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We presented a modified procedure of the functional labeling technique as an educational tool. The standard labeling procedure is a persuasion strategy that consists of assigning a label to a person (e.g., trait, attitude) in order to obtain a behavior consistent with that label. Participants ($N = 54$) were psychology undergraduates gathered in dyads that performed a text reading exercise in a natural classroom setting. Prior to the exercise, and unlike the standard procedure, these pairs were the target of the label instead of individually addressed labels. Each pair was verbally labeled either with an approach-oriented statement (positive labeling condition) or an avoidance-oriented statement (negative labeling condition) instead of the direct verbal formulation in the standard procedure. The control group was treated as if they were in a non-interventional setting.

Performance of each dyad was measured based on a grading rubric including the following dependent variables: 1. Quality of paraphrasing 2. Comprehension 3. Participation 4. Correct answers. Results revealed a robust effect of functional labeling on participants' performance for all four measures with significantly better scores obtained by the pairs labeled with a positive (i.e., approach-oriented) statement compared to the pairs labeled with a negative (i.e., avoidance-oriented) statement. The results also indicated that avoidance-oriented functional labeling has a detrimental effect on performance since pairs in this condition didn't perform better than the control pairs. This extends results of a previous study where the best performance was obtained in the attribution condition, to the case of small groups (i.e., dyads).

"Gifted as you are, I'm sure that you'll solve this problem," is an example of a "tricky" statement that enables individuals to perceive themselves in a particular way. Here, the message is that the individual is...
"a gifted person." Upon hearing this statement, the individual is more likely to enjoy an improved performance on a task closely related to problem-solving skills (e.g., performance skills needed to solve a puzzle). Moreover, the self-improvement in this example has not been shown to affect unrelated tasks or behavior inconsistent with the label of "giftedness," such as "helpfulness" for example (e.g., Kraut, 1973). Consequently, the alleged label of giftedness in our hypothetical example, is not supposed to provoke a behavior such as "helping someone to carry a heavy suitcase" simply because "helpfulness" is here the assigned label instead of "giftedness." One common explanation of this kind of social message is that people tend to use past information about themselves to guide their future behavior (e.g., Albarracín & McNatt, 2005; Ouellette & Wood 1998). This “domain-specific” phenomenon is called social attribution. It is based on a complex interaction between internal and external factors that rely on a self-perception mechanism (Bem, 1972) that can be manipulated using a labeling technique. The latter is considered to foster internal attribution inferences by providing a person with statement about his/her personality traits or values.

This labeling technique was originally developed by Miller, Brickman and Bolen (1975) in a seminal experiment referred to as "the neatness study." These researchers first measured the baseline neatness behavior of 5th-grade students by observing whether or not students would throw candy wrappers on the floor after eating them. In the next step, they assigned children to three different groups. In the first group (attribution group), children were repeatedly told they were neat and tidy. In the second group (persuasion group), the authors repeatedly reminded children that they should be neat and tidy. In the control group, children were given no specific information. These conditions were in effect for 8 consecutive days. At the conclusion of the 8 days, experimenters gave children candies with distinctive wrappers for each class. They counted afterwards the number of wrappers on the floor, on desks, and in the trash. The results revealed that while there was no significant difference among the three groups in the pretest regarding the percent of wrappers thrown in the trashcans, children in the attributional labeling condition had the best performance in the posttest with 80% of litter deposited in the trash compared to 46% for the persuasion group and 23% for the control group.

This so-called labeling effect was successfully replicated by the same authors in a classroom learning situation. Miller et al. (1975) used this technique to improve children’s math performance. By following the same procedure as in their first experiment, these authors assigned children to three distinct experimental conditions over the course of 8
consecutive days. In this experiment, teachers made statements about students’ math ability: Such statements included phrases such as, “You really work very hard in math” (the attribution group), “You should be good at math” (the persuasion group), and a third condition (referred to as the reinforcement group) in which teachers repeatedly told children that they are proud of their performance in math. The results again showed that the best performance (i.e., math score) was obtained in the attribution group, with the reinforcement condition showing a better performance relative to the persuasion condition.

