et al., 2005), argues against an interpretation of the compensation effect in terms of existing stereotypic expectations. Along similar lines, the features associated with a given target group very much depend on the comparison target (Kervyn et al., 2008), emphasizing the fluid nature of stereotypic views Of course, it may be that people entertain some sort of global expectation that the characteristics associated with each one of the two comparison groups should balance each other out evaluatively. Clearly, the finding that compensation emerges only for the two dimensions of warmth and competence but not for any pair of dimensions argues against this possibility and underscores the unique nature of the compensatory relationship between warmth and competence (Yzerbyt et al., 2008). It is simply not the case that a general rule is at work by which the superiority of one group

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on some dimension of comparison should result in the superiority of the other group on any other dimension.

The present research aimed at further understanding the importance and pervasiveness of the compensation effect involving warmth and competence. Our first goal was to test whether and how compensation affects the interpretation of new information about social targets. Our hypothesis is that once a compensated impression of the two targets has been formed, participants will be biased in the way they interpret new information. Our second, related, goal was to test whether we find compensation using indirect and possibly also implicit measures since all the research conducted so far has required participants to rate the targets on a series of explicit trait rating scales. To examine this issue, we used causal attributions (Gilbert, 1998) (Experiment 1) as an indirect measure of compensation and the level of abstractness of language as defined by the Linguistic Category Model (LCM; Semin & Fiedler, 1988) (Experiment 2) as an implicit measure. If compensation emerges on such measures, this would suggest that the effect has consequences for the way new information is interpreted and that it is not a mere response strategy. Indeed, following the distinction made by De Houwer and Moors (2007), although these measures are not implicit as far as their measurement procedure is concerned (respondents are in full control of the answer that they produce), the measurement outcome is implicit (what is actually measured remains unknown to respondents).

CAUSAL ATTRIBUTION AND LANGUAGE ABSTRACTNESS

The measures that we use in the present experiments are based on two phenomena that have been studied extensively by social psychologists: causal attribution and the LCM. Researchers have devoted considerable time and energy understanding the processes involved in causal attribution (for reviews, see Gilbert, 1998; Jones, 1979; Trope, 1986). A key message emerging from the literature is that if an action is seen as informative of the kind of person an actor is, then that action will be attributed dispositionally. In other words, perceivers' attributions measure the extent to which people consider newly acquired information about some social target as more or less revealing of their deep nature (Yzerbyt, Rogier, & Fiske, 1998). As such, attributions that are made about actions can provide an indirect measure of compensation if those actions that are consistent with compensation are attributed more dispositionally while those that are inconsistent with compensation are attributed less dispositionally.

The work on the LCM (Semin & Fiedler, 1988) similarly examines how perceivers deal with their surrounding social environment but it does so by looking at the language that perceivers use to communicate what they observe. Specifically, the LCM distinguishes 4, increasingly abstract, categories of language, namely descriptive action verbs (DAV), interpretative action verbs (IAV), state verbs (SV), and adjectives (ADJ). Research on the LCM has shown that perceivers use the more abstract categories to convey the idea that the observed behavior reveals an inherent and permanent characteristic of the actor (Semin & Fiedler, 1988).

In one illustrative study, Maass, Salvi, Arcuri, and Semin (1989) provided evidence that positive (versus negative) behaviors performed by ingroup members were described in more abstract (versus concrete) terms whereas the reverse was true for behaviors performed by outgroup members. According to the authors, such a linguistic intergroup bias contributes to the maintenance of a positive view of the ingroup and a negative view of the outgroup because more abstract descriptions of behaviors imply that they are caused by enduring features of the actor. Thus positive and negative behaviors are more revealing of ingroup and outgroup members, respectively.

