

# Moral Licensing: a Study of Progress Influencing Motivation on a Physical Task



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### **Abstract**

Moral licensing has been researched in social and cultural behaviour, like donating to charity. This paper explores the moral licensing effect on physical behaviour. Researched was whether the motivation for a physical task was influenced by feedback through a between-subjects experimental design. The effect of feedback on limited or substantial progress was measured on motivation to perform the physically straining task of jumping rope. The key dependent variable was the number of seconds jumped. In this study, 16 males and 35 females were recruited, and subjected to one of two possible feedback interventions, while jumping rope. Each participants' number of seconds jumped and motivation to jump was measured. Control variables were the enjoyment of jumping rope and motivation to jump. In this study, no significant effect of feedback on motivation to jump or time jumped was found, but there was a correlation between motivation to jump and time jumped. In this study it is concluded that receiving feedback on progress on a physically straining task does not subsequently affect motivation to carry on performing, nor does it affect subsequent performance of said physically straining task.

## Introduction

Most individuals are prone to give in to temptations (Magen, 2007). Nowadays temptations are provided by society in larger numbers than before (Baumeister & Tierney, 2011), making individuals even more likely to give in to temptations. Temptations are, according to Magen (2007), desires to behave in a way that is expected to be regretted at a later time. Gulping down a chocolate bar, binge-watching a show or drinking beer are examples of temptations. Multiple cognitive effects occur if an individual tries to display 'good' behaviour (e.g. Baumeister, Vohs, & Tice, 2007; Carver & Scheier, 2001; Fishbach & Dhar, 2005). Good behaviour could be resisting temptation, for instance, by passively not eating the doughnut or by actively going to the gym. When displaying good behaviour, amongst other cognitive effects, the moral licensing effect could occur (Fishbach & Dhar, 2005).

Moral licensing theory, which is also referred to as self-licensing or moral credential theory, suggests that individuals who initially behaved in a moral way, later display immoral, unethical or otherwise problematic behaviour (Blanken, van de Ven, & Zeelenberg, 2015). For instance, an individual displays good behaviour with a workout and treats himself afterwards with a bowl of ice cream, thereby reducing the effect of the workout.

As researched by Fishbach and Dhar (2005), perceived progress can incite moral licensing. When individuals feel they advance towards their goal, they feel liberated to behave in another, possibly conflicting, way. Progress can be communicated through feedback, where feedback on progress can equip an individual with a license to display immoral behaviour or to discontinue performing desired behaviour (Blanken, van de Ven, & Zeelenberg, 2015; Fishbach, Dhar, & Zhang, 2006).

People have several main goals (Fishbach & Dhar, 2005). Each goal can be divided into sub goals. More often than not, the goals or sub goals are in conflict with each other. Goal 1 could be to exercise more and lose weight. Goal 2 could be to wine and dine more with friends. Achieving to exercise 3 times a week (a sub goal of goal 1), can give permission to eat out more often with friends, gaining weight in the process. Thus, completing a sub goal on a main goal activates action on a goal which increases weight. So, completing a sub goal on the main goal could act as a license to perform goal sabotaging behaviour.

Previous research shows that moral licensing appears in multiple facets of society. Researched topics are sexist and racist statements, donating to charity and taking environmentally friendly actions (Mazar & Zhong, 2010; Monin & Miller, 2001; Sachdeva, Iliev, & Medin, 2009). The effect of moral licensing on physical effort is a facet of society that has not yet been researched, while physical effort is an important factor in maintaining public health (Haskell et al., 2007).

This study examines the influence of perceived goal progress on performing the physically straining task of jumping a rope. This study proposes that students performing a physically straining activity and receiving feedback on their 'limited' progress will continue performing for a longer time period than students receiving feedback on their 'substantial' progress. In this study, it is expected that perceived substantial progress liberates individuals to halt good behaviour. During this research, the question '*Does gaining feedback on goal progress influence subsequent performance in a physically straining task?*' will be addressed. More specifically, this study poses the hypothesis that substantial (vs. limited) feedback on a physically straining task makes it more likely that an individual continues this task shorter (vs. longer).

This study could increase insight into why individuals fail in achieving their set goals and therefore support individuals to achieve set goals. With more information on moral licensing individuals could decrease their incongruent behaviour. This is important for individuals but also for society. When more individuals behave consistently, they will – among other things – smoke and drink less, which could lead to a healthier society (Ent, Baumeister, & Tice, 2015). This study will also contribute to the body of knowledge concerning willpower and self-control for individual uses, but also for institutional uses. Both outcomes could contribute to a healthier society.

