Paper to be presented at DRUID17
NYU Stern School of Business, New York, June 12-14, 2017

IN THE MOOD TO COLLABORATE: AN EXPERIMENTAL STUDY ON THE EFFECT OF MOOD ON COLLABORATION IN COMPLEX PROBLEM-SOLVING

Maitane Elorriaga Rubio
Copenhagen Business School
Strategic Management and Globalization Department
1maelorr@gmail.com

Marion Poetz
Copenhagen Business School
Innovation and Organizational Economics Department
mp.ino@cbs.dk

Mirjam Van Praag
Copenhagen Business School
Department of Innovation and Organizational Economics
mvp.ino@cbs.dk

Abstract

Creative processes greatly benefit from collaboration especially if the problem to be solved is complex. Collaboration takes increasingly place on an anonymous basis, in virtual teams, and on ad hoc projects, such as in open innovation communities or crowd sourcing. In a laboratory experiment, we test the effects of both positive (i.e., happy) and negative (i.e., sad) moods on the willingness to collaborate by joining such a virtual team instead of working solo, in simple vs. complex problem solving tasks. Our results show, in the context of a real-effort incentivized task, that individuals in a happy mood are more willing to collaborate than those in a sad mood. However, only in complex problem-solving, that is, when the difficulty of the task is high and requires extensive information processing, moods significantly predict individuals' willingness to collaborate. When presented with a more easy-to-solve task triggering heuristic (simplified) information processing, moods do not have a direct effect on collaboration willingness. Against the backdrop of an increasing importance of open and collaborative problem solving activities, our findings have important managerial implications. Keywords: Moods; affective states, collaboration; complex problem-solving; information processing

Jelcodes:Z00,Z00

IN THE MOOD TO COLLABORATE: AN EXPERIMENTAL STUDY ON THE EFFECT OF MOOD ON COLLABORATION IN COMPLEX PROBLEM-SOLVING

ABSTRACT

Creative processes greatly benefit from collaboration especially if the problem to be solved is complex. Collaboration takes increasingly place on an anonymous basis, in virtual teams, and on ad hoc projects, such as in open innovation communities or crowd sourcing. In a laboratory experiment, we test the effects of both positive (i.e., happy) and negative (i.e., sad) moods on the willingness to collaborate by joining such a virtual team instead of working solo, in simple vs. complex problem solving tasks. Our results show, in the context of a real-effort incentivized task, that individuals in a happy mood are more willing to collaborate than those in a sad mood. However, only in complex problem-solving, that is, when the difficulty of the task is high and requires extensive information processing, moods significantly predict individuals' willingness to collaborate. When presented with a more easy-to-solve task triggering heuristic (simplified) information processing, moods do not have a direct effect on collaboration willingness. Against the backdrop of an increasing importance of open and collaborative problem solving activities, our findings have important managerial implications.

Keywords:

Moods; affective states, collaboration; complex problem-solving; information processing

INTRODUCTION

One of the key defining characteristics of organizations is their inherent social nature (Asforth & Mael, 1989). Together with the need to strategically adapt to a growingly dynamic and uncertain business environment, new ways of collaboration are constantly emerging. In addition to adapting to increased dynamism and uncertainty, new collaborative endeavors enable organizational efficiency and productivity in general (Mowshowitz, 1997) and innovation performance in particular (Laursen & Salter, 2006). Examples can be found in open-innovation communities (O'Mahony & Lakhani, 2011), crowdsourcing platforms (Boudreau & Lakhani, 2013), knowledge-sharing partnerships (Wutchy, Jones & Uzzi, 2007) or virtual teams (Townsend, DeMarie & Hendrickson, 1998), as well as collaborative projects (Hoang & Rothaermel, 2005).

These new forms of collaboration have distinguishing characteristics which deserve special consideration. Virtual teams (Crampton, 2001) and problem-based discussion forums (Wakso & Faraj, 2005) are often based on anonymity (Griffith & Neale, 2001), making interactions more socially complex and clearly uncertain. Furthermore, geographical dispersion between members (Crampton, 2001) often implies temporality and computer-based communication (Jarvenpaa & Leidner, 1999). All these characteristics create a need to collaborate in the absence of non-verbal language (Walther, 2009) and trust-building frameworks (Jarvenpaa & Leidner, 1999) due to a lack of face-to-face and personal contacts. For these reasons, communities are often highly complex and can best be understood from a problem-solving perspective (Foss, Frederiksen & Rullani, 2015). Moreover, due to the volatility of membership, collaborators need to be capable of dynamically adjusting to their team or community for the purpose of efficiency (Townsend et al., 1998), which includes the need to quickly build trust in ad-hoc and temporary collaborations (Crisp & Jarvenpaa, 2013).

It is precisely under these dynamic and uncertain conditions, under which socially complex situations must be managed, where individual´s behavior is most vulnerable to the influence of transient affective states (Eisenhardt, 1989; Forgas & George, 2001). In fact, the importance of studying affective states in relationship to key adaptive behavior has been recently highlighted as a promising avenue for future research (Hodgkinson & Healey, 2011).

Based on this argumentation, the main objective of our paper is to answer the following research question: to what extent and under which conditions do transient affective states (i.e., moods) affect the willingness to collaborate (i.e., join a team)? Furthermore, we seek to shed light on the contradictory findings in the previous literature regarding the existence of a main effect of moods on collaborative behavior (cf. Carnevale & Isen, 1986; Forgas, 1998; Hertel & Fiedler, 1994; Hertel, Neuhof, Theuer & Kerr, 2000). Since studying mood states is not possible in isolation, i.e., without considering situational factors which may moderate the potential influence of moods on behavior (Forgas, 1995), we specifically disentangle the effect of the complexity of the problem-solving task from the mood effect. Currently, complex collaborations are exposed to crowdsourcing and other innovation problem-solving approaches (e.g. "Zooniverse", is a web portal where citizens can collaborate in solving research problems). Hence, we propose a contingency perspective on how mood affects collaboration.

Mood as a Driver of Judgement and Behavior in Social Contexts

Happy and sad moods are universal mood states that are undoubtedly positive and negative (Bless et al. 1996; Forgas, 1994; Watson & Tellegen, 1985). Moods are specific affective states which are defined as "low intensity, diffuse and relatively enduring affective states without a salient antecedent cause and therefore little cognitive content (e.g. feeling good or feeling bad)" (Forgas & George, 2001, p.5). In more colloquial terms, moods generally refer to "feeling well" or "feeling down". Although related to emotions, moods are differentiated concepts, as emotions usually respond to a specific stimulus and are related to a higher initial intensity (Barsade & Gibson, 2007). Because moods are non-specific and mild, they are often embedded in our unconscious cognitive processes when we pursue goals (Dijksterhuis & Aarts, 2010). More importantly, moods can exert an insidious influence on collaboration, as both social thinking and behavior are to a large extent based on automatic processes (Bargh & Williams, 2006).

Moods and cognition are intimately interrelated and both simultaneously and through a dynamic interaction help to predict behavior (Fiedler, 2001). The basis for the affect-cognition link can be found in cognitive psychology. In a very general way, it can be argued that memories are formed and stored in a network of associations. The basic unit of these memories are propositions, which are subsequently connected to past events in our memory and at the same time linked to specific emotions acting as connecting nodes of information. From this perspective, a subtle cue that partially describes an event, such as "kindergarten days" could trigger the emotion node of sadness in a sad person and this combined activation would result in a complete retrieval of a sad memory related to those kindergarten days (Bower, 1981). Similarly, this increases the likelihood for a particular individual in an elated mood to retrieve those specific pieces of information previously encoded and associated in memory with a positive affective tone. Therefore, it can be argued that mood states trigger associations, information and memories previously linked in our memory through the associative network to a similarly negative mood (Bower, 1991; Snyder & White, 1982).