Labeling techniques can effectively influence behavior in situations where people are initially interested in the target behavior. Moreover, it is important to carefully formulate a personally addressed statement in order to influence the participant’s behavior. Most relevant to our study is research that used the social labeling technique to simultaneously reach more than one person. We are aware of only one study that reported a robust labeling effect affecting a large audience or community at once. Allen (1982) used labeling in video advertisements with a statement reflecting American consumers’ willingness to actively participate in finding solutions to the energy problem. Allen assumed that the strength of the labeling - at least for those who are already engaged - should be attributed to the link between prior behavioral experience about energy conservation and the label.

Functional labeling and action tendencies

Social labeling has often been coupled with other paradigms. The most used is the compliance technique known as the foot-in-the-door (FITD) technique (Freedman & Fraser, 1966). It has been found that FITD participants are more likely to accept a major request if they have first agreed to a minor request. Both techniques (FITD and social labeling) target participants in a personal way and via personal statements, then subsequently rely on self-perception processes. For example, Strenta and DeJong (1981) demonstrated that individuals will behave morally in order to be consistent with a previously established self-evaluation (e.g., kindness). In a recent study conducted by Cornelissen, Warlop, Dewitte, and Yzerbyt (2007), the authors showed that it is possible to enhance the strength between the label and the focal behavior (an environmentally friendly behavior) if prior to the label the participant is primed to perform a task related to the focal behavior. By doing so, the researchers increased the feeling that the label is consistent with the person's previous experience or personality. Consequently the individual is likely to feel more personally addressed or engaged.

All the above-mentioned examples reported the social effect of labeling on our behaviors but, on a daily basis, they are not
systematically labeled with reference to our own social values. In some cases, behaviors could be labeled with reference to what would be the behavioral consequences of a label. This new labeling feature is referred to as functional labeling and it is attributed to the usefulness of the performed behavior (Fointiat, 2006). Functional labeling emphasizes what has been done (e.g., "Thanks, you showed me the way"), relative to "social labeling" that reveals the social value of an individual (e.g., "Thanks, you are very helpful") (Fointiat, Caillaud, & Martinie, 2004).

From that perspective, functional labeling is suited to be extended and combined with verbal manipulation of the label in order to trigger particular action tendencies such as goal approach and avoidance (or withdrawal). It is now admitted that our behaviors can be categorized within two bulky systems: on one hand, the behavioral facilitation system (Depue & Collins, 1999) and on the other hand the behavioral inhibition system (e.g., Davidson, 1998; Gray, 1994). These two classes are referred to as action tendencies associated with an appetitive (approach) or an aversive (avoidance) motivation (e.g. Carver, 2006; Carver & Scheier, 1998; Davidson, 1998; Elliot, 2006). Therefore, it is not ruled out that positive feedback (e.g., verbal) may trigger an attraction toward the goal and negative feedback may move the subject away from the goal. Consequently, we expect a better group performance in the positive labeling condition compared to the control condition and a poorer group performance in the negative labeling condition compared to the control condition.

We combined the functional labeling verbal statement with either an approach-oriented or an avoidance-oriented verbal feedback. We chose to apply the functional labeling technique in a situation that would spontaneously initiate participants' engagement in a task and thereby substitute without directly manipulating the pre-labeling task reported in the Cornelissen et al. study (2007). The classroom situation can offer a link between the label and the students' performance in an introductory psychology, which is the focal behavior in our study. Therefore, participants are likely to feel more personally invested in the task if the statements are formulated in relation to their performance in answering questions pertaining to a psychology handbook. While the experiment was presented as a regular academic exercise, we took into consideration task arrangements and instructions in order to increase the chance that students would perceive their own contributions as vital to the group (i.e., dyad) (Meyers, 1997). Similar to Meyer's recommendation (1997), the task we suggested was aimed to promote cohesion and open discussion among the group members in order to boost productivity.