## Theoretical framework

### Moral licensing

Moral licensing theory suggests that an individual morally justifies performing incongruent actions towards a set goal. For instance, first helping an old lady to cross the street and then kicking a hindering stray dog. Blanken et al. (2015), researched moral licensing in a meta-analytic study and found a general explanation why people behave inconsistently towards a goal. After combining findings of 91 studies they concluded that individuals who initially behaved in a moral way are equipped with a "license", which allows them to later display immoral, unethical, or otherwise problematic behaviour.

Sachdeva et al. (2009) researched the influence of perceived moral identity on altruistic or prosocial behaviour. An individual's moral identity or moral self-concept is based on how moral they perceive themselves to be. Normally, when performing immoral behaviour the perception of self-worth is negatively influenced. As a consequence, individuals sometimes engage in moral behaviour in order to balance out the moral self-concept (Dunning, 2007). In another study, individuals were shown to internally balance self-worth (Sachdeva et al., 2009). The perception of moral self-worth can determine whether an individual displays prosocial behaviour or not. A decrease in the moral self-concept could lead to increased prosocial behaviour, but an analogous increase in the moral self-concept could inhibit altruistic or prosocial behaviour (Sachdeva et al., 2009).

In the study, subjects were exposed to word types containing either neutral words (house, book, keys), positive traits (generous, fair, kind) or negative traits (disloyal, greedy, mean) and then were asked to write a short story relating to their lives using the words. The study ended with asking the respondents whether they would like to donate (from \$1 to \$10) to a charity of their choice. Respondents exposed to neutral words donated \$2.71, the group with negative traits donates \$5.30 and the positive group donated \$1.07. Participants who felt good about themselves donated significantly less money than those who felt their moral identity was under threat. A decrease in moral self-concept leads to increased prosocial behaviour, but an analogous increase in an individual's moral self-concept inhibits altruistic or prosocial behaviour. Past good behaviour pardons future bad behaviour.

Next to the balancing mechanism, other underlying mechanisms could explain moral licensing. For example, Conway and Peetz (2012) propose that recalling prior good actions could lead to moral licensing. Recalled moral actions could subsequently elicit self-licensed behaviours. Miller and Effron (2010) pose the underlying mechanism of moral licensing via credits. Moral licensing via credits states that behaving well could grant people credits that function to balance out subsequent questionable behaviour. It could be viewed as a moral currency. When you have done something moral you have currency to do something immoral.

### Influence of feedback

According to Jeong and Koo (2015), making progress can also cause moral licensing. Receiving feedback on the progress towards a goal causes the same incongruent behaviour explained by moral licensing. Fishbach and Dhar (2005), tried to find out what the influence is of initial goal pursuit on consumers' subsequent interest in pursuing unrelated or even conflicting goals. In one of their studies, an experiment was conducted on female dieters to see whether perceived progress on their diet influenced the choice of a healthy (apple) or an unhealthy (chocolate bar) parting snack. The participants were manipulated into either perceiving their progress as substantial or limited by indicating how far off they were from their ideal weight on either a wide or a narrow scale. On a wide scale, participants would perceive their progress to be substantial because a weight discrepancy appeared small and on a narrow scale limited progress would be perceived. Most women (85%) perceiving substantial progress chose a chocolate bar over an apple as a parting gift, while only 58% of women perceiving limited progress chose a chocolate bar as a parting gift. Participants were more likely to select a gift consistent with their diet goal when limited progress was perceived and

participants were more likely to select an inconsistent gift when they experienced substantial progress on their goal.

In compliance with moral licensing theory, progress acts as the “license” which liberates individuals to perform goal sabotaging behaviour. By consciously or unconsciously perceiving progress, an individual can perceive satisfaction on his main goal and can be more likely to either quit goal attaining behaviour or to desire to attain an alternative goal (Fishbach & Dhar, 2005).

### **Sub goals**

When achieving a sub goal, this achievement or progress can cause incongruent behaviour towards the main goal. According to Fishbach and Dhar (2005), goals are cognitive structures that embody movement and progress toward an abstract and desirable end state. Goal progress refers to the pursuit of a previously defined goal (Fishbach & Dhar, 2005). Long-term goals can appear to be abstract, the goal of getting physically fit is broadly defined and the implications of reaching the goal are not clear in a short glance. Individuals can, therefore, prefer to break an abstract goal down into multiple concrete sub goals (Fishbach et al., 2006).

Fishbach et al. (2006) state that completing a sub goal can justify temporary detachment from the main goal and therefore activate goal incongruent behaviour. The effect of sub goals as perceived goal progress on subsequent goal pursuit has been researched. The participants acknowledged that working out and eating healthy (sub goals) enables individuals to keep in shape (main goal). Participants were given a sense of sub goal accomplishment through social comparison and were then asked about their interest in eating a healthy meal. Feedback was given to the respondents in the form of their comparison to another person. High social comparison suggests perceived progress being low and low social comparison suggests high perceived progress. Respondents were asked to fill in a survey that had already been filled in but then partially erased. The partially filled out survey presented participants with either a low or high social comparison. Participants exposed to a low social standard showed a lower interest in eating healthy than participants exposed to a high social standard.