This mood-congruent effect has been supported by a well-known mood-related theory known as the Affect-as-infusion theory (Forgas, 1995). This theory is supported empirically by an affect-priming mechanism through which mood affects cognition and behavior in social contexts. This affect-priming mechanism or affect infusion, is defined as "the process whereby affectively loaded information exerts an influence on, and becomes incorporated into the judgmental process, entering into the judge´s deliberations and eventually coloring the judgmental outcome" (Forgas, 1995, p.39). Thus, coherently with the mood-congruency effect, positive mood, in contrast to negative mood, posits the occurrence of positive events as more likely in our mind, whilst those who experience negative mood have a tendency to view negative events as more probable (Rottenstreich & Hsee, 2001; Johnson & Tversky, 1983). These affective influences on our judgement will eventually shape our behavior.

For example, in interpersonal and bargaining situations, a positive mood has been linked to a more optimistic, collaborative and confident pattern, whilst those in a negative mood have a tendency to engage in more competitive and pessimistic relational patterns (Forgas, 1998, 1999).

With respect to our main question, that is, if positive and negative moods influence the willingness to collaborate, we would expect similar mood-congruent effects. Therefore, individuals in a positive mood would be more inclined to collaborate than those in a negative mood. Thus, we hypothesize the following:

Hypothesis 1: Individuals in a positive mood will be more willing to collaborate than individuals in a negative mood.

Mood Effects under Complex and Heuristic Information Processing

The Affect-as-infusion theory (Forgas, 1995) does not expect the aforementioned behavioral effects to be equally unfolded with the same degree of intensity in all kinds of circumstances. Because this theory builds on information-processing principles, it predicts differences in the strength of mood effects on behavior, depending on the adopted information-processing strategies by a particular individual in a particular situation.

In this respect, highly complex situations require extensive information processing. This type of complex processing relies on a combination of both previously stored knowledge and new information in order to form a response (Forgas & George, 2001). In these cases, the task is usually unfamiliar, atypical and complex and the situation has a need for accuracy (Forgas, 1995). Therefore, individuals need to "select, learn and interpret new information about a task and need to rely on their associative ideas and memories to accomplish this" (Forgas & George, 2001, p.12). Based on the aforementioned ideas regarding the associative network in our memory, the mood congruency-effect is expected to be particularly strong under this specific type of information-processing (Forgas, 1995), because mood-related information has a higher likelihood to spread across the memory network.

However, moods can also impact behavior through the use of "heuristic processing", which is especially useful when operating in equally complex and rapidly changing conditions, but follows a simplified and quick processing style (Clore, Gasper & Garvin, 2001). This type of information processing has also been named as intuitive or fast thinking (Kahneman, 2010). According to existing theory, heuristic processing may have a more limited effect on the affect-priming mechanism than extensive processing (Forgas & George, 2001). Thus, compared to heuristic information processing (Chaiken, Liberman, & Eagly, 1989), situations which require extensive information processing (i.e., those in highly complex tasks), will result in stronger mood effects on collaboration (Forgas, 1995). Consequently, we expect a moderation effect in the relationship between moods and collaboration, depending on the type of information processing which is active in the cognitive processes of a particular individual. Thus, we hypothesize the following:

Hypothesis 2: The relationship between mood and collaboration is moderated by the complexity of the task (and therefore, the extent to which extensive vs heuristic information processing is needed).

METHODS

Experimental Design and Procedure

The experimental design consisted of two main differentiated treatments. Specifically, we simultaneously manipulated both individual mood states and the type of information processing needed to solve the task (extensive vs heuristic processing). We did this by explicitly manipulating the difficulty level, i.e., the complexity of the task. The low-difficulty level of the task was intended to elicit the use of heuristic information processing, while the high difficulty level was expected to promote the use of extensive information processing. The induced mood states could only take two different forms: positive (i.e., happy) or negative (i.e., sad) mood states. Happy and sad moods have been respectively induced in previous research, as these are universal mood states that are undoubtedly positive and negative (Bless et al. 1996; Forgas, 1994). Consequently, the design consisted of a 2x2 factorial between-subjects design derived from the combination of the two treatments. Figure 1 graphically represents the summary of the four treatments.

Insert Figure 1 about here

The experimental sessions were implemented in a specialized laboratory in economic experiments in Valencia (Spain). The software we used was Z-3. After a first initial pre-test of the software, we performed one pilot session with 40 subjects under controlled experimental conditions. Finally, the four experimental sessions were performed, one per treatment. 240 subjects were randomly assigned to each of these four experimental conditions.

The real-effort task we chose consisted of a selection of matrices from the Raven test. This test was developed as a means of measuring general cognitive ability (Raven, 2000). The Raven test is a set of problem-solving exercises that presents a number of matrices or puzzles, which are all associated based on a hidden pattern. There is an empty space corresponding to a missing figure and the decision maker needs to find out which figure is missing from the presented options following the hidden pattern. There is only one correct answer per Raven puzzle. We selected puzzles from both the Raven´s Progressive Matrices version and the Raven´s Advanced Progressive Matrices version; for the low complexity versus high complexity conditions, respectively. The advanced progressive matrices were developed to detect and differentiate between individuals with higher levels of cognitive ability (Raven, 2000) and therefore some of these puzzles have been shown to be difficult also for university students (Rushton, Skuy & Fridjhon, 2003), as they involve a high level of abstract reasoning. Furthermore, the Raven puzzles have been previously used in economic experiments following a varying difficulty scheme (Herz, 2014).

Specifically, subjects in the high complexity condition were presented with five puzzles from the Raven Advanced Progressive Matrices. In a similar vein, those in the low complexity condition were asked to solve five puzzles from the Raven Progressive Matrices (Raven, 2003). In both cases, before every round they were informed that they had five minutes (one minute per puzzle). Both extensive and heuristic information processing have been shown to be needed to solve the Raven puzzles, but only the most complex puzzles, need significantly more extensive processing to be adequately solved, as heuristic mechanisms alone have proven to be insufficient in those cases (Carpenter, Just & Shell, 1990).

At the beginning of the procedure, subjects were introduced to the main instructions of the experiment and were requested to accept the informed consent to participate. They were told that a potential partner had been assigned to each of them, with whom they could either choose to team-up at some point if they wished to, or work solo. Subjects were explicitly informed that their earnings would depend on their performance in solving the main task (i.e., Raven puzzles) and the results derived from their decisions.

Immediately after the questionnaire, subjects were presented with the instructions of the task as in Raven et al. (2003), with an example puzzle (see Figure 2) that they could solve without time limit. Specifically, they were asked to find the underlying pattern of the eight related figures and to coherently select in a multiple-choice format the missing figure that completed the underlying pattern.

Insert Figure 2 about here

The inclusion of two different rounds of the Raven task, enabled us to implement both the mood induction and the manipulation of the difficulty of the task only in the second round. Consequently, the first round of puzzles was not subject to possible mood influences on the obtained performance (i.e. number of correct Raven puzzles). Subjects were told that they would not know which of the two rounds of the Raven puzzles would be considered for the final payment. Although we did not disclose this information to the individuals, we only considered for payment the results from the first round (and not the second one, subject to the influence of the mood induction) for ethical reasons. In addition, keeping constant the difficulty level (either low or high) across the two rounds could have elicited an unintended "direct-access" strategy, which is likely to be unfolded in highly familiar circumstances, attenuating the appearance of mood effects (Forgas, 1995).