In a recent extension of this work, Wigboldus, Semin, and Spears (2000; Wigboldus, Spears, & Semin, 2005) argued that it is not merely the valence of the behavior that prompts different linguistic descriptions but rather observers' expectations. If the behavior corresponds to (contradicts) what observers expect of the target group, then this behavior will be described in more abstract (concrete) terms. For example, even though athletic achievements of African-Americans are positive behaviors performed by outgroup members, Whites tend to describe them in abstract terms because being good in sports is something that is expected of African-Americans. Importantly for us, these linguistic biases have been shown to have a subtle but powerful impact on the representation constructed by the recipients of the communication. Indeed, Wigboldus et al. (2000) showed that the impact of communicated stereotypic information on perceivers' impressions is mediated by the language abstraction of the message. And these linguistic biases have been shown to operate in an implicit fashion (Semin & de Poot, 1997) and to be related to other implicit, unobstrusive, measures (Franco & Maass, 1996; von Hippel, Sekaquaptewa, & Vargas, 1997).

OVERVIEW OF THE EXPERIMENTS AND HYPOTHESES

In both experiments, participants were presented with behavioral information about two groups and asked to form and write down their impression about them. Whereas one group was high and the other low on a manipulated dimension (warmth or competence), they were both ambiguous on the other dimension. Participants then received new written behaviors (Experiment 1) or pictures of new behaviors (Experiment 2) and had to rate potential causes of each of the behaviors (Experiment 1) or to choose which among a series of sentences best described the behaviors (Experiment 2). Importantly, the behaviors used in the attribution and LCM measures were new behaviors that were presented after participants have been introduced to the two groups (through a first and different set of behaviors). The focus here is on how the impressions built by participants affect the attributions for those new behaviors and the language used to describe those new behaviors.

In Experiment 1, we hypothesized that, for the manipulated dimension (the dimension on which one group was presented as high and the other as low), positive behaviors should be attributed more dispositionally for the high group than for the low group. And, for the unmanipulated dimension (the

dimension on which equal, balanced information was given for both groups), the compensation effect should lead to more dispositional attributions for positive behaviors for the low group than for the high group. In Experiment 2, we also expected a compensation effect on the unmanipulated dimension to be manifested on the language used to describe the behaviors. Specifically, positive behaviors on the unmanipulated dimension should be described more abstractly for the low group than for the high group.

EXPERIMENT 1

Method

Participants

Forty-five undergraduates at the University of Colorado, Boulder, took part in the experiment for partial course credit. Participants were run in parallel sessions of four to six participants but were individually randomly assigned to conditions.

Procedure and Design

Upon their arrival to the laboratory, participants were introduced to two groups, the Green and the Blue group. They received a deck of 20 cards in random order, 10 for each group. Each card mentioned the group name along with one behavior allegedly performed by one of its members. The behaviors were taken from Judd et al. (2005) who selected behaviors that were simultaneously valenced (positive or negative) on one dimension and neutral on the other dimension. It is interesting to note that Judd et al. (2005) report a positive correlation between the competence and warmth ratings of the behaviors in the pretest. In other words, a positive correlation was weakly present in the behavioral information conveyed about the groups. The high (low) group was described by means of 6 positive (negative) behaviors on the manipulated dimension, as well as 2 positive and 2 negative behaviors on the unmanipulated dimension. We counterbalanced which specific behaviors (both positive and negative) on the unmanipulated dimension were assigned to the high and low groups, thus assuring that across participants all behaviors on that dimension were associated equally often with both groups.

Participants were instructed to read all the cards one at a time and to sort them into two piles, one for each group. Then, they were asked to read all the behaviors of each pile a second time. They then gave the cards to the experimenter and were asked to write down their impression of each group in about 10 lines. They were told that these written impressions would be shown to another participant who would not have access to the specific behaviors of the group members. They were thus asked to give a complete and detailed impression of both groups, so that the other participant could know what the group was like. This was done to ensure that the participants would integrate all the information given about each group into meaningful impressions. Participants then completed the trait-rating task. Finally, participants did the attribution task.

Either competence or warmth was manipulated between participants. The group valence was manipulated within participants in that each participant was presented with a high and a low group. There were several counterbalancing factors: the group (Green or Blue) that came first throughout the procedure, the name of the high and the low group (Green or Blue), the set of unmanipulated behaviors, and the behaviors used for the attribution task for the high and the low group. Crossing these 4 factors created 16 conditions for each 1 of the 2 levels of the dimension manipulation. Participants were therefore randomly assigned to 1 of these 32 conditions.