Concluding, individuals working out more than the person in the partially filled survey felt they made progress and were less likely to eat healthily. Individuals who felt they worked out less than in the survey perceived less progress and were therefore more likely to eat healthily. Working out served as a sub goal, which provided feedback linked to progress and influenced a subsequent desire to eat healthily.

### **Conceptual model and hypotheses**

When breaking an abstract goal down into concrete sub goals, achieving a sub goal can be perceived as progress toward the main goal and can subsequently cause incongruent behaviour. As shown in fig. 1, the conceptual model displays that receiving feedback on progress influences subsequent performance towards the main goal.

Hypothesis 1 states that feedback on either substantial or limited progress influences performance of a physically straining task. Participants who receive feedback on their progress being substantial will jump the rope shorter than participants who receive feedback on their progress being limited.

Hypothesis 2 states that feedback on progress influences the motivation to perform a physically straining task. Feedback exclaiming that progress is substantial will subsequently be paired with lower motivation to perform a physically straining task than feedback exclaiming limited progress.

Hypothesis 3 states that motivation influences performance of the physical task. A decreased motivation will lead to a low jumped time. Participants having low motivation to jump a rope will jump shorter than participants having high motivation.

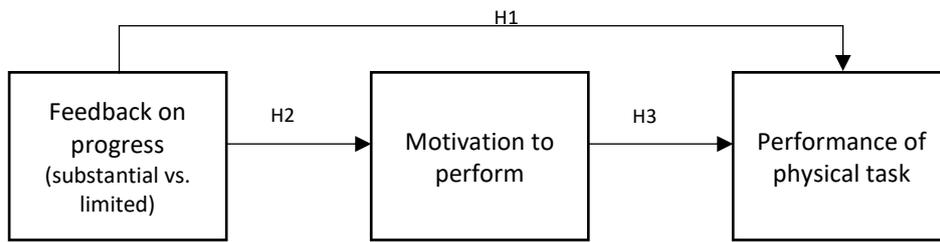


Figure 1. Conceptual model

## Method

### Research design

The research was conducted via a between-participants-design experimental study. The effect of feedback on progress on the performance of a physically straining task, jumping a rope, was investigated. In this research, the independent variable was feedback on progress and the dependent variable was the time jumped by participants. An experimental design has been chosen because the moral licensing effect can best be measured when it occurs. The effect does not necessarily occur consciously (Khan & Dhar, 2006; Monin & Miller, 2001), therefore depending on an individual's perception (i.e. through a survey) is unreliable. In this experiment, university students were observed to see how a feedback intervention on progress would impact subsequent time jumping a rope. A health goal in the form of a fit norm for moving intensively was induced by presenting participants with information. Jumping a rope could be a sub goal of achieving the fit norm. Also, a sense of limited versus substantial progress on accomplishing the health goal was induced through an intervention. Participants received feedback on either substantial or limited progress towards the fit norm. Limited progress was indicated by verbally stating: *'At this stage, you are at about 20% of the norm value for moving intensively.'* Substantial progress was indicated by verbally stating: *'At this stage, you are at about 90% of the norm value for moving intensively.'* Participants were alternately given either the first or the second statement during the intervention.

The experimental manipulation referred to the feedback intervention. Because of limited (vs. substantial) progress one's motivation to continue jumping could vary among the two types of feedback.

### Participants

Participants were 16 men and 35 women aged 19 to 25 years (age of men:  $M = 21$ ,  $SD = 1.53$ ; age of women:  $M = 21.5$ ,  $SD = 2$ ) making a total of 51 Dutch students from Wageningen University and Research. They participated in the experiment for a parting gift in the form of a snack. The study took place between January 15th and 19th, 2018. WUR students were recruited by asking if they wanted to participate. At the time of recruitment, participants received no information concerning the going of the experiment. The information respondents received was that the experiment consisted of performing the physically straining task of jumping a rope. Respondents were invited to visit a room to jump a rope. Two additional participants received inconsistent information during the experiment and were therefore excluded from analysis. In this way randomising administration of feedback interventions.

### Measures

The study was originally prepared in English, but because all participants were Dutch, the study was translated into Dutch. At the end of the study, participants received a short questionnaire. In the questionnaire, the construct of motivation to jump and a manipulation check were measured. Demographic and control questions were also asked.

#### **Key-dependent variable: time jumped**

The key dependent variable of this study was time jumped by participants. In this study, the time jumped by participants was measured in number of seconds, using a hand-held stopwatch. Directly after the first time the rope connected to the floor a stopwatch was started. Time was stopped when the participant said: Stop.