Relatedly, as mentioned at the beginning of the Methods Section, subjects were virtually assigned to an unknown partner, thereby forming virtual pairs that could potentially afterwards become a real two-people team. However, they could not communicate with their assigned partner and they would not know at any moment the identity or the performance of the partner. The absence of interaction is not uncommon in previous experiments. Furthermore, this intentionally avoided the appearance of other types of information processing dissimilar to extensive and heuristic processing, which can arise in face-to-face social interactions leading to the disappearance of mood effects on behavior (Forgas & George, 2001).

Towards the end of the experiment, subjects were requested to fill out a short set of background questions that asked them to explicitly indicate, from a variety of options, what was the reason behind their choice. Furthermore, we asked subjects to guess the objective of the experiment and in case they suspected to know it, to write down their guesses.

A detailed overview was presented to the subjects upon the end of the experiment, stating their obtained earnings and those of their assigned partner, in relation to the obtained performance in the puzzles and the results of their choices. Finally, they were thanked for their participation and paid according to their earnings. Figure 3 graphically illustrates the timeline of the experiment.

Insert Figure 3 about here

The mood induction technique

As previously mentioned, we only introduced the mood treatment in the second round of the Raven puzzles. Subjects were exposed to the mood induction technique immediately before starting the second round of Raven puzzles. In addition, we did not induce mood states before presenting the task, in order to prevent the possibility of mood states affecting participant´s understanding of the task.

Previous studies have pointed towards an additive effect in mood induction when including more than one technique as part of the same procedure (Bower, 1981; Clark, 1983). Consequently, we induced positive or negative moods (depending on the treatment) by combining a primary technique that consisted of remembering in detail and as vividly as possible, a past event of their lives, and a background music composed by empirically tested classical music pieces to promote positive and negative mood states (Västfjäll, 2002). The music selected was different depending on the condition and was intended to prolong the mood effects generated by the written story-recall task. This written exercise was presented to subjects as a memory task (Forgas, & Ciarrochi, 2001), in order to avoid demand characteristics. From the beginning of the task, they started listening through individual headphones to the background music and they continued listening to the music until the debriefing of the experiment. [1]

[1] It is not uncommon to use more invasive mood induction techniques based on the use of "guided imagery" (Mayer, Allen & Beauregard, 1995). As part of these induction techniques, subjects are asked to visualize fictitious but often dramatic situations (e.g. to imagine the death of a beloved one). Due to ethical considerations, such an implementation was not included.

Because there is evidence that a cognitively demanding task can alter mood states (Kim & Kanfer, 2009), and in order to ensure that the mood was the intended one during the whole task, two mood refreshers were introduced after the second and the fourth puzzle in the second round of the Raven puzzles. These refreshers consisted of recalling and writing for a minute once again the feelings generated by the affective story recall task. Mood refreshers have successfully been used in previous research for the purpose of keeping constant the intended mood effect (Bramesfeld & Gasper, 2008). In order to ensure that the mood manipulation was successful across the five puzzles and without interfering with the task, subjects were only requested to fill out a short self-reported mood scale both at the beginning and at the end of the second round.

In order to neutralize the artificially induced mood states and before asking subjects to fill out the background questionnaire, all subjects were asked to engage in solving three extra Raven puzzles from the advanced version. This task was introduced as a question that intended to further assess their intellectual ability. We applied this debriefing technique because it has been shown that a posterior cognitively demanding task can act as a natural way to repair an induced negative mood (Erber & Erber, 2000; Kim & Kanfer, 2009). Although the debriefing was primarily focused on those that had been induced a negative mood, for consistency reasons, subjects in the positive mood condition were equally asked to engage in solving the three extra advanced puzzles.

The Option to Collaborate and Incentives

Subjects were presented with the possibility of either working on an individual basis or starting a collaboration by forming a team with one other subject of equal ability, immediate upon completion of the second round of puzzles. Subjects were requested to state their preference in this respect in a binary form (i.e. individual or team option). In addition, we included a bidding mechanisms as our main outcome variable, in order to have a more informative and continuous measure of the real willingness to be in the team (Becker et al., 1964; Czibor et al., 2015). We included these two different measures of collaboration (binary and continuous), as a way of triangulation, in order to ensure that our findings were in the same line regardless of the type of measure.

In particular, for the implementation of the bidding mechanism, subjects were given an endowment of four euros each, that they could either keep or invest it in the possibility to form a team. Mutual consent was the underlying requirement for the bidding mechanism to lead to team creation, which provided our setting with a more realistic approach to team formation (Czibor et al., 2015). According to this, subjects were told that the actual prize of the team option would be randomly chosen by the software from an interval ranging from one to four euros, and that *both* their assigned partners and themselves, should have bidden at least as high as the prize chosen by the software for the team to be finally created. Furthermore, subjects were informed that they would only loose the invested amount in case the team was actually formed, following this mutual consent rule. A graphical representation of two different examples of the bidding mechanism and the results derived from their investment choices is presented in figure 4.

Insert Figure 4 about here

Unlike our two treatments (i.e. positive and negative mood states and task difficulty), our design has important similarities with that of Czibor et. al., (2015). In particular, we operationalize the team option following the same rationale, which allows potential synergies between teammates to arise from the team option. Following the procedure that these authors implemented, we asked subjects to make their choices only after they had performed the Raven task, in order to avoid free-riding.

The possible earnings were presented to individuals as experimental units, were one unit was equivalent to one euro in this phase. For both the individual and the team options, every correct puzzle was rewarded with 2,75 units. Overall, regardless of their choices, two puzzles were randomly selected for payment at the end of the experiment by the software. Regarding the specific payment schemes corresponding to the individual option, the maximum profit they could gain was two times 2,75 units; that is, a total of 5,5 units in case they had correctly solved the two randomly selected puzzles. In contrast, the team option entailed potential synergies. Hence, if the correctly solved and selected puzzles were *different* puzzles for each team member and the answers to these puzzles were all *correct*, the possibility of maximizing the earnings would raise to the double of the ones in the individual option. This means that if as a player, I have solved one of the two selected puzzles correctly, but I have not managed to solve the second one right, my teammate could have solved his/her two puzzles correctly and my earnings would increase from a single correct answer to three correct answers (in case that my correctly solved puzzle is a different one from those solved by my teammate).

Specifically, subjects were told that in the team option their earnings would not only depend on their individually solved number of puzzles and that those of their assigned partner would be added to their payment calculation. What differentiated the team option from the individual option in terms of earnings was that subjects could earn a maximum of four times 2,75 units, in case that the two team members had solved correctly two different puzzles each, reaching a total amount of four different puzzles solved per team. Specifically, subjects were informed that they could increase their total earnings up to 11 units depending on their performance on the puzzles and their posterior choices, that is, the double of what they could earn in the individual option. Hence, they were informed that their earnings would be at least as high (or higher) in the team option (a maximum of 11 units), as compared to the individual option (a maximum of 5,5 units). It should be noted that the team option could be just beneficial or on the contrary, imply no change in the obtained earnings derived from working solo.