However, our labeling technique diverges from the standard paradigm with the two following main changes: Instead of utilizing labels that
address large audiences or individuals on a personal level, we employed a version of the Miller et al. (1975) paradigm that targets small groups such as dyads. To do so, we applied this tool in classroom situations to target pairs of students (as opposed to individuals) in order to improve educational performance. The task was performed within a dyadic interaction and each participant was evaluated based on his/her group performance. Hence, our measures took place in natural classroom settings.

Unlike previous studies, the formulation of the qualifying statements is less direct. This is done by slightly changing the verbal statement to a "slanted label" formulated in a positive or a negative way. This positive-negative valence will allow us to evaluate the approach-avoidance motivation. Hence, in our context “positive statement” means beneficial to the student performance whereas “negative statement” means harmful to the student performance (see Elliot, 2006 for a review). Accordingly, the reason behind using a "slanted" label is to provide a message that is not detrimental to students' performance in their real classroom situations. In other words, we framed the functional labeling manipulation in the current study based on an approach goal statement for the indirect positive condition and on an avoidance goal statement in the indirect negative statement.

Moreover, we added a critical measure, self-evaluation, that we expected to have an effect on our main manipulation. Many recent educational studies pointed out the bias derived from the motivations behind self-evaluation. Depending on the evaluation context, positive self-reports may reflect either an avoidance motivation (i.e., self-protection), or an approach motivation (i.e., self-enhancement) as shown by Gramzow, Elliot, Asher, and McGregor (2003). Indeed, since past behavior is the subject of participants' interpretation, we asked our participants individually in a post-experimental self-evaluation task to compare their performance in the past to the present teamwork experience. This is another novelty of our study, since this question is aimed to examine the way participants retrieve their own mental representation of teamwork being influenced by the functional labeling task in relation to their episodic memory.

METHOD

Participants
Fifty-four students (18 males, mean age = 20 yrs., SD = 2.1) participated in this experiment. All were French freshman psychology students from the University of Nîmes. Because our study was conducted in real settings, subjects participated spontaneously and unwittingly in the experiment. The current research was conducted within the normal
course of their introductory psychology class. The three groups of first-year students in psychology were solicited for the experiment while their own teachers served as experimenters.

**Stimuli and design**

The main task consisted of reading a patchwork text related to a particular psychological topic. The text was written in French and was taken from an introductory handbook of psychology: "Les méthodes en psychologie" (Research Methods in Psychology by the French psychologist Maurice Reuchlin). It contains the following paragraphs: a) the use of observation instruments, b) hypothesis formulation c) comparative methods and d) types of experimental designs. The students were given approximately 30 minutes to read the text, after which point they were gathered in small subgroups (2 persons each) and were invited to answer a series of questions related to the text. The teacher (i.e., experimenter) encouraged students (i.e., participants) who knew each other beforehand to team up in order to prevent as much as possible the lack of interaction between group members.

Stimuli:

a. Grading Rubric: The questions allowed the teacher to evaluate with a grading rubric the response provided by each pair based on the following categories:

1. Quality of paraphrasing: refers to the ability to present main ideas of the text by highlighting headlines covering the foremost topics emphasized by the author(s) while avoiding at the same time a "verbose" paraphrasing style. This was measured by the extent to which one underlying theme can be summarized in just one sentence.

2. Comprehension: refers to the students' ability to grasp the meaning behind text sections and the link between them. This was measured by their answers to the following typical question: "Which methods are used in experimental psychology as outlined by the author?" Students were expected to provide a correct and comprehensive list of the names of these methods based on the information available in the patchwork text.

3. Participation: refers to the level of involvement of each pair in this task reflected by a group's oral contribution, discussion, and communication among its members while answering the question.

4. Correct answer: refers to the rate of correctly reported key words required for answering questions. These key words are target-concepts that have to be learned and retained by students after reading the text.
For each dimension, experimenters used a rating scale from 0 (no match to tabulated criteria from the rubric) to 4 (all criteria from the rubric are met) to evaluate pairs' performance.

b. Self-evaluation 2-AFC questions: Each student answered individually by yes or no the following two-alternative forced-choice (2-AFC) question: "Before today's teamwork, did you consider yourself more efficient while working individually or in group?"

Design:
The independent variable: labeling is the between-subjects factor and has the following three levels: positive, negative, control (i.e., absence of labeling).
The dependent variables: 1. The students' performance on the 4 grading rubric categories (quality of paraphrasing, comprehension, participation, and correct answers) 2. Answers from the self evaluation question.

Procedure
The teacher (i.e., the experimenter) presented the task as a regular teaching exercise that would contribute to the general evaluation of students' level in this course. The task consisted of answering a series of questions related to a given text. The teacher assigned students to different pairs (2 students each) in a standard classroom situation. Students were originally unevenly distributed by twos. All teachers allowed groups formed by three students to team-up for the purpose of the task but these groups (6 triads in total) were removed from the final analysis. The teacher ensured that there was adequate physical distance between each pair in order to prevent cross contamination between experimental conditions while presenting the task instructions. Each pair was assigned to one of the following conditions: 1) labeling with indirect positive slant 2) labeling with indirect negative slant 3) the control condition. The instructions were given independently to each pair. In the positive condition, the teacher provided instruction using the following statement: "I think that you can write a good summary and deliver a good oral presentation if you work as a team and if each one of you contributes by providing your knowledge about the text." In the negative condition the teacher addressed the students by stating: "I think that you can avoid a poor summary and a poor oral presentation if you work as a team and if each one of you contributes by providing your knowledge about the text." In the control condition, no specific instructions were given.

After participants completed the exercise the teacher presented a personal reflection form containing the self-evaluation question to each student. It is a two-alternative forced choice (2-AFC) question. The participant has to provide one answer either "individually" or "in group."
Finally, in order to control for intra-classroom variables such as teaching style, student's abilities and pair distribution, the same experiment was conducted simultaneously in three separate classrooms with three different teachers and with different students.

**RESULTS**

For the grading rubric it is important to note that the evaluation concerned the pair and not the individual. Therefore, grouping in the three different classrooms (with each classroom producing data for each of the three labeling conditions) resulted in 8 positive labeling pairs, 8 negative pairs, and 8 control pairs. Unlike other measures that were collected on each dyad (conjoint performance), the self-evaluation task data were collected and analyzed individually (per participant).

**Grading Rubric**

Four dependent variables were measured using the grading rubric: 1. Quality of paraphrasing 2. Comprehension 3. Participation 4. Correct answers. Data were analyzed using 4 separate one-way-ANOVAs with Labeling (positive, negative and control) as a between-subjects factor. The results revealed a significant and sizeable main effect of labeling for:

**TABLE 1** Means Plus or Minus Standard Errors of Four DVs from the Grading Rubric as a Function of Labeling Conditions. Effect sizes (Cohen's $d$) were reported.

<table>
<thead>
<tr>
<th></th>
<th>Positive</th>
<th>Negative</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of paraphrasing</td>
<td>3.0 ± 0.4</td>
<td>0.6 ± 0.2</td>
<td>1.6 ± 0.4</td>
</tr>
<tr>
<td></td>
<td><em>d</em> = 1.1</td>
<td><em>d</em> = 1.0</td>
<td></td>
</tr>
<tr>
<td>Comprehension</td>
<td>3.2 ± 0.4</td>
<td>0.7 ± 0.3</td>
<td>1.6 ± 0.4</td>
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<tr>
<td></td>
<td><em>d</em> = 1.2</td>
<td><em>d</em> = 0.8</td>
<td></td>
</tr>
<tr>
<td>Participation</td>
<td>2.9 ± 0.6</td>
<td>0.6 ± 0.3</td>
<td>1.7 ± 0.5</td>
</tr>
<tr>
<td></td>
<td><em>d</em> = 0.7</td>
<td><em>d</em> = 0.8</td>
<td></td>
</tr>
<tr>
<td>Correct answers</td>
<td>3.2 ± 0.4</td>
<td>0.7 ± 0.2</td>
<td>1.8 ± 0.4</td>
</tr>
<tr>
<td></td>
<td><em>d</em> = 1.0</td>
<td><em>d</em> = 1.0</td>
<td></td>
</tr>
<tr>
<td>Marginal means</td>
<td>3.2</td>
<td>0.7</td>
<td>1.8</td>
</tr>
</tbody>
</table>