#### **Mediator variable: motivation to jump**

The mediator was the motivation to perform a physically straining task. Participants' motivation to jump the rope was measured by asking how much they agreed with statements regarding jumping the rope. Four statements that were used to measure motivation all started with

'during jumping the rope I...' followed by: (was motivated to continue for a long time), (wanted to continue for a long time), (did not intend to give up quickly), (gave everything I had). A Likert scale from 1 (strongly disagree) to 5 (strongly agree) was used to score each statement. Scales used to measure motivation to jump and enjoyment of jumping rope were tested with a reliability analysis. Tested was the reliability of the scales, to see whether the scales consistently reflect 'motivation to jump' and 'enjoyment of jumping rope'. Cronbach's alphas for the 4 motivation and 3 enjoyment items were .85 and .82 respectively. The 4 motivation items were averaged to create the 'motivation to jump rope' construct and the 3 enjoyment items were averaged to create the 'enjoyment of jumping rope' construct.

### **Control questions**

In the questionnaire, participants', level of fitness and enjoyment of jumping rope were asked for. They both act as control variables, for a difference in both variables can lead to distortion of data and therefore negatively affect collected data. Level of fitness can influence jumped time and enjoyment of jumping rope can influence motivation. When taking level of fitness and enjoyment of jumping rope into account when analysing data, a more accurate display of data could be obtained.

Enjoyment of jumping rope was assessed in the questionnaire by the following questions: 'I enjoy jumping rope', 'jumping rope is a pleasant activity' and 'during jumping the rope I enjoyed myself' ( $\alpha = .82$ ).

To assess the level of fitness the Godin Leisure Time Exercise Questionnaire (GLTEQ) was used (Godin & Shephard, 1985). In the questionnaire, the physical activity habits of participants were asked for to measure weekly exercise. Three statements were presented to participants. Each statement assessed the frequency of performed exercise performed for at least 15 minutes in a typical week. In accordance to the GLTEQ, the performance of strenuous exercise, moderate exercise and mild exercise were asked for. To calculate total weekly leisure activity, and thus level of fitness, the products of the separate components were summed up using the following calculation: weekly exercise = (frequency of mild exercise x 3) + (frequency of moderate exercise x 5) + (frequency of strenuous exercise x 9).

### **Manipulation check**

The manipulation check serves the purpose of checking whether participants believe the feedback given during the intervention. If participants did not believe the feedback to be credible, the experiment would have been unsuccessful. The following statement was presented to participants: 'the information I received during jumping the rope was credible'. Again a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) was used.

### **Background variables**

In order to be able to describe the sample, age and gender were incorporated in the questionnaire.

### **Procedure**

Participants were approached in advance and were scheduled for a timeslot (every 30 minutes, starting from 08:30 till 17:00). Participants were alternately assigned to a condition, to ensure randomisation of data. They were welcomed in a private room. They were spoken to with the following words: *'Thank you for participating in this study. Before we start, I would like to ask you to read and sign this paper concerning informed consent.'* An informed consent form was signed by participants to document agreement with the experiment. Next the following words, further referred to as introduction speech, were spoken to participants: *'This research is about rope jumping. The Dutch Health Council advocates that people should move more and sit less. Maybe that sounds familiar. They, for example, recommend moving moderately intensive by for example taking 10.000 steps a day. But, besides moderately intensive, the Health Council also recommends moving*

*intensively. While moving intensively your heart rate rapidly increases. When jumping a rope, you move intensively. The norm value for jumping will be elaborated at a later moment. Could you grab the jumping rope? Then we can start!* Participants took hold of the jumping rope and the introduction speech continued. *I would like to ask you to jump as long as you can. It does not matter if you trip over the rope or if the rope hinders your jump. You can just continue jumping. In the meantime, I will give more information on the norm value for moving intensively. Good luck!*

Ending the introduction speech, the experimenter gave participants space to perform the task. The experimenter also appeared to be busy reading a book. After respondents having jumped for 30 seconds they were stopped and informed that their progress was either limited or substantial. According to Pashler and Johnston (1998), individuals process less information when performing a physically straining task. That is why respondents were stopped jumping when information was presented to them. The following words were spoken to participants: *'Alright you can stop for a little while'* and feedback on progress (limited or substantial) was given. Next, the participants were encouraged to continue jumping for as long as they could: *'You can continue with jumping the rope. Try to continue as long as you can! If you are unwilling to continue, say so. Good luck!'* Participants indicated when they were done performing the physically straining task. The stopwatch was stopped directly after the announcement. Jumped time was noted and converted into seconds. Participants were handed water and if necessary a towel. After they recovered they were asked to fill in a short questionnaire. When ready with the questionnaire, participants were told the actual meaning of the experiment and explicitly asked not to mention the meaning of the research to other individuals. Closing the research, participants were given a parting gift in the form of a snack.