Thus, in order to avoid all respondents to be inclined to select the team option, in which they would also invest (and loose) part of their endowment or the entire endowment (up to 4 euros) as a way to form a team, we included a small penalty. Those that finally formed a team, would be penalized in case the team did not reach at least two correctly solved puzzles in total. Specifically, the penalty would be applied to one of the two puzzles finally selected for payment, and would consist of a loss of the potential synergies attached to that specific puzzle. Figure 5 illustrates the two synergy examples that subjects were provided with prior to making their bids to form a team.

Insert Figure 5 about here

Measures

After the introduction to the experiment, subjects were asked a number of questions related to their personality and socio-demographic aspects. The socio-demographic variables measured were gender, age and education. Gender has already been recently related to decisions to cooperate (Kuhn & Villeval, 2013). Similarly, education has been found to be positively linked to the decision to team-up (Czibor et al., 2015). Finally, age, was a crucial variable to control for because it has been consistently linked to risk-related variables (Vroom & Pahl, 1971), also in relation to affective characteristics (Figner, Mackinlay, Wilkening & Weber, 2009).

In regards to personality variables, the questionnaire included the Positive and Negative Affective Schedule (PANAS scales) by Watson, Clark & Tellegen (1988), which provided us with a measure of their affective traits. This instrument is composed of two scales, one for trait negative affect and the other for trait positive affect. It measures the stable tendency of a person to feel more positive and/or negative mood in general, across life situations. As positive and negative moods constitute a critical independent variable in our design, this question was asked at the beginning in order to prevent possible confounding effects with the posterior mood induction technique.

In order to test if the mood induction was successful, we used a self-reported scale that has been elaborated in previous research for the same purpose (Van Knippenberg, Kooij-de Bode & Van Ginkel, 2010). This enabled us to perform the mood manipulation check afterwards.

Furthermore, all subjects were asked to fill out a scale of a specific personality dimension from the big-five that has been previously related to the preference for teaming-up, which is named conscientiousness (Bäker & Mertins, 2013). For this purpose, we used the NEO-FFI by Costa and McCrae (1989) instrument. Furthermore, we also assessed their altruism as a personality trait, as there is evidence supporting its effect on preferences for social cooperation (Dur & Sol, 2010). Furthermore, altruism has also consistently been linked to a positive mood (Lyubomirsky, King & Diener, 2005). For the measure of altruism, an already existing scale in the Spanish language was used, because it has already shown to have good psychometric properties and to be a reliable instrument to be applied using software instruments (Sing, Corral Verdugo, Tapia Fonllem & García Vázquez, 2011).

Another personality-related variable we measured was their risk attitude, operationalized as a general willingness to take risks in a 11 point Likert scale ranging from 0 (completely unwilling to take risks) to 10 (completely willing to take risks); as it has also been found to affect our dependent variable (Dohmen, Falk, Huffman, Sunde, Schupp, Wagner, 2012).

Finally, the effect of other types of relevant variables was also measured. One of these variables was perceived self-efficacy. Efficacy beliefs can be defined as a personal confidence that an individual has on his/her ability in regards to a specific task or domain (Bandura, 1977). It was important to control for this variable because it has been shown to affect cooperative strategies in economic game situations (Karamanoli, Fousiani & Sakalaki, 2014). We asked their perceived self-efficacy particularly tailored to the Raven puzzle (i.e. they had to indicate how confident they were regarding their ability to solve different quantities of puzzles, measured in percentages in a 10-points Likert scale). Additionally, we also administered subjective estimations or beliefs in one´s own attainted performance and the potential performance obtained by the assigned partner (Czibor et al., 2015) after every round, as these beliefs could have also affected their willingness to collaborate.

Furthermore, the puzzles in the first round were mixed in terms of the difficulty level. We used the number of correct answers from the first round of the Raven puzzles as a measure of their cognitive ability (as an IQ proxy). Lastly, the exact time needed to make the decision was also monitored.

To eliminate the possibility of social-preferences driving the results, an incentivized trust game was introduced to subjects at the end of the experiment after the debriefing. Every participant played the game as a first and second movers. They were informed that only one scenario would be randomly chosen for payment at the end of the experiment. At the beginning, as first movers, subjects received an endowment of seven units from which they could chose the number of units they preferred to send to the assigned partner prior to knowing how many units he/she would receive back afterwards. This measure regarding the first move was operationalized as trust. All transfers of units were automatically tripled. The chosen amounts to transfer to the partner in a second move (i.e. they had to choose different amounts to send back to their partner, depending on different imaginary outcomes they could potentially have previously received from their partners) were operationalized as reciprocal interaction. One unit was equivalent to half a euro in the trust game and subjects were informed about the change in the unit´s value for the trust game. All the structure and operationalization of the variables in the trust game is the same as the one used by Dohmen & Falk (2011).

DATA ANALYSIS AND RESULTS

Data Overview

We assigned 60 subjects to each of the four experimental groups, as this was the maximum of seats offered by the facilities in the lab. The total sample consisted of 240 subjects, from which 113 were men and 127 were women. The mean age was 23.28 years (SD=4.49).

As exposed in Table 1, correlation analyses between collaboration and all the control variables show that the majority of these variables do not have significant correlations with the decision to collaborate (i.e. age, gender, positive and negative affective traits, altruism, conscientiousness, perceived self-efficacy, own subjective performance, number of puzzles correct in the first round, time to make the decision and reciprocal interaction). Similarly, the level of achieved education was not significantly related to the dependent variable, and for reasons of potential multi-collinearity due to many dummy-coded variables in the models, this variable was not included in the regression analyses. However, risk attitudes, subjective performance estimations about other´s performance and trust, were statistically significant (r=.15, .06, .28, respectively) and therefore included as controls in the data analysis.

Insert Table 1 about here

As shown in Table 2, randomization checks were performed in order to ensure the random distribution of all the relevant variables across the various treatments in the sample. We tested for all independent variables if their means were statistically significant from each other depending across the four treatment groups. All mean differences were statistically insignificant, empirically supporting the randomized assignment to treatments.

Insert Table 2 about here

Mood manipulation check

According to expectations, the t-tests show that positive mood scores do not significantly vary across experimental groups before the mood manipulation, both for the positive mood (M= 10 SD=0.20), t (236.41)= -0.05, p=(0.95) and the negative mood (M=10.01 SD=.21), *t* (238)=0.55, p=(0.57). After the mood manipulation, however, those in the positive mood condition indicated that they did significantly feel in a more positive mood (M=10.47 SD=0.21) than those subjects in the negative mood condition (M=8.39 SD=0.25), *t* (238)= 6.28, p=(0.00). The same results also hold for the negative mood scores, which did not significantly vary across experimental groups before the mood manipulation, both for the positive mood groups (M=4.09 SD=0.15) and the negative mood group (M=3.96 SD=0.16), t (238)=0.55, p=(0.57). However, after the mood manipulation, those in the negative mood condition indicated that felt in a more negative mood (M=5.59 SD=0.20) than those subjects in the positive mood condition (M= 4.1 SD=0.15), t (219.26)=-5.77, p=(0.00). Therefore, the results statistically support that our mood manipulation procedure (including the mood refreshers) was successful.

Factors Influencing Collaboration: Hypothesis 1 and 2

Dummy variables were created to represent differences between the treatments in the OLS regression analyses. Specifically, one dummy variable represented mood states (0= negative mood, 1= positive mood). A second dummy variable, differentiated between low and high difficulty levels in the task (0= low difficulty 1= high difficulty). We mean-centered all the independent variables following recommendations by Aiken & West (1991). All regression models were calculated with robust standard errors.