Dependent Variables

In the trait-rating task, participants rated each group on two positive competence traits (capable and skilled), two negative competence traits (lazy and disorganized), two positive warmth traits (caring and sociable), and two negative warmth traits (unfriendly and insensitive). Answers were given on a 9-point scale going from -4 (= totally disagree) to 4 (= totally agree). The eight traits were presented in a random fixed order.

For the attribution task, participants were presented with four new behaviors for each group and asked to indicate, considering what they knew about the group, the extent to which each behavior had been caused by the actor's dispositions (''because this is the sort of person X is'' and ''because of X's stable and long-lasting personality traits'') on a 9-point scale going from 1 (not at all) to 9 (totally). We selected eight new behaviors, two positive and two negative of warmth and of competence that were adapted from Judd et al. (2005) and were different from the ones used for group presentation. We formed two sets of behaviors, each consisting of one positive warmth, one positive competence, one negative warmth, and one negative competence behavior. The order in which the four behaviors were presented was always the following: first the positive behavior on the manipulated dimension, then the negative behavior on the manipulated dimension, then the positive behavior on the unmanipulated dimension, and, finally, the negative behavior on the unmanipulated dimension. We counterbalanced which set of behaviors was used in the attribution task for which group so that, across participants, each attribution behavior was seen as often for the high group as for the low group.

Results

Traits Ratings

For each group, we computed one score for each dimension by averaging the scores of the two positive traits and the two negative traits (reversed). We analyzed the scores separately for the manipulated and for the unmanipulated dimension by means of a 2 (group: High vs. Low) by 2 (dimension manipulated: Competence vs. Warmth) ANOVA with the first factor varying within participants and the second between them. As far as the scores on the manipulated dimension were concerned, results showed a main effect of group,

$F(1,43) = 430.76$, $p < .0001$, that was qualified by a group by manipulated dimension interaction, $F(1,43) = 5.51$, $p < .05$. Unsurprisingly, the groups were judged to be very different on the manipulated dimension. Additionally, this difference was larger when warmth was manipulated ($M = 3.51$ and -2.61, for the high and the low group, respectively) $F(1,21) = 279.69$, $p < .0001$, than when competence was manipulated ($M = 3.46$ and -1.42, for the high and the low group, respectively), $F(1,22) = 162.9$, $p < .0001$.

Turning to the scores on the unmanipulated dimension, the analysis revealed the presence of a main effect of group, $F(1,43) = 27.28$, $p < .0001$. Confirming the presence of a compensation effect, the high group ($M = -0.01$) was rated lower than the low group ($M = 1.71$) and this effect did not differ as a function of which dimension was manipulated ($p > .2$).

Attribution Task

For each group, we computed one dispositional attribution score for each dimension by averaging the attribution scores of the positive behavior and of the negative behavior (reversed). Thus higher scores indicate that the positive behavior on a dimension was more dispositionally attributed than the negative behavior.

We analyzed the scores separately for the manipulated and for the unmanipulated dimension with a 2 (group: High vs. Low) by 2 (dimension manipulated: Competence vs. Warmth) ANOVA with the first factor varying within participants and the second between them. As expected, the analysis for the manipulated dimension revealed a group main effect $F(1,43) = 161.98$, $p < .001$ (see Table 1), such that the tendency to make more dispositional attributions for positive behaviors than negative ones was more true for the high group than for the low group. This interaction was not moderated by the manipulated dimension factor, $F(1,43) = 2.08$, *ns*.

The same analysis for the scores of the unmanipulated dimension revealed the presence of a group main effect, $F(1,43) = 12.35$, $p < .001$ in the opposite direction. Again it was the case that more dispositional inferences were made for positive than negative behaviors, but in this case this was more true for the low group than the high group, in line with our compensation hypothesis (see Table 1).

