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Structured and Unstructured Self-Regulation: Self-Control, Self-Efficacy and Its Effects on Task Performance

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ABSTRACT

Self-regulation has been investigated on the past decades in many fields, and despite the fact that contributions have enlightened the understanding of a vast array of behaviors, the development of general explanatory models hardly reaches a consensus. A recent contribution on the field suggests that the presence or absence of a goal may lead to different self-regulatory states, in which the individual would think and behave differently, facilitating goal achievement when there is a goal, or environmental adaptation, when there is not. Those states were defined as structured and unstructured self-regulation and even though this line of research has potential to give significant contributions, it is important to develop a better description of those states, for example, in terms of which variables may have influence on the process. In an effort towards the development of a model based on the suggested self-regulatory states, a sequence of experiments was conducted to test the moderation effects of self-control (experiment 1) and self-efficacy (experiment 2) on the relation between goal presence/absence and task performance. On experiment 1 participants were randomly selected for two groups, goal or no goal, in which they had to perform a task with or without a specific goal. The performance on the task was measured and the moderation effects of self-control were investigated. On experiment 2, the same procedure was conducted but self-efficacy was tested as a moderator. At this point the results suggest that the model is feasible, with moderation effects found for self-control and self-efficacy. Also, the presence of a goal affected the performance on both tasks, suggesting that the model could be a significant contribution to a better understanding of self-regulation.

THEORETICAL BACKGROUND

From time to time individuals deal with goals in a striving, motivational way, pursuing goals as a strategy to achieve success and endeavor in many areas, while on other situations, it seems hard to pursuit goals, which generally leads to effort reducing or simply abandoning circumstances. Considering those patterns, it is plausible to hypothesize that individuals regulate behavior differently in situations with or without specific goals, which may be related to different self-regulatory states, with diverse characteristics, that needed to be investigated in order to clarify the self-regulatory processes in each case and illuminate the understanding on the phenomenon. Fujita and Trope (2014) proposed a model describing two self-regulatory models, based on the presence or absence of goals. According to those authors, when a goal is set, the individual would engage in a structured regulation state, while on absence of a specific goal, the individual would engage in an unstructured regulation state. Two aspects not discussed in the original model are the possible moderators and the effects of each state in task performance. As a development of the model, this research proposes to manipulate the goal-setting process to engage the individual in one of the two states, and also, assuming that both states are affected by moderators, self-control and self-efficacy were investigated.

REFERENCES

References

Background Image - http://runyourjewels.com/projects/2012-08-13/fullview/2012-08-13-FULL_Chris_Keegan.jpg

Full Research

METHOD

Experiment 1

Participants

122 undergraduate students, 65% female, within an average of 27.23 years old (SD = 10.18) were selected and randomly assigned to groups (Goal and No-Goal).

Instruments

Participants answered the Self-Control Scale (Tangney et al., 2004) in its Brazilian Portuguese version (Victorino and Franco, 2016), and for the performance task, a puzzle app was presented in an iPad.

Procedure

Participants were asked to solve the puzzle and answer the Self-Control Scale. For the Goal Group, the participants were asked to solve the puzzle in less than 5 minutes, while in the No-Goal Group, they were only asked to do the puzzle.

Experiment 2

Participants

204 undergraduate students were selected and randomly assigned to three groups (Goal/Reward, Goal/No Reward and No-Goal/No Reward). The age average was 20,55 years old (SD = 9,19), being mostly psychology undergraduates (61,71%) and women (52,09%

Instruments

Participants answered the General Self-Efficacy Scale (Schwarzer & Jerusalem, 1995) in its Portuguese version (Araújo & Moura, 2011). The performance measure was the Tower of London Task (Keith Berg & Byrd, 2002), presented through Millisecond Inquisit software. **Procedure** Participants were asked to solve the Tower of London task and answer the Self-Efficacy Scale. For the Goal/Reward Group, participants were told that their goal was to score among the top 25%, and that there was a reward of R\$ 5,00 if they succeed. Since they did not know exactly how many points were necessary, participants would strive to commit the minimum amount of mistakes possible. The Goal/No Reward group followed the same procedure, but without the reward, with participants being told that their goal was to score among the top 25%. For the No Goal groups, participants were only asked to do the task. The No Goal/No Reward Group was only asked to do the task.

RESULTS

Experiment 1

In order to test moderation effects, specifically analyzing changes in the coefficients obtained for both groups of the categorical variable (goal and no goal), a hierarchical regression with two blocks was conducted, to investigate the differences on the models with and without the interaction term.