We analyzed collaboration in OLS regression analyses with two dummy variables representing the two treatments (i.e. positive and negative mood states and low and high task difficulty levels). As shown in Table 3, we followed step-wise regression analyses in order to clearer represent the contrast of the differential effects that our variety of control variables were exerting on the dependent variable. Model 1 only includes the single effect of the treatments. Model 2 includes the effect of the treatments and the interaction between them. In model 3, we include all the previous variables and we add the socio-demographic variables (age and gender). Model 4 excludes the socio-demographic variables and includes only the personality-related variables (i.e. trait positive and trait negative affect, altruism, risk attitudes and conscientiousness). It can be noted, if we compare model 3 and model 4, that the coefficients of the treatments slightly change, which suggests the importance of controlling for age and gender. Relatedly, model 5 includes together with the personality variables other types of variables (i.e. perceived self-efficacy, own and the other´s subjective performance estimations and number of correctly solved puzzles in round one as a proxy for cognitive ability). In Model 6 we can see the joint effect of personality variables and social preferences (i.e. trust and reciprocal interaction). Model 7 includes again the effect of socio-demographic variables and all the variables altogether. It can be noted that there is no change in the adjusted R^2 from model 6 to model 7 (full model). Model 8, includes only the significantly related variables to collaboration, with no major changes in the coefficients.

Insert Table 3 about here

The results show a strong interaction effect between our two treatments, but there was no significant main effect of mood and thereby we did not find support for Hypothesis 1. Specifically, model 1, which contemplated only the main effects of the two treatments, shows that only the difficulty treatment (and not the mood treatment), had a main statistically significant effect. The negative sign tells us that subjects exposed to the high difficulty level treatment, did significantly collaborate less than those exposed to the low difficulty treatment. The interaction of the contrast between the positive and negative mood condition and the difficulty of the task (low vs high) proved to be significant when including the relevant control variables in model 5, supporting Hypothesis 2. As shown in figure 6, moving from the negative mood condition to the positive mood condition, significantly increases collaboration. We also notice, as represented by the dashed line, that this effect is only significant when in the high difficulty condition, while it is insignificant in the low difficulty condition.

Insert Figure 6 about here

Robustness checks

Mood effects occur primarily at an unconscious level, however, in this case, the 17% of the participants self-reported in our background questionnaire that their affective state was the reason behind their choices. Under heuristic processing (i.e. low difficulty treatment in our design), previous research has shown that it is common to use the "affect-as-information" heuristic, which consists of using the personal information regarding one´s current feelings as a source of information when making a decision (Clore, Gasper & Garvin, 2001). In order to test for consistency between this finding in our background questionnaire and our treatment effect, we should test if those individuals in the low difficulty (heuristic processing) condition did indeed use to a higher extent the "affect-as-information" heuristic (as compared to those in the high difficulty condition). A one-tailed proportion t-test including the use of this heuristic (vs the absence of it) as a dummy coded variable, showed support for this effect towards the expected direction. Thus, the difference between the use of the heuristic in the low difficulty condition, as opposed to the high difficulty condition is statistically significant $z=1.69$ $p=0.04$, supporting that those in the heuristic processing condition used the affect-as-information heuristic to a larger extent in our sample, as compared to those in the extensive processing condition (high task difficulty). This finds support for a correct heuristic processing treatment in our experiment.

The same analyses were replicated using logit models aiming to predict the binary categorical variable capturing the preference to join the team. We did not find support for the effect of any of our treatments, probably due to the high level of noise in our binary measure.

However, we can see from the results that the sign of the coefficients remained the same in both types of regression analyses.

Finally, in a second question of the background questionnaire, participants were asked to guess the objective of the experiment. None of them did correctly predict the aim of the study, which increases the internal validity of the findings.

DISCUSSION AND CONCLUSION

Key findings and discussion

By drawing on the affect-as-information model (Forgas, 1995), this study contributes to empirically test 1) whether moods predict collaboration and 2) under which particular conditions mood states lead to collaboration.

In regards to whether moods predict collaboration, contradictory findings are evident from prior experimental evidence in social dilemma situations and bargaining contexts. Some of these studies find an association between moods and behaving more or less collaboratively (Carnevale & Isen, 1986; Forgas, 1998; Knapp & Clark, 1991), while others do not find any main effect (Forgas, 1994; Hertel & Fiedler, 1994). The reason for such an inconsistency in previous findings has been suggested to rely on different situational characteristics (Tan & Forgas, 2010).

In our study, we find that mood does not directly influence collaboration, however, it does have a causal effect on collaboration when in the difficult task condition, where extensive information processing is needed.

This study helps us reconcile previous divergent findings. Furthermore, to our knowledge this is the first study that explicitly uses an incentivized task to study mood effects on the willingness to join a team. Therefore, this study significantly diverges from previous experimental work where the setting was characterized by an inevitable dilemma between benefiting one´s interests at the expense of the teams´ benefit, such as trust-games, dictator-games and social dilemmas (Drouvelis & Grosskopf, 2014; Hertel et al., 2000; Kluger et al., 2012; Suleiman, Aharonov-Majar & Luzon, 2015; Tan & Forgas, 2010). Furthermore, oftentimes these social dilemma studies explicitly allow for interactions and information is shared regarding team choices, which establishes the use of social norms that in turn undermine potential mood effects on behavior (Forgas & George, 2001).

In contrast, we know less about current ways of collaboration, where social norms are often ill structured, as they are subject to constant change and uncertainty. Therefore, our study sheds light on the importance that mood effects have in less explored, highly uncertain types of collaboration that often lack face-to-face interactions. In addition, we advance the existing theory in collaboration by proposing a contingency perspective to answer whether mood predicts collaborative behavior. Specifically, we find support for mood effects in contexts where extensive information processing is needed. Therefore, innovative and knowledge-intensive contexts are the most vulnerable settings for mood effects to influence collaborative behavior.

Our findings could also be extended to our understanding of other types of collaboration in organizations, as extensive information processing has been shown to be predominant in the majority of organizational settings where social aspects are important (Forgas & George, 2001). In this regard, we also find in our data that without considering mood effects, difficult tasks alone promote less collaboration than easy tasks. This finding is to some extent counter-intuitive, as it is in those difficult tasks where individuals are most likely to benefit from collaboration and the synergies created by joining teams. We argue that this finding may be due to the fact that subjective estimations of the partners´ performance are more positive in the easy task as compared to the difficult one, which could foster the willingness to collaborate by decreasing uncertainty. When dealing with difficult tasks, the uncertainty about the others´ performance might be more salient, particularly in current ways of collaboration. Therefore, and in line with our findings, the benefits of positive mood in the context of highly difficult tasks (such as in complex problem-solving), may be particularly helpful in promoting collaboration under such conditions under which people may be less naturally inclined to collaborate. We therefore find support for the relevance of paying higher attention to the affective mechanisms that drive collaboration in those particularly complex problem-solving settings.

Methodological Advantages, Caveats and Limitations

Our measure of collaboration has advantages as compared to other previously used measures, because it realistically operationalizes the potential synergies between individuals that usually emerge in real-life contexts. In our setting, both assigned individuals had to bid at least as high as the auction price for the team to be created. This required mutual consent. We believe that these aspects are found in work collaborations in real life and we have to some extent included them in our laboratory context. However, our measure of collaboration is only a first step in the study of the mood-collaboration relationship. The fact that we do not allow real social interactions between partners of the team and that the task was not commonly solved in the context of actual team production has some limitations. We are aware that shared decision-rights are an intrinsic part of behaving as a team, which could not be explicitly captured in our study. However, the context of sharing decision-rights has been empirically shown to highly resemble the joint-production picture created in our study (Czibor et al., 2015). Therefore, we can argue that our measure of collaboration is a quite realistic representation of what would have occurred in the context of actual shared-decisions in teams. However, future studies should empirically test this prediction.