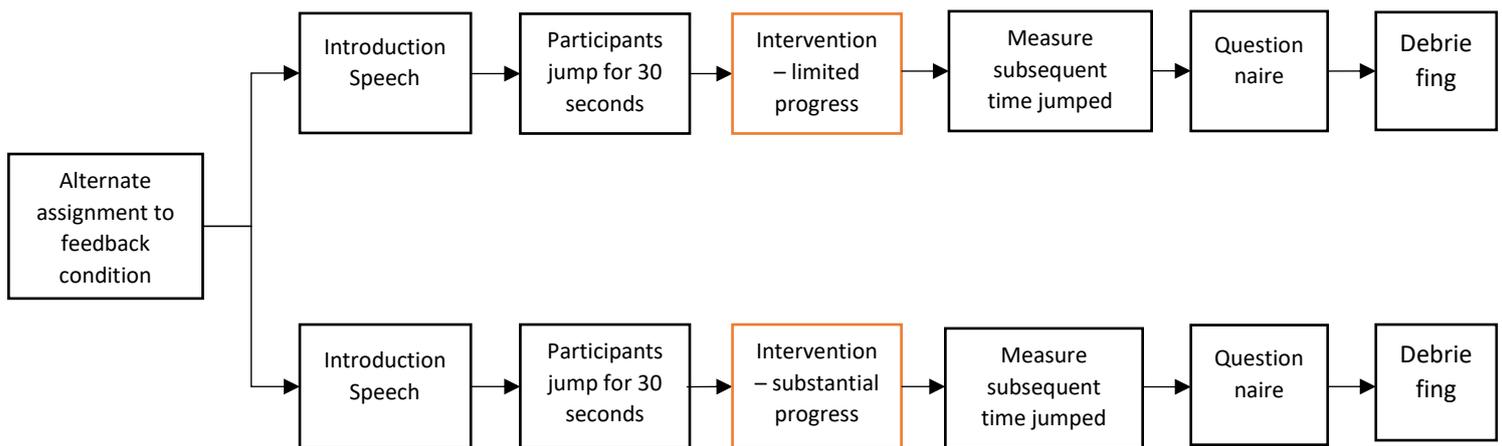


Figure 2. Design of experiment

### Data analysis

For analysing the findings gathered during the experiment statistical techniques of One-Way ANOVA, linear regression and reliability analysis via Cronbach's Alpha were used.

### Randomisation check

Randomisation of independent variables across conditions was measured by using analyses of variance. Checked for were differences between feedback condition (limited vs. substantial) and the level of fitness, enjoyment of jumping rope, credibility of feedback and age. Randomisation of gender was measured with a chi-square test.

Correlation of influence of level of fitness on performance of a physically straining test was also analysed for randomisation. Used was a linear regression to test the predictive power of level of fitness on time jumped. The p-value was the chance of level of fitness influencing time jumped, the dependent variable was time jumped and the predictor variable was level of fitness. Another

regression was used to test the predictive power of the level of fitness on the perceived credibility of the feedback.

### **Hypothesis 1**

Findings gathered for hypothesis 1, testing whether feedback on progress influences time jumped with jumping rope, were tested by using a One-Way ANOVA. In this situation, the dependent variable was time jumped, covariate was level of fitness and the independent variable was feedback on progress either being limited or substantial.

### **Hypothesis 2**

For testing hypothesis 2 a One-Way ANOVA was used to measure whether feedback on progress influences motivation to jump. It follows that the dependent variable was motivation to jump, the covariate was perceived credibility of feedback and the independent variable was feedback on progress either being limited or substantial.

### **Hypothesis 3**

Hypothesis 3, testing the predictive power of motivation to jump and level of fitness on time jumped, was tested using a linear regression. The p-value was the chance of motivation to jump and level of fitness influencing time jumped and null hypothesis states no significant prediction of time jumped by motivation to jump. The dependent variables was time jumped and predictor variable were motivation to jump and level of fitness.

## Results



Figure 3. Influence of feedback on performance of physically straining task

		Feedback limited progress (n = 26)	Feedback substantial progress (n = 25)	p-value
Manipulation and randomisation check	Level of fitness	42.5 (18.7)	35.4 (17.4)	.17
	Enjoyment of jumping rope	3.3 (.8)	3.6 (.7)	.13
	Credibility feedback	3.6 (1.2)	3 (1.2)	.12
	Age	21.2 (2)	20.7 (1.4)	.37
H1: Seconds jumped with rope		219 (171.8)	183 (156.1)	.74
H2: Motivation to jump rope		3.6 (.9)	3.4 (.8)	.62