Discussion

The traits ratings replicated the compensation effect (Judd et al., 2005; Yzerbyt et al., 2008). The warm group was rated as less competent than the cold group and the competent group was rated as colder than the incompetent group. More importantly, a compensation effect was also observed in the dispositional attributions made about the new behaviors of each group. Competent behaviors were attributed more dispositionally for the cold group than for the warm group. And warm behaviors were attributed more dispositionally for the incompetent group than for the competent group.

To sum up, the trait ratings indicate that participants saw a competent and cold group on the one hand and a warm and incompetent group on the other. Their dispositional attributions reveal that new behaviors were attributed to stable and internal dispositions of the group members when they matched the impression of the group. When the exact same behaviors were presented for the other group, then participants were much less prone to make dispositional attributions. These results confirm that compensation not only affects explicit trait ratings but also indirect attribution measures. In light of the fact that the pretest of the behaviors revealed the presence of a positive relation between the two dimensions, we can safely conclude that it is not the material used that led to the observed pattern in ratings and attributions.

Table 1. Dispositional attribution scores as a function of dimension, and group (Experiment 1)

	Dimension			
	Manipulated		Unmanipulated	
Group	High	Low	High	Low
Manipulated dimension				
Competence	6.87	3.51	4.78	5.59
Warmth	7.08	2.86	4.91	5.99

EXPERIMENT 2

In order to make our measure of compensation even more unobtrusive, Experiment 2 relied on a procedure developed by Geeraert, Yzerbyt, Corneille, and Wigboldus (2004) and based on the LCM. Using language abstraction as our dependent variable was most appropriate for our two objectives. First, those linguistic biases have been shown to lead to stereotype maintenance (Karpinski & von Hippel, 1996) and communication effects (Wigboldus et al., 2000). Second, language abstraction is widely seen as an implicit measure (Von hippel et al., 1997; Wigboldus et al., 2000) and has been shown to be closely related to other implicit measures (Franco & Maass, 1996). Moreover, to make sure that the effect observed on the implicit measure did not require that participants first rate the groups on an explicit measure, we dropped the trait rating task in this study.

Method

Participants, Procedure, and Design

Fifty-five undergraduates at the catholic University of Louvain took part in the experiment for partial course credits. They were run in parallel sessions involving up to four participants (randomly assigned to conditions). The design and procedure were the same as in Experiment 1 with the exceptions that the groups were presented and the measures taken on a computer using E-prime, that trait ratings were not measured, and that our dependent measure was different. Specifically, the dependent variable was the LCM rating of a series of eight pictures. These pictures presented eight new behaviors for each group (two positive competence, two negative competence, two positive warmth, and two negative warmth pictures). As in Experiment 1, there were a total of 32

different conditions as a result of crossing our manipulation of warmth or competence with the same four counterbalancing factors.

Materials

The descriptions of the groups were similar to those used in Experiment 1 except that eight valenced behaviors were presented for the manipulated dimension. Again, two positive and two negative behaviors on the unmanipulated dimension were presented for each group. These behaviors were taken from Yzerbyt et al. (2008) and were presented in random order on a computer screen. Again, as in Judd et al. (2005), in spite of efforts to select behaviors that were judged orthogonally on warmth and competence, Yzerbyt et al. (2008) found a positive correlation between the two dimensions in their pretest of individual behaviors. Participants read the 24 behaviors at their own pace, They then went through them a second time, first reading all the behaviors of one group and then all the behaviors of the other group.

LCM Measure

We created 16 pictures,[1] 4 for each category (positive competence, negative competence, positive warmth, and negative warmth). For each picture, we produced four sentences written underneath the picture in a fixed random order. These sentences embodied the categories of the LCM, describing the main character's behavior by means of a DAV, an IAV, a SV, and an ADJ. Participants were asked to select the sentence that in their opinion best described the behavior shown in the picture. (See Appendix. The full set is available from the first author.)

Results

In order to analyze our results, the responses given to each one of the pictures were assigned a value from 1 (DAV) to 4 (ADJ), meaning that higher scores indicate that the behaviors shown on the pictures were described in more abstract terms. For each group, we computed an abstraction score for each dimension by averaging the scores of the two positive and the two negative (reversed) pictures. Thus higher scores mean that positive behaviors were described more abstractly than negative behaviors.