The change in F values was significant, $\Delta F = 2.59$, which indicates that the moderation is present. Also, there is an expressive change of R² from 0.02 to 0.44 showing an increase on the total variance explained by the model when the interaction term is considered. These results are corroborated with the residuals analysis, with a decrease in residual sum of squares from the model without the interaction term and the model with the interaction term

Figure 1 shows the regression lines for the models, indicating that for the goal group, there is a more expressive effect of self-control on the predicted time. Both relations are negative, indicating that higher levels of self-control are related to faster times on the task

Experiment 2

There was a significant difference in the scores for Goal/Reward (M = 32.56, SD = 4.50) and No Goal (M = 30.35, SD = 4.71) conditions; $t(131) = 2.617$, $p = .010$, with and effect size of $r = 0,6$, considered a large effect (Cohen, 1992).

For the Goal/No Reward and No Goal comparison, the t-test was not significant (Goal / No Reward M = 29.09, SD = 6.72; No Goal M = 30.35, SD = 4.71); $t(129) = -1.243$, $p = .216$. A third test was conducted to investigate both Goal/Reward and Goal/No Reward groups (N = 134) against No Goal group (N = 65). Due to the different sample sizes on each group, the Mann-Whitney U test was adopted and indicated that the TOL Score was not significant different for Goal/Reward-No Reward group (Mdn = 104.37) in comparison with No Goal group (Mdn = 91.00), $U = 3.770$, $p = .123$.

The moderation analysis was conducted using Hayes PROCESS (2012), a SPSS macro for mediation, moderation and conditional analysis. The analysis indicated that changes in F values was significant, which points out to a moderation effect being present. Additionally, a variation in R² from 0.05 to 0.97 was detected when the interaction term was considered, meaning that the total variance explained has increased with the interaction term.

Figure 2 presents the regression lines for the models, demonstrating that for the goal group, there was a more substantial effect of self-efficacy on the TOL Score. Both relations are positive, indicating that higher levels of self-efficacy are related to better TOL Scores.

Figure 1 – Regression Slopes for Experiment 1

Figure 2 – Regression Slopes for Experiment 2

DISCUSSION

Experiment 1 results show a trend also found in some other studies, that the presence of a goal increases the performance on simple tasks (Gardner, Diesen, Hogg, & Huerta, 2016; Lord et al., 2010). Considering that self-regulation is responsible for the effort management towards a goal and that the relation between self-regulation and goals is relatively consensual (Kotabe & Hofmann, 2015), as far as the structured/unstructured regulation model is concerned, it is reasonable to assume that the first part of the model seems plausible.

The presence of a goal led individuals to a different self-regulation state, which was responsible for the performance differences found. As for the self-control, even though the observed effects were not significant, with self-control explaining only 0.06% of the total variance in the group with goals and 0.02% of the total variance in the no-goal group. Despite the fact that the p value for both groups was not significant, for the goal group it was close to 0.05, and based on recent critics to a sole dependency on p values it is adequate to consider some other information on the analysis (Kline, 2013).

The results of the moderation tests were significant, supporting the hypothesis that the self-control acts as a moderator on the relationship between the presence of goals and task performance, with significant changes in F and R² when the model considered the interaction term. If those results were not strong enough to be detected by the p value, it may be due to other causes.

On experiment 2, the results suggest that the presence/absence of a goal only have an effect on the TOL Score when there was a reward. Without a reward, the presence of a goal did not lead participants to a better performance. Henceforth, the analysis will consider only the Goal / Reward group, and the relationship between goals and rewards will be addressed in the discussion of this experiment.

Experiment 2 brought a better understanding of the structured and unstructured self-regulation, shedding some light in grey areas such as the role of reward and the effects of other dispositional variables on the process. Considering the development of the SUSR model, it is plausible to affirm that there were major advances.

The first advance was related to the role of reward in the goal-setting process. Apparently, individuals were only truly engaged in the task when a reward was presented, even though the responses on the debriefing questions showed differently. On a scale from 1 to 10, when asked if they were engaged on the task, individuals did respond positively (Mdn = 8.00, SD = 2.77). Probably the social desirability lead individuals to state a false engagement, even though the scores on declared motivation and attention were a bit worse (Mdn = 6.00, SD = 3.83 and Mdn = 5.00, SD = 3.93, respectively).

As for the effects of self-efficacy, this variable could not explain alone the performance on the task, which was expected not only considering the SUSR model itself but also the literature on the area (Huang, 2016; Komarraju & Nadler, 2013). The significant result here is that self-efficacy affected the task performance, as shown before on the slopes graph (Figure 2) and therefore should be included in the SUSR model.

Even though this effect was not large in terms of variance explained, recent literature has shown that this is a common finding with variables in the self field and small effects could have significant societal repercussions (Asendorpf et al., 2013; Greenwald, 2014)