Managerial Implications and Directions for Future Research

Large multi-nationals such as Google, often implement a variety of activities in order to promote employees´ positive affective states. In this study, we empirically show that these initiatives might be worthwhile, especially in contexts in which complex-problem solving is particularly salient. Therefore, we can conclude that it is particularly important to design environments in which individuals feel pleasant or in a positive mood, as a way to promote collaboration in such settings. As we have shown, this is especially important in those ad hoc communities and online settings, were collaborations are often anonymous and distinguishing characteristics, but can be extended to other types of organizational collaborations where extensive processing of information may strengthen the impact of mood on collaborative behavior.

Furthermore, since collaboration is an important aspect of leadership, executive training programs could to a large extent benefit from including personal development training techniques with a special focus on affective processes and their relationship with cognition and behavior. For instance, those techniques that promote the appearance of more frequent positive affective states, such as the use of appropriate emotion regulation strategies, seem particularly promising.

REFERENCES

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

Ashforth, B. E., & Mael, F. (1989). Social identity theory and the organization. Academy of management review, 14(1), 20-39.

Bäker, A., & Mertins, V. (2013). Risk-sorting and preference for team piece rates. Journal of Economic Psychology, 34, 285-300.

Bargh, J. A., & Williams, E. L. (2006). The automaticity of social life. Current directions in psychological science, 15(1), 1-4.

Barsade, S. G., & Gibson, D. E. (2007). Why does affect matter in organizations?. The Academy of Management Perspectives, 21(1), 36-59.

Bless, H., Clore, G. L., Schwarz, N., Golisano, V., Rabe, C., & Wölk, M. (1996). Mood and the use of scripts: Does a happy mood really lead to mindlessness?. Journal of personality and social psychology, 71(4), 665.

Boudreau, K. J., & Lakhani, K. R. (2013). Using the crowd as an innovation partner. Harvard business review, 91(4), 60-69.

Bower, G. H. (1981). Mood and memory. American psychologist, 36(2), 129.

Carnevale, P. J., & Isen, A. M. (1986). The influence of positive affect and visual access on the discovery of integrative solutions in bilateral negotiation. Organizational behavior and human decision Processes, 37(1), 1-13.

Carpenter, P. A., Just, M. A., & Shell, P. (1990). What one intelligence test measures: a theoretical account of the processing in the Raven Progressive Matrices Test. Psychological review, 97(3), 404.

Clark, D. M. (1983). On the induction of depressed mood in the laboratory: Evaluation and comparison of the Velten and musical procedures. Advances in Behaviour Research and Therapy, 5(1), 27-49.

Clore, G. L., Gasper, K., & Garvin, E. (2001). Affect as information. In Forgas, Joseph P. (Ed), (2001). Handbook of affect and social cognition (pp. 121-144).

Costa, P. T., & McCrae, R. R. (1989). Neo Five-Factor Inventory (NEO-FFI). Odessa, FL: Psychological Assessment Resources.

Chaiken, S. (1980). Heuristic versus systematic information processing and the use of source versus message cues in persuasion. Journal of personality and social psychology, 39(5), 752.

Cramton, C. D. (2001). The mutual knowledge problem and its consequences for dispersed collaboration. Organization science, 12(3), 346-371.

Crisp, C. B., & Jarvenpaa, S. L. (2013). Swift trust in global virtual teams. Journal of Personnel Psychology.Vol. 12(1):45–56

Czibor, E., Rosendhal, H. & Koudstall, M. Risks, gains and autonomy: An experimental analysis of sorting into teams. Working paper. University of Amsterdam.

Dijksterhuis, A., & Aarts, H. (2010). Goals, attention, and (un) consciousness. Annual review of psychology, 61, 467-490.

Dohmen, T., Falk, A., Huffman, D., Sunde, U., Schupp, J., & Wagner, G. G. (2011). Individual risk attitudes: Measurement, determinants, and behavioral consequences. Journal of the European Economic Association, 9(3), 522-550.

Dur, R., & Sol, J. (2010). Social interaction, co-worker altruism, and incentives. Games and Economic Behavior, 69(2), 293-301.

Eisenhardt, K. M. (1989). Making fast strategic decisions in high-velocity environments. Academy of Management journal, 32(3), 543-576.

Foss, N. J., Frederiksen, L., & Rullani, F. (2015). Problem-formulation and problem-solving in self-organized communities. Strategic Management Journal.

Forgas, J. P. (1999). Feeling and speaking: Mood effects on verbal communication strategies. Personality and Social Psychology Bulletin, 25(7), 850-863.

Forgas, J. P., & George, J. M. (2001). Affective influences on judgments and behavior in organizations: An information processing perspective. Organizational behavior and human decision processes, 86(1), 3-34.

Hoang, H., & Rothaermel, F. T. (2005). The effect of general and partner-specific alliance experience on joint R&D project performance. Academy of Management Journal, 48(2), 332-345.

Jarvenpaa, S. L., & Leidner, D. E. (1998). Communication and trust in global virtual teams. Journal of Computer- Mediated Communication, 3(4), 791-815.

Laursen, K., & Salter, A. (2006). Open for innovation: the role of openness in explaining innovation performance among UK manufacturing firms. Strategic management journal, 27(2), 131-150.

Mowshowitz, A. (1997). Virtual organization. Communications of the ACM, 40(9), 30-37.

O'Mahony, S. & Lakhani, K. (2011). Organizations in the shadow of communities. HBS Working Paper 11-131.

Raven, J. (2000). The Raven's progressive matrices: change and stability over culture and time. Cognitive psychology, 41(1), 1-48.

Rushton, J. P., Skuy, M., & Fridjhon, P. (2003). Performance on Raven's advanced progressive matrices by African, East Indian, and White engineering students in South Africa. Intelligence, 31(2), 123-137.

Townsend, A. M., DeMarie, S. M., & Hendrickson, A. R. (1998). Virtual teams: Technology and the workplace of the future. The Academy of Management Executive, 12(3), 17-29.

Walther, J. B., Van Der Heide, B., Hamel, L. M., & Shulman, H. C. (2009). Self-generated versus other-generated statements and impressions in computer-mediated communication a test of warranting theory using Facebook. Communication research, 36(2), 229-253.

Wasko, M. M., & Faraj, S. (2005). Why should I share? Examining social capital and knowledge contribution in electronic networks of practice. MIS quarterly, 35-57.

Wuchty, S., Jones, B. F., & Uzzi, B. (2007). The increasing dominance of teams in production of knowledge. Science, 316(5827), 1036-1039.

APPENDIX

FIGURE 1: Summary of the four treatments.

Treatments	**Low difficulty**	**High difficulty**
Positive (happy) mood	Treatment 1	Treatment 2
Negative (sad) mood	Treatment 3	Treatment 4

FIGURE 2: Example of a Raven puzzle (as introduced to subjects).