quality of paraphrasing, F(2, 21) = 9.2, MSE = 1.3, $p < .005, \eta^2_p = .47$; comprehension, F(2, 21) = 8.9, MSE = 1.4, $p < .005, \eta^2_p = .46$; participation, F(2, 21) = 4.7, MSE = 2.3, $p < .05, \eta^2_p = .31$; and correct
answers, $F(2, 21) = 8.9, MSE = 1.4, p < .005, \eta_p^2 = .46$ (see Table 1 for the mean values related to the four dependent variables). Simple planned comparisons showed that students in the positive labeling condition performed significantly better in quality of paraphrasing than students in the negative labeling condition ($p < .0005$), and in the control group ($p < .05$). These students in the positive labeling condition also performed better in comprehension and had more correct answers than the two other groups (all $ps < .05$). Students in the positive labeling condition participated significantly more than students in the negative labeling condition, however they seem to participate at the same level as the control group ($p > .1$). No significant difference was observed between the negative labeling condition and the control condition for the 4 dependent variables with a marginally significant difference observed in quality of paraphrasing ($p = .07$) and correct answers ($p = .09$).

FIGURE 1 Percent of Students Self-declared Efficient Individually or in Group Prior to Dyadic Task Reported in the Experiment

Self-evaluation question

Figure 1 shows the percent of students per labeling condition who consider themselves more efficient in working individually or in a group prior to the experiment. Seventy-three percent of the students in the positive labeling condition were self-declared to be more efficient individually prior to the experiment, whereas 27% self-reported as more efficient in group. Interestingly, students in the control condition showed the same pattern of results as those in the positive condition. Conversely, students in the negative labeling condition showed a completely opposite
result: 79% declared themselves to be more efficient working in a group than working individually.

**DISCUSSION**

This study presents a new procedure to measure a slight verbal variation in the social labeling effect being presented as either negative or positive slants. Based on this manipulation, we then compared the pairs’ performance to a control condition where no label was presented. The obtained results demonstrated that the pairs of students labeled with positive slant had better performance than the pairs of students labeled with negative slant for quality of paraphrasing, comprehension and correct answer. No significant difference was revealed between the positive and the negative slant conditions regarding the level of pairs’ participation.

The effectiveness of positive labeling relative to negative labeling has already been shown with helping behavior (Goldman, Seever & Seever, 1982; Kraut, 1973). Our results replicated previous findings according to which changes in self-perception can guide future behavior (e.g., Albarracin & McNatt, 2005; Ouellette & Wood 1998). People tend spontaneously to behave in a way that is congruent with their self-perceptions. Hence, the positively perceived self (i.e., being friendly, efficient, etc.) can be elicited by a positive verbal statement (“you are good, competent,” etc.) whereas a negatively perceived self (i.e., “I failed many exams,” “I’m not efficient,” etc.) can be elicited by a negative verbal statement. Our study extended such findings to the case of dyadic workgroup performance.

The key finding of the present study is that the combination of an approach (positive) vs. avoidance (negative) -oriented statement with functional labels is likely to shape individuals' self-evaluation (i.e., auto-perception) differently and thus may accordingly define participants’ motivations. Regarding the self-evaluation question, results revealed that the number of students self-declared to work more efficiently individually in the past rather than in a group is sizeable in the positively labeled pairs (73% vs. 27%) and in the control pairs (68% vs. 32%). Pairs that were negatively labeled showed an opposite trend with more participants reporting they work more efficiently in a group than individually prior to the experiment (21% vs. 79%). One explanation could be attributed to the impact of autobiographical recall of previous academic success or failure triggered by the question on actual task performance (Selimbegovic, Regner, Bo Santioso, & Huguet, 2011).