We analyzed these scores separately for the manipulated and for the unmanipulated dimension by means of a 2 (group: High vs. Low) by 2 (dimension manipulated: Competence vs. Warmth) ANOVA with the first factor varying within participants and the second between them.

Analyzing the LCM scores of pictures on the manipulated dimension, the predicted group main effect was significant, $F(1,53) = 78.72, p < .0001$, such that more abstract descriptors were used for positive behaviors from the high group than from the low group. This effect was moderated by the manipulated dimension, $F(1,53) = 4.99$, $p < .05$, such that the effect was stronger for the competence manipulation, $F(1,25) = 66.47$, $p < .0001$, than for the warmth manipulation $F(1,28) = 21.05$, $p < .001$.

[1]We thank Gauthier Kervyn for creating those drawing.

Table 2. Abstraction attribution scores as a function of dimension, and group (Experiment 2)

	Dimension			
	Manipulated		Unmanipulated	
Group	High	Low	High	Low
Manipulated dimension				
Competence	3.08	1.88	2.44	2.95
Warmth	2.87	2.15	2.62	2.56

The same analysis on the LCM scores of pictures on the unmanipulated dimension revealed that the expected group main effect was marginally significant, $F(1,53) = 3.01$, $p = .08$, and was moderated by the manipulated dimension $F(1,53) = 4.88$, $p < .05$. Further analyses indicated that the compensation effect on level of abstraction was significant for the competence manipulation, where warmth was the unmanipulated dimension $F(1,25) = 6.27$, $p < .02$, but not for the warmth manipulation, where competence was the unmanipulated dimension ($p > .7$) (see Table 2).

Discussion

When competence was manipulated, the LCM ratings of the pictures showed a clear compensation pattern. Pictures of negative warmth behaviors were described in more abstract terms for the competent group than for the incompetent group and this pattern was reversed for the positive pictures. This is all the more interesting given that, as in Experiment 1, a pretest of the materials revealed the presence of a positive relation between the two dimensions (Yzerbyt et al., 2008). This pattern was not observed for the warmth manipulation. Research on the compensation effect has consistently reported a weaker effect for the warmth manipulation than for the competence manipulation (Judd et al., 2005; Yzerbyt et al. 2008). We interpret this weaker effect as being due to the primacy of warmth over competence (Wojciszke, Bazinska, & Jaworski, 1998; Ybarra, Chan, & Park, 2001). When encountering someone, the first question is whether this person intends to cooperate or to compete with oneself (warmth) and the second question is whether this person has the necessary abilities to fulfill these intentions (competence). Therefore, when participants only have ambiguous warmth information about the two groups (competence manipulation), they are more motivated to process this ambiguous information than when competence is ambiguous and warmth is manipulated.

GENERAL DISCUSSION

In Experiment 1, we replicated the compensation effect on trait ratings. More importantly, we also observed compensation on the dispositional attributions with respect to new behaviors. Experiment 2 goes even further by showing compensation on the warmth dimension when competence is manipulated without having previously asked participants to explicitly rate

the two groups and when using an implicit task. These results clearly support our two goals in the present research. First, we identified two ways through which compensatory stereotypes may be maintained (Karpinski & von Hippel, 1996; Yzerbyt et al., 1998) and communicated to others (Wigboldus et al., 2000). Second, we have shown that compensation is not restricted to explicit measures such as trait ratings but that it is also observed on indirect and implicit measures that are less likely to be under perceivers' control (De Houwer & Moors, 2007; Franco & Maass, 1996; von Hippel et al., 1997; Wigboldus et al., 2000).