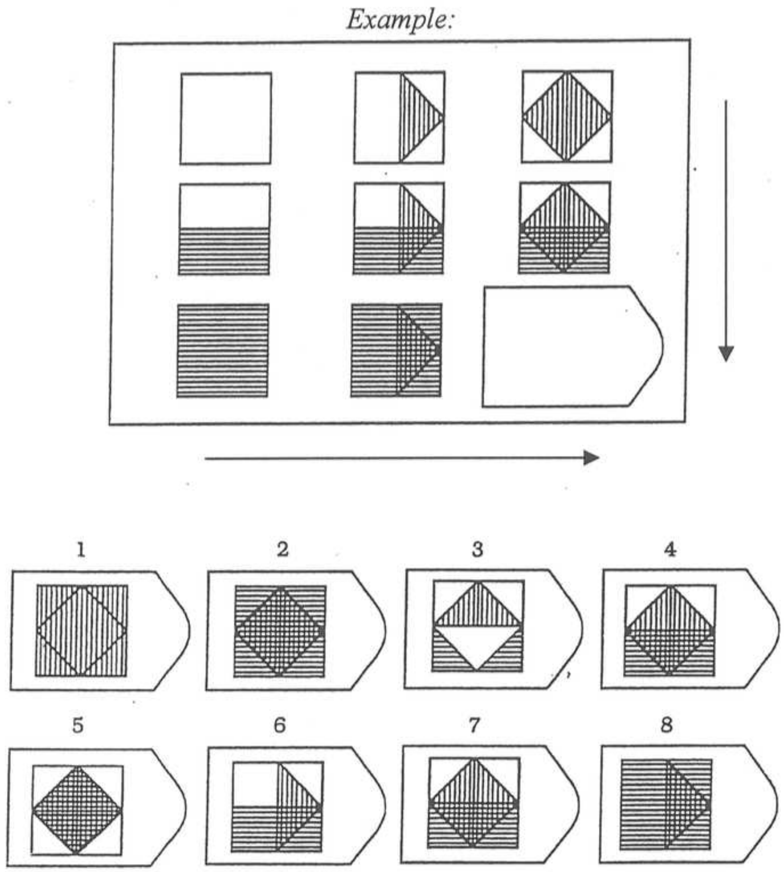


FIGURE 3: Timeline of the Experiment.

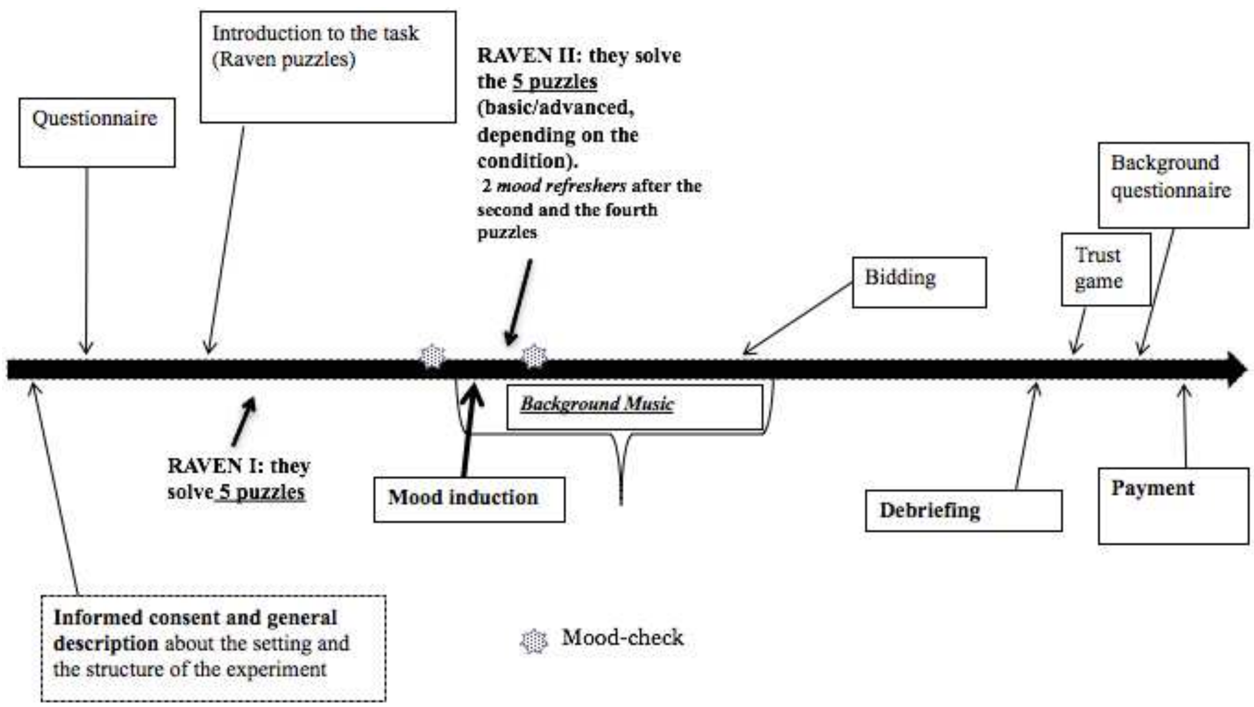


FIGURE 4. The bidding mechanism

Example 1: Auction Prize of three euros.

Player A[2]	*Auction prize: 3 euros* Amount of the 4 euro-endowment invested: 4 euros (above the auction prize).	**Result: The team is *not* created.** Player A keeps the whole amount of the endowment (it will be added to his/her the final payment).
Player B	*Auction prize: 3 euros* Amount of the 4 euro-endowment invested: 2 euros (below the auction prize).	**Result: The team is *not* created.** Player B keeps the whole amount of the endowment (it will be added to his/her the final payment).

Example 2: Auction Prize of two euros.

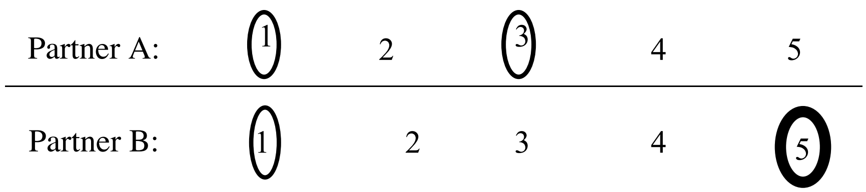
Player A	*Auction prize: 2 euros* Amount of the 4 euro- endowment invested: 3 euros (above the auction prize).	**Result: The team is created.** Player A keeps the remaining 1 euro of the endowment (it will be added to his/her the final payment).
Player B	*Auction prize: 2 euros* Amount of the 4 euro- endowment invested: 2 euros (exactly the auction prize).	**Result: The team is created.** Player B keeps the remaining 2 euros of the endowment (it will be added to his/her he final payment).

[2] In each of the examples player A and player B have been pre-assigned to each other as potential partners to form a team before making their bids.

FIGURE 5: Two synergy examples (in the team option).

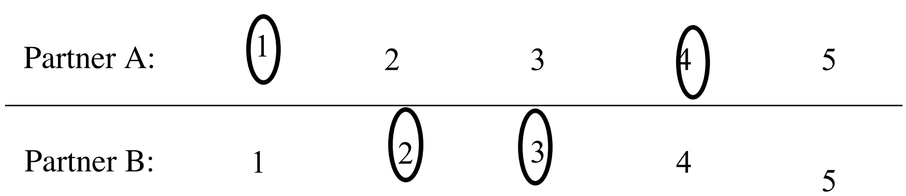
- The circles represent the puzzles that have been randomly chosen for payment (two per player).
- The ordinary circles represent the *correct* solutions, while the one in bold represents the *incorrect* ones.
- The payment is calculated in the following way:

Example 1:



	Team option	**Individual option**
Number of answers given:	4	2
Number of *correct* puzzles:	3 / 4	Partner A: 2 Partner B: 1
Number of *different* puzzles correct:	2 / 3	Partner A: 2 Partner B: 1
Final payment:	2 correct answers x 2,75 units per puzzle= 5,5 units.	Partner 1: 2 x 2,75= 5,5 units. Partner 2: 1 x 2,75= 2,75 units.

Example 2:



	Team option	**Individual option**
Number of answers given:	4	2
Number of *correct* puzzles:	4/4	Partner A: 2 Partner B: 2
Number of *different* puzzles correct:	4/4	Partner A: 2 Partner B: 2
Final payment:	4 correct answers x 2,75 units per puzzle= 11 units.	Partner A: 2 x 2,75= 5,5 units. Partner B: 2x 2,75= 5,5 units.

FIGURE 6: Interaction of the Mood treatment (dummy coded, 0= negative 1=positive) and Difficulty of the task (dummy coded, 0=Low 1=High) treatment on Collaboration.

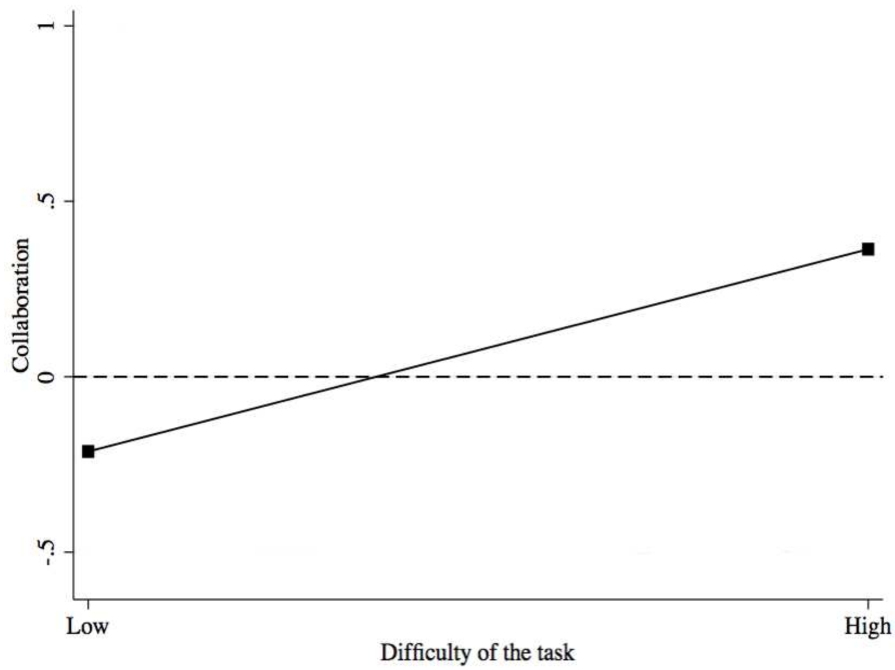


TABLE 1: Means, standard deviations and correlations.

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Collaboration	1.86	1.07	1																
2. Age	23.18	4.49	-.01	1															
3. Gender (dummy)	-	-	-.05	-.11	1														
4. PANAS+	35.81	4.68	.06	-.01	.02	1													
5. PANAS-	20.38	6.37	.00	-.02	-.04	-.18**	1												
6. Altruism	25.125	6.06	.05	-.06	.26**	.37**	.01	1											
7. Risk Attitude	6.89	1.88	.15*	.00	-.04	.24**	-.23**	.18**	1										
8. Conscientiousness	29.18	3.33	-.01	.19**	.11	.35**	-.15**	.07	-.01	1									
9. Perceived self-efficacy	78.48	17.72	.06	.01	.00	.23**	-.08	-.05	.08	.14*	1								
10. Own subjective performance	3.56	1.27	.00	.02	.08	.15*	-.19**	-.02	.02	-.01	.35**	1							
11. Others subjective performance	3.74	.96	.06*	.04	.20**	-.00	-.06	.01	-.08	-.02	.13*	.59**	1						
12. N correct	3.46	1.06	.07	-.09	-.05	.03	-.06	-.21**	-.00	-.05	.24**	.56**	.37**	1					
13. Time	17.33	13.40	-.02	-.03	.00	-.05	-.05	-.07	-.09	.02	.09	.06	.00	.10	1				
14. Trust	3.97	1.97	.28**	.05	-.20**	.07	.05	-.08	-.01	.03	.06	-.06	-.04	.02	.01	1			
15. Reciprocal interaction	50.87	33.80	.01	.03	.00	.07	.03	.13*	.03	.03	-.04	-.12	-.08	-.12	-.08	.29**	1		
16. Mood(dummy)	-	-	.02	.00	.02	.09	.02	.05	.08	-.02	.07	.02	-.04	.02	-.06	-.05	-.08	1	
17. Difficulty of the task (dummy)	-	-	-.15*	-.05	-.02	-.12	.06	-.07	-.06	-.05	-.04	-.02	-.03	.00	.01	-.03	.01	.00	1

TABLE 2: Randomization check.

	Low difficulty	High difficulty	Positive mood	Negative mood
Age	23.42	22.95	23.22	23.15
PANAS+	36.38	35.25	36.27	35.35
PANAS-	19.97	20.79	20.51	20.25
Altruism	25.6	24.65	25.44	24.80
Risk Attitude	7.01	6.77	7.05	6.74
Conscientiousness	29.14	29.22	29.25	29.11
Perceived Self Eff	79.32	77.65	79.84	77.13
Subjective performance (own)	3.41	3.35	3.40	3.36
Subjective performance (others)	3.62	3.56	3.55	3.65
N puzzles correct	3.45	3.46	3.49	3.43
Time (decision)	17.16	17.51	16.48	18.19
Trust	4.04	3.9	3.85	4.08
Reciprocal	50.33	51.40	48	53.74
Gender (proportion t-test)	.54	.51	.54	.51

TABLE 3: Ordinary Least Squares (OLS) regression results for Collaborat

DV: Collaboration	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
T1: Mood	.05	-.17	-.16	-.25	-.28	-.23	-23	-.21
T2: Difficulty (task)	-.33*	-.56**	-.56**	-.58**	-60**	-.56**	-.57**	-.56**
Age			-.00				-.01	
Gender			-.11				-.04	
Trait positive affect				.00	.01	.00	.00	
Trait negative affect				.01	.00	.00	.00	
Altruism				-.00	-.00	.00	.00	
Risk Attitude				.09*	.10*	.10**	.10**	.09**
Conscientiousness				-.00	-.00	-.00	-.00	
Perceived Self Eff					.00	.00	.00	
Own subjective performance					-.23*	-.19	-.19	
Other subjective performance					.29**	.28**	.29**	.20**
N correct (IQ proxy)					.09	.07	.07	
Decision time					-.00	-.00	-.00	
Trust						.16**	.16**	.15**
Reciprocal int.						-.00	-.00	
Exp.session2								-.10
Exp.session3								.22
Exp.session4								-18
Mood x Difficulty		.46	.48	.53	.61*	.58*	.58*	.57*
Mood x trait positive affect								
Constant	2.00**	2.1**	2.38**	1.22	.23	-.10	.89	.13
Adj. R^2	.02*	.03*	.04*	.06*	.10**	.18**	.18**	.18**
ΔR^2		.01	.01	.02	.04	.08	.00	.00