The possibility exists that prior to the question, the labeling task activated either success for the positively labeled pairs or failure for the negatively labeled pairs. Indeed, participants in the positive condition already had a
positive self-image and a high level of certainty as stated above. Consequently they were more likely to remember and describe a positive academic past individual experience. They literally attributed the success of their pairs to their personal contributions. Participants in the negative labeling condition already had a high level of uncertainty and tried not to blame themselves as being responsible for the team’s possible failure. Accordingly, by considering themselves more efficient in team work rather than individually, participants may have tried to attribute their inefficient group dynamic to the group’s failure rather than to their own contributions.

By analogy with the self-verification theory (Swann, Rentfrow, & Guinn, 2003), people are motivated to maintain a coherent sense of the self. One motivational component of this theory is self-certainty. Hence in our study, it is possible to assume based on this theory that pairs that were positively labeled were more likely to show high levels of self-certainty relative to pairs in the negative labeling conditions. In line with previous studies that have demonstrated that self-certainty is crucial in determining the impression people make on others (e.g., Swann & Ely, 1984), follow-up research can add to the present paradigm the self-certainty measure using, for example, the 6-item self-certainty subscale of the Beck Cognitive Insight Scale (Beck, Baruch, Balter, Steer, & Warman, 2004). One assumption is that participants in the positive condition had a high level of self-certainty and behaved consistently with their self-view, while participants in negative condition were uncertain because they didn't have a coherent self-image and were more likely to adjust their behavior according to their preconception of the pair interactions.

This is, at least, consistent with the fact that no difference was observed between positively-labeled and negatively-labeled pairs regarding "participation." They were both active in contributing to the group task, although the motivation for each was not the same. Previous studies showed that academic outcomes are positively correlated to academic self-concept (e.g., Valentine, Dubois, & Cooper, 2004). In other words, it is more about high self-esteem for the positively labeled pairs whereas it is more about tentative adjustment for the negatively labeled pairs given the lack of consistent self-esteem. Note that of the four grading rubric criteria, it was only "participation" that didn't require a deep understanding of the text. This finding was consistent with the idea that self-certainty as a key component in the self-verification theory (Swann et al., 2003) is more connected to the workgroup performance rather than to the dynamic of interaction within the workgroup at least as shown in the present study.
The fundamental distinction between the above mentioned classes of motivations has a parallel in Carver and Scheier (1998) bipolar affective theory according to which a good deed or performance fosters a positive affect whereas a bad action fosters a negative affect. Admittedly, one limit of the current study is that it did not manipulate the emotional state of participants before and after the verbal statement administration. Such measure is likely to provide more grained explanation about the cognitive and motivational process involved in our paradigm and should be included in follow-up studies. According to some studies (see Higgins, 1996, 1997), it is possible to find approach perspective associated with negative feelings or evaluations. For example, when people are performing approach strategies worse than expected, this can lead them to feel depressed. It is possible also to find avoidance perspective associated with positive feelings or evaluations. For example, when people are performing avoidance strategies better than expected, this can lead them to some measure of relief. In many cases both motives are present; an active avoidance of a threat also involves an approach to an incentive.

Finally, from an applied perspective, the present findings suggest that it is advisable for teachers at different academic levels to take into consideration the task instructions, arrangements, and more prominently, their verbal feedback toward their students in order to improve students' interaction. It is true that working with small groups is very productive (e.g., Meyers, 1997) but labeling effect is particularly powerful under these circumstances and can influence group performance depending on how the labeling statement or even the labeling slant is formulated. Indeed, the indirect formulation of the qualifying statement has been shown to influence about the same students' performance when labeled by the standard method. This novelty is completed by slightly changing the verbal statement to a "slanted label" formulated either in an indirect positive or negative fashion. This valenced verbal manipulation allowed us to successfully evaluate the approach-avoidance mechanisms that can be grafted upon the labeling effect.

REFERENCES


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