Table 1. Mean (SD) of ANOVA findings on both feedback conditions

### Manipulation and randomisation check

Whether or not participants believed the feedback given to them during the intervention to be credible, determines if the feedback had an effect on participants jumping behaviour. If participants did not think the feedback was credible, they would not take feedback into consideration when they jumped or they would act on behalf of pleasing the experimenter. As described below, a separate ANOVA showed no significant difference in credibility of feedback on either two conditions. This states that participants believed the feedback to be credible, making it possible to draw conclusions when referring to the feedback. Separate ANOVAs showed no significant differences between the two conditions (feedback on limited vs. substantial progress) in level of fitness,  $F(1, 49) = 1.95, p = .169$ , enjoyment of jumping rope,  $F(1, 49) = 2.42, p = .126$ , credibility of feedback,  $F(1, 49) = 2.46, p = .124$  and age,  $F(1, 49) = .814, p = .371$ , indicating that randomisation across conditions were successful. Also, a chi-square test of independence was calculated comparing the frequency of feedback in men and women. No significant interaction was found ( $\chi^2(1) = .009, p = .925$ ). Men and women are equally divided between conditions.

After conducting a simple linear regression, time jumped was predicted based on the level of fitness, assessed by GLTEQ. Corresponding significant regression equation was found,  $F(1, 49) = 6.47$ ,

$p = .014$ , with an  $R^2$  of  $.117$ . Participants' predicted time jumped is equal to  $81.7 + 3.07$  (fitness) seconds when the level of fitness is measured by weekly activity ( $\beta = .341$ ). Level of fitness was taken into account as a covariate in the data analysis. The higher an individual's level of fitness, the longer said individual can perform the physically straining task of jumping rope.

### **Hypothesis 1: Feedback on progress influences time jumped**

Figure 3 shows the mean number of seconds jumped by participants for each feedback intervention. (Note that when receiving feedback on substantial progress, participants jumped slightly shorter). Inspection of fig. 3 suggests that the two feedback interventions only slightly differ, with participants receiving feedback on substantial progress jumping fewer seconds than participants receiving feedback on limited progress. After conducting an ANOVA corrected for level of fitness, the potential conclusion is that the number of seconds jumped by participants when receiving feedback on limited progress was not significantly different from the number of seconds jumped by participants receiving feedback on substantial progress. The predicted main effect of feedback on progress on time jumped was not significant,  $F(1, 48) = .11$ ,  $p = .741$ ,  $\eta_p^2 = .002$ , but the influence of level of fitness on time jumped was significant,  $F(1, 48) = 5.79$ ,  $p = .020$ ,  $\eta_p^2 = .108$ . According to the findings, hypothesis 1 was not confirmed.

### **Hypothesis 2: Feedback on progress influences motivation to jump**

Analysis of variance, corrected for credibility of feedback, showed no main effect of feedback on progress on motivation to jump,  $F(1, 48) = .25$ ,  $p = .620$ ,  $\eta_p^2 = .006$ , or credibility of feedback on motivation to jump,  $F(1, 48) = .26$ ,  $p = .612$ ,  $\eta_p^2 = .005$ . Hypothesis 2 was not confirmed.

### **Hypothesis 3: Motivation to jump influences time jumped**

A multiple linear regression was calculated to predict time jumped based on motivation to jump and level of fitness, for all hypotheses are corrected for the physical abilities of participants. Gender was not included because the number of seconds jumped by participants did not statistically differ between males and females. A significant regression equation was found ( $F(2, 48) = 8.825$ ,  $p < .001$ ), with an  $R^2$  of  $.269$ . Participants' predicted time jumped is equal to  $-163.486 + 79.496$  (motivation) +  $2.211$  (fitness), where motivation is measured scale-wised by a Likert scale and level of fitness is measured in weekly exercise. Participants' time jumped increased  $79.496$  seconds for each increasing step on the scale of motivation and  $2.211$  seconds for each increase in weekly exercise. Motivation to jump was a significant predictor of time jumped ( $\beta = .402$ ) and level of fitness was a marginally significant predictor of time jumped ( $\beta = .246$ ). Results show a marginal significance, indicating that hypothesis 3 can be confirmed but on weak grounds.

## Discussion

This study was designed to understand the effects of feedback on progress on motivation to perform a physically straining task. The present study demonstrated that feedback on progress being limited or substantial did not influence time spent jumping rope. When participants received feedback on their progress being substantial, they did not jump a shorter number of seconds than participants receiving feedback on their progress being limited. The study also showed that feedback on progress did not influence motivation to jump. Participants receiving feedback in the form of limited progress did not express a higher motivation to jump rope than participants receiving feedback on substantial progress. However, the study did demonstrate a weak link of motivation to jump rope and level of fitness influencing time spent jumping rope. In this study, feedback on progress was not the determining factor that predicted performance on a physically straining task, but rather motivation to jump and level of fitness.

These results are not in line with previous research. That is to say, according to Fishbach and Dhar (2005); Fishbach et al. (2006), a sense of progress or accomplishment towards a sub goal should be negatively correlated (an increase in one factor leads to a decrease in another factor) with motivation to continue pursuing the initial main goal. An increase in progress on a sub goal should lead to a decrease in motivation to pursue a main goal. This was not the case in this study. In this study, no negative correlation was found between feedback on progress on a sub goal (jumping rope as long as possible) and performance on the initial goal (reach the fit norm). Nor was there a negative correlation between feedback on progress and motivation to pursue the initial goal. Variables measured could play a role in Fishbach and Dhar (2005); Fishbach et al. (2006) finding a moral licensing effect. They, for example, measured behavioural intentions and choice of parting gift. This more cleanly measures an effect than physical activity, for many factors can influence physical behaviour (Moreno, González-Cutre, Martín-Albo, & Cervelló, 2010). Blanken et al. (2015) suggest that individuals who initially behaved in a moral way, later could display immoral behaviour, but this was also not the case in this study. Participants who behaved in a moral way - by making substantial progress - did not subsequently display immoral behaviour by quitting jumping earlier. However, as intrinsic motivation in sporting tasks improves performance (Moreno et al., 2010), this study found that higher motivated participants tended to weakly jump for a longer period than less motivated participants.

The inability to replicate moral licensing effect could be explained by communication. The linear model of communication shows the key component needed to communicate (as explained by Baines, Fill & Page, 2011). A source encodes words into a message and communicates this via a channel to a receiver, who decodes the message and responds to it. Noise and the 'realm of understanding' accompany the linear model of communication (Baines et al., 2011). Each component of the model, that is the source, encoding, channel, decoding, noise and realm of understanding could have influenced the outcome. For example, the combination of words may not have appropriately represented the message – the feedback intervention – and therefore the message may have been misunderstood by the participant. When the encoding of a message is unclear, the receiver is less able to give meaning to the message. So, if the feedback in this study was not properly coded and subsequently not properly decoded, no moral licensing effect could occur. Also, accompanying noise and the 'realm of understanding' could have played a role in the communication. The presence of noise could have influenced whether the verbally communicated feedback was properly received and therefore could have a negative influence on the subsequent response (Baines et al., 2011). Noise can distort information in the communication process, therefore making it difficult for the receiver to correctly decode and interpret a message (Baines et al., 2011). The 'realm of understanding' recognizes that successful communications are more likely to be achieved if the source and the receiver understand each other. In this study, it is possible that the participant did not understand the experimenter. This would ensure that the participant would not use the feedback as a measure for motivation to continue jumping.

A second explanation centres on the performance of the physical task. For example, the rope jumping technique applied by the participant could have played a role in the number of seconds jumped. An increase in the difficulty of technique applied increases exercise intensity during performance of the task (Solis, Foster, Thompson, & Cefalu, 1988). Every participant chose his or her own method of jumping. No pre-explained and similar technique was applied by all participants. So, a participant applying a more difficult technique would probably discontinue jumping earlier than if an easier technique was used.

Lastly, the inability to find moral licensing in this study is not uncommon in the research field of moral licensing. Urban, Bahník, and Kohlová (2017) tried to find a moral licensing effect by replicating the study done by (Mazar & Zhong, 2010), but were unsuccessful in finding a similar moral licensing effect. Having trouble with replication is not uncommon in the moral licensing domain (e.g. Blanken, van de Ven, Zeelenberg, & Meijers, 2014). Results of this study show that feedback on progress on a physically straining task does not have a strong enough effect to trigger moral licensing. This raises the question of the robustness and strength of the moral licensing effect. Blanken et al. (2015) conducted a meta-analysis on the effect of moral licensing and found an effect size of Cohen's  $d$  being .31. This also implies that the moral licensing effect may not be significant or that studies on moral licensing need more participants to draw solid conclusions. How can Mazar and Zhong (2010) reap an effect size on the moral licensing effect of  $d = .53$  when Urban et al. (2017) could only reap an effect size of  $-.16 < d < .07$  on almost exactly the same experiment? Could the moral licensing effect actually be triggered by some form of feedback on progress on a physically straining task? These statements elicit questions and argue for further much needed substantial research and replications of studies done on licensing. Further research on licensing of behaviour during physical activity is needed, because of the complexity of this field.

Methodological limitations of this study show limitations in the sample, both by the size and the consistency. The study was conducted on a fairly small sample group ( $n = 51$ ), which decreases statistical power. A small sample size can negatively affect the likelihood that a nominally statistically significant finding actually reflects a true effect (Button et al., 2013). The consistency of the sample is limited because in this study a convenience sample of WUR students was used. Convenience samples of university students yield unstable or dissimilar results (Peterson & Merunka, 2014). Having used a convenience sample of undergraduate WUR students, results could be disparate when this study is replicated. Another limitation is that this study does not have a control group, which means that a possible change in behaviour cannot be attributed to the inferred manipulation (American Psychological Association, 2017). However, in the case of this study, no change in behaviour was found. The conclusion that the manipulation did not influence behaviour would have been drawn regardless of the presence of a control group. The importance of using a control group in experiments is acknowledged, but in this study the outcome would have looked the same.

This study was not conducted under double-blind circumstances; therefore, the experimenter could have subconsciously altered his attitude or behaviour towards participants and therefore influenced the outcome of the study. The experimenter could, for example, have emphasized to one feedback group the importance of continuing the task for as long as possible and neglected to emphasize it to the other feedback group.

In this study, the difficult task of measuring behaviour was undertaken instead of the easier method of measuring intentions (Martin & Bateson, 1993). The outcome of measuring behaviour can be more conclusive than the outcome of measuring intentions. In contrast to measuring actual behaviour, self-reported intentions do not perfectly predict their future behaviour (Chandon, Morwitz, & Reinartz, 2005; Manski, 1990). It is difficult to explain behaviour on physical activity, for a lot of factors could influence such a willpower straining task. This study tried to increase the predictability of participants physical behaviour by accounting their performance on their physical abilities and motivation. Sharpening the method could still produce a measurable moral licensing effect.

Researchers need to continue conducting experimental research on motivation and physical activity. First, future research should take greater care to ensure a proper study design. A design in

which a control group is used with a larger sample size, executed under double-blind circumstances. Second, researchers should determine what type of factors could influence motivation on the performance of physically straining tasks, in order to be able to correctly manipulate behaviour.

In conclusion, the moral licensing effect could influence performance on physical activities. However, this study found out that presenting feedback on progress did not influence WUR students' performance on a physically straining task.

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## Appendix - Questionnaire

### Q1 Beste deelnemer,

Bedankt dat je mee wilt doen aan het onderzoek van bedrijfs- en consumentenwetenschappen-student Jara Valk in het kader van haar scriptie. Het invullen van deze enquête zal nog geen 2 minuten duren. Graag verzoek ik je om gedurende de gehele enquête de vragen naar waarheid te beantwoorden. Let wel op: als je eenmaal een pagina hebt afgesloten, kun je niet meer terug. Door op "Volgende pagina" rechtsonder in beeld te klikken, ga je door naar de volgende pagina. Nogmaals bedankt voor het meedoen aan dit onderzoek.

### Q2 Welk cijfer staat er op je post-it blaadje?

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### Q3 Wat is je geslacht?

Man (1)

Vrouw (2)

### Q4 Wat is je leeftijd in jaren?

15      18      21      24      27      30

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Leeftijd (1)	
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**Q5** Geef aan in hoeverre je het eens bent met de volgende stellingen over het touwtje springen.

	helemaal mee oneens (1)	mee oneens (2)	neutraal (3)	mee eens (4)	helemaal mee eens (5)
Ik vind touwtje springen leuk (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Touwtje springen is een plezierige activiteit (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tijdens het touwtje springen heb ik me vermaakt (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tijdens het touwtje springen was ik gemotiveerd om lang door te gaan. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tijdens het touwtje springen wilde ik graag lang door gaan (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tijdens het touwtje springen was ik van plan het niet snel op te geven (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik heb echt alles gegeven tijdens het touwtje springen (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Q6** Nu een vraag over sport en beweging. Gedurende een typische week, hoeveel keer doe je gemiddeld aan de volgende sporten voor meer dan 15 minuten in je vrije tijd? (schrijf het juiste getal in elk vakje)

	Aantal keer per week (1)
Inspannende sport (hartslag verhogend). Bijvoorbeeld: rennen, joggen, hockey, voetbal, skien, intensief zwemmen of fietsen (1)	
Matig intensieve sport (niet uitputtend). Bijvoorbeeld: snel wandelen, tennis, rustig fietsen, volleybal, rustig zwemmen of dansen (2)	
Milde sport (minimale moeite). Bijvoorbeeld: yoga, boogschieten, vissen, bowlen, rustig wandelen (3)	

**Q7** Geef aan of je het eens bent met de volgende stelling over de gekregen feedback tijdens het touwtje springen.

	helemaal mee oneens (1)	mee oneens (2)	neutraal (3)	mee eens (4)	helemaal mee eens (5)
De informatie die ik hoorde tijdens het touwtje springen was geloofwaardig (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Q8** Wat denk je dat het doel van dit onderzoek was?

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**Q9** Aan Wageningen Universiteit worden vaker studies verricht waarvoor wij op zoek zijn naar deelnemers. Mogen wij je hiervoor af en toe (maximaal 1 keer per maand) benaderen per e-mail? Zo ja, schrijf hieronder je e-mailadres:

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**Q10** Als je opmerkingen hebt over dit onderzoek dan kun je deze hieronder opschrijven.

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