Previous research (Judd et al., 2005; Kervyn et al., 2008, 2009; Yzerbyt et al., 2008) has shown when and how compensation emerges on explicit trait ratings. Our results extend this research by showing that a compensation effect is also observed on indirect and implicit measures. So, although it could be argued that participants in previous research (Judd et al. 2005; Kervyn et al., 2008; Yzerbyt et al., 2008) compensated on their ratings of the traits on the unmanipulated dimension because of a strategic decision to reach some kind of equality between the two groups, this argument does not hold for the attribution and the LCM measures used in the present experiments. As a matter of fact, it is difficult to argue that our participants strategically use causal attributions (Gilbert, 1998) or the LCM categories (Semin & Fiedler, 1988) in order to consciously promote a balanced view of both groups. Clearly, their reactions offer a strong demonstration that compensation is a spontaneous process, one that does not involve strategic considerations.

Kervyn et al. (2009) recently showed that when participants are given the chance to ask further questions of group members after having formed a compensated impression of two groups, they choose questions that are biased in a compensatory direction. In follow-up experiments, these questions selected have been shown to elicit answers that do indeed confirm the compensated impression. The present results nicely complement those findings by showing that when participants are given the opportunity to observe the groups after having formed their impressions, they bias their interpretations and descriptions of the new behaviors observed in order to preserve their compensated impression.

Our results in Experiment 1 can be interpreted as a refinement of the ultimate attribution error (Pettigrew 1979). As a matter of fact, we found that the tendency to overestimate dispositional causes when making attributions is moderated by the expectations of the perceiver. These results thus show that dispositional attributions are biased in a way that matches the way language abstraction is biased in the language expectancy model (Wigboldus et al., 2000, 2005). As for the results of Experiment 2, they support our hypotheses based on the language expectancy bias. We note that this is the first time that such support for the LEB has been found using artificial groups.

CONCLUSIONS

Research by Fiske, Xu, Cuddy, and Glick (1999) and Fiske, Cuddy, Glick, & Xu (2002) has shown that a large proportion of social groups are subject to what these authors call ambivalent stereotypes. In Fiske et al.'s studies there is a high consensus regarding the way the different participants perceive these social groups. The present results suggest a series of mechanisms by which these kind of ambivalent stereotypes are maintained through attribution and language. As such, these two mechanisms clearly contribute to the maintenance of perceivers' compensated view of their social world as well as to their dissemination through language and communicative acts. In all likelihood, they also play a role in the way these stereotypes are passed on when perceivers interact with others about those groups.

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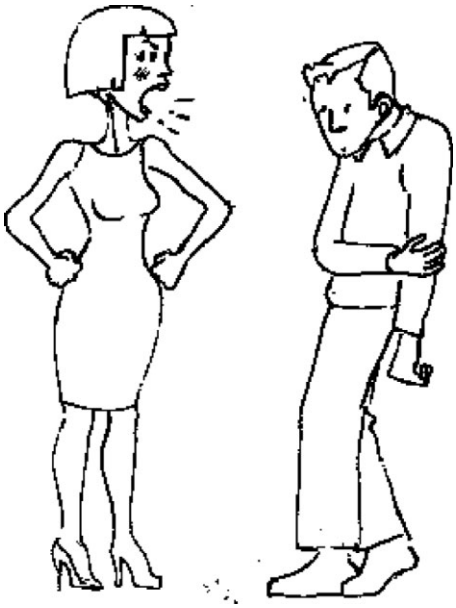
APPENDIX

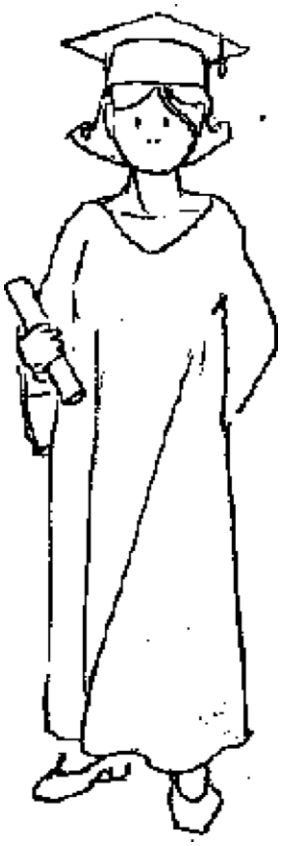
Examples of pictures used in experiment 2

High warmth:

Low warmth:



High competence:



Low competence: