Abstract

The aim of the study is to replicate the effect of micro-psychokinesis (Cardeña, 2018) and to emphasize the relevance of intrinsic motivation for this effect. In line with the theory of the unus-mundus model (Atmanspacher et al., 1995) in the context of motivational psychology, intrinsic motivation in the study correlates significantly with the outcome of quantum random processes. Thus, micro-psychokinesis can again be demonstrated despite its complex conditions. The quantitative online study consists of various questionnaire items to record different facets of motivation as well as an interactive part in which the study participants play games that are presented to them by a quantum random number generator. The use of games is intended to elicit motivation, which in turn is used to enable the effect of micro-psychokinesis to occur and be identified.

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We live in an age in which science is held in high esteem. This may be attributed above all to the standard of obtaining unambiguous and replicable results through objective measurements. Such measurements are certainly useful for understanding many phenomena that previously seemed a mystery to us, such as gravity or even simpler things like the shape of the earth. But when we enter the field of psychology, this may seem a little more challenging, as not everything here can be measured or even objectified without a doubt. After all, one of the most enduring debates in philosophy is that of the human mind and its abilities. Even today, it can be difficult to explain what exactly this mind, a very subjective construct, is all about and how it is to be defined. One possible conclusion from this conflict could be that the subjectivity and lack of objectivity of the mind itself may be the reason why hardly any convincing scientific findings can be found on it. As a result, might it not also be relevant to question our existing view of reality and its objectivity or subjectivity? The extent to which the objective and subjective can interact and mutually influence our perception and definition of reality is also the subject of the following investigation. Here we focus on the motivation of study participants and how this can also influence supposedly objective random processes. Specifically, the question is asked whether there can be a connection between the motivation just mentioned and the number and type of games presented to people by a quantum random number generator.

Theory

The Unus-Mundus model

Theoretically, the study is primarily based on the Unus Mundus Model (UMM) by Wolfgang Pauli and Carl Gustav Jung (Atmanspacher et al., 1995). Here the

so-called pre-reality, also known as potential space or prereality, is defined as the basis of all existence in order to make the connection between objective and subjective reality, or the interaction between mind and matter, clear. In the context of the present study, the focus on the influence of mind on matter is of particular relevance, which is only made possible by a description and acceptance of the UMM, as this opposes the dualism of the two aspects. In the aforementioned dualism, spirit and matter are ultimately mutually exclusive and therefore cannot emerge from their respective counterparts. Accordingly, the potential space of the UMM is the origin of spirit and matter. It contains the pre-forms of subjective experience, unconscious content, as well as the pre-forms of objective reality, quantum-physical states. These pre-forms in the unity of the potential space form spaces of potential outcomes of the various interactions.

Micro-psychokinesis

The effect of so-called micro-psychokinesis (Cardeña, 2018) investigated in this study focuses on a specific phenomenon in the context of the UMM, namely induced correlation. This describes the mental-intentional influence on the outcome of quantum random processes. The volitional influence of an individual appears in the conscious mind and thus in the subjective reality with the desire to influence or even create the objective reality. This is made possible by the potential space (Atmanspacher et al., 1995), which can transfer the subjective volitional impulse into objective reality. By linking the impulse to pre-material parts, material things can also be influenced by subjective aspects. Overall, the will impulse and its active construction of reality increases the probabilities in favor of certain intended realities occurring. This is to be seen as a systematic distortion, as the quantum randomness itself is canceled out. Specifically, despite the use of a quantum randomness generator

(QZG) to ensure true randomness (Saini et al., 2022) and thus also to counteract the problem of the manipulability of ordinary random generators, a distortion will occur which, however, is not attributable to the QZG itself.

Intrinsic motivation

Intrinsic motivation is characterized by the fact that it is generated by the individual themselves and is not dependent on external influences (Heckhausen & Heckhausen, 2018). In this sense, it can be concluded that it corresponds at least to a certain extent to the will of the individual and should therefore have an influence on micro-psychokinesis. Therefore, the decision was made to use study motivation, which also contains intrinsic aspects, for the observation of micro-psychokinesis in this design.

Model of pragmatic information

The model of pragmatic information (MPI) developed by Walter von Lucadou (1995) states that pragmatic information, or its effect, is the result of the product of initiality (E) and confirmation (B). The first time describes the intention that is generated individually by the sender. It contains the primary intention and the desired effect of the message. The confirmation contains the basis of the communication between sender and receiver. This enables an understanding or transmission of the message through stable and intersubjectively identical information components. The initiality and confirmation of a message should be as balanced as possible and each greater than zero in order to achieve a pragmatic effect due to the multiplicative context. Both aspects depend on each other in a curvilinear fashion and can therefore reduce the resulting pragmatic information by assuming values that are too high. In the context of the induced correlation, the first time is greater than zero and the confirmation is less than the maximum possible confirmation ($_{Bmax}$), which

pragmatic information that is greater than zero. An active and reality-constructing measurement is carried out, which cannot guarantee complete objectivity based on the reduced confirmation. One consequence of this is that the replicability of the findings is severely limited and, according to the current state of research, no classic proof of the effect in the context of micro-psychokinesis can be produced, as this requires maximum confirmation, which in turn nullifies the effect.

Research question

Based on the theoretical constructs just explained, this study primarily asks to what extent the motivation of participants is related to the number and enjoyment of games selected by a quantum random number generator in the context of micro-psychokinesis. Specifically, the motivation of the participants to take part in the study is used to examine whether this can result in an intentional construction of reality in the form of the induced correlation. The focus is primarily on intrinsic motivation and its type and intensity. In addition, it is examined whether the subjectively experienced vitality, willpower, autonomy and self-control capacity can also be related to micro-psychokinesis, as these constructs can also be closely related to intrinsic motivation.

Method Sample

and study period

The sample includes 205 test subjects (100 male, 103 female, 2 diverse), the majority of whom are employed or students. The average age is approximately 29.9 years. The study survey began on December 14, 2023 and was completed on

ended on January 24, 2024. This is an online study to be conducted on a computer. The test subjects were recruited via the respective

acquaintances of the investigators by distributing a study link. Participation in the study is voluntary.

Implementation

The study begins with information about the data protection regulations and obtaining consent to participate in the study. Basic demographic questions are then asked about the subjects, covering their age, gender and current occupation. The primary motivation for the study is then recorded (see Appendix A). More specific questions on the motivation of the subjects are then asked using the Intrinsic Motivation Inventory according to Ryan (1982) and Ryan et al. (1983). This inventory was used as a point of reference and the categories of pressure/tension and interest/pleasure, which we defined in the same order as equivalents to the constructs of self-control and self-regulation (Forstmeier & Rüddel, 2005), were selected and reformulated to suit the study design (see Appendix B and C).

This is followed by the Subjective Vitality Scales (Buchner et al., 2022; see Appendix D). After these questions, the test subjects were given the opportunity to choose which games they would enjoy the most from an image preview with screenshots of some of the available games. However, with regard to the quantum randomizer, this had no influence on which games were actually presented. Each subject is then presented with an initial game in the form of a trial run, so that at least this can be guaranteed. The games are divided into two equal categories. The first category consists of games that are generally described as fun, or "enjoyable".

can be described as "fun". This category includes five games selected by us, namely Pinball, Pong, Boomshine, Tetris and Snake. The second category is formed by games that we consider to be less fun, or "not fun", due to the strain on short-term memory, as they require a certain amount of memory capacity.

is required. These games are as follows: Memorizing telephone numbers/number sequences, a spatial memory test, memorizing letter sequences, memorizing objects in pictures and easy arithmetic tasks. Each game is finished after a maximum of 2 minutes, or after it has been played to the end. Afterwards, as well as after each subsequent game, the test person is asked how much fun they had playing the respective game, ranging from no fun (1) to a lot of fun (5). The quantum random number generator (QRG) then decides with a probability of 50% whether a further game or the final survey will follow. If the QCG decides in favor of another game, it is again decided with a 50% probability whether the next game will be a fun or non-fun game. The same games can also be repeated. Each test person can play a maximum of 6 games, including a trial run. Each person is then forwarded to the final survey. This includes a questionnaire on self-perceived autonomy (Janke & Glöckner-Rist, 2012), a questionnaire on currently available self-control capacity (Lindner et al., 2019; see Appendix F), also known as ego depletion, and the questionnaire on the Implicit Theory of Willpower (Job et al., 2010; see Appendix G). Finally, the subjects are given the opportunity to contact the research team by email if they have any questions and are thanked for participating in the study.

Analysis

The data is evaluated by means of a correlative analysis using the Pearson correlation. This involves checking the individual constructs for possible correlations.

Results

Descriptive results

The data from the 205 test subjects were analyzed using the Pearson correlation, whereby the mean values of the item responses of the individual questionnaires were always compared. In

Table 1 shows the most important variables and their correlations with each other when the entire sample is included.

It can be seen that there is a significant correlation of r = .15 between the number of fun games and the construct of self-regulation according to Forstmeier and Rüddel (2005) for the factors relevant to micro-psychokinesis, namely the number of games (total games) and the number of games that should be fun (number of fun games). It may also be relevant that far more significant correlations can be observed for the subjectively experienced fun that the test subjects rated themselves. For example, subjective fun correlates significantly with ego depletion (r = -.23), subjective vitality (r = .15) and even more highly with self-regulation (r = .46) as well as with subjectively experienced autonomy (r = .41). The questionnaire on implicit willpower by Job and colleagues (2010) shows no significant correlations with relevant variables.

Table 1

Correlations for the total sample (N= 205)

Variable	1	2	3	4	5	6	7
1. SMS5							
2. SVS	-.39**						
3. SK	.14*	-.13					
4. SR	-.20**	.29**	.03				
5. Total games	-.01	.02	.13	.11			
6. Number of fun games	.01	.07	.07	.15*	.77**		
7. subjective fun	-.23**	.15*	.09	.46**	-.02	-.03	
8. experienced autonomy	-.29**	.19**	.03	.31**	.03	.10	.41**

Note. SMS5= Ego Depletion. SVS= subjective Vitality Scales. SK= Self-control. SR = self-regulation. * $p < .05$. ** $p < .01$.

Far more differentiated results emerge from the separate analysis of men and women, with gender diversity being excluded, mainly due to the small proportion (two people) of the available sample, as can be seen in Table 2 and Table 3.

Table 2

Correlations for male subjects only

Variable	1	2	3	4
1. IMI_SK				
2. IMI_SR	.11			
3. Number of fun games	.26*	.12		
4. subjective fun	.18	.47**	.04	
5. perceived autonomy	.06	.31**	.19	.47**

Annotation. SK= Self-regulation. SR= Self-regulation. * $p < .05$. ** $p < .01$.

Table 3

Significant correlations for exclusively female test subjects

Variable	1	2	3	4
1. SMS5				
2. SVS	-.46**			
3 IMI_SR	-.29**	.30**		

4. subjective fun	-.28**	.21*	.46**	
5. Experienced autonomy	-.32**	.35**	.30**	.35**

Annotation. SMS5= Ego Depletion. SVS= subjective Vitality Scales. SR = self-regulation. * $p < .05$. ** $p < .01$.

When looking at the male test subjects (Table 2), there is still a significant correlation between the number of fun games, but this time with self-control (r = .26), while there is no significant correlation in terms of the number or type of games for the female test subjects. However, if we look again at the subjective enjoyment of the games, the number of significant correlations with other factors predominates among the female test subjects. Here, subjective enjoyment (see Table 3) correlates significantly with ego depletion, vitality, self-regulation and experienced autonomy. In the male subjects, on the other hand, this fun only correlated with self-regulation and experienced autonomy.

Interpretation

From these results, it can be concluded that overall, significant correlations can be found between the number of fun games and aspects of intrinsic motivation, especially self-regulation and self-control, within the framework of micro-psychokinesis, whereby this effect is more pronounced in the subpopulation of male test subjects. This may be due to the fact that digital games are socially considered to be more of a preference for males and they may consequently be more motivated to play them. The basic perception of which games are experienced as more or less fun may also differ between the two genders, which is why a micro-psychokinesis effect can certainly be subjectively perceived in the women in this study, but this is not reflected in the type of games

given the two categories. It could be relevant here to include the argument that the objectification of the fun to be expected from the games may have had a negative effect on the development of micro-psychokinesis.

Discussion

Central findings

In summary, it can be said that this study successfully demonstrated the effect of micro-psychokinesis in connection with intrinsic motivation and, above all, its elements of self-regulation and self-control. Relevant gender differences were also identified. These go so far that, when analyzed separately, a significant correlation in the context of micro-psychokinesis can only be found in male test subjects. In addition, a large difference was found between objective and subjective enjoyment of the games and their respective correlations with the other factors. While conjectures could be formulated within the theoretical framework, it may be relevant to conduct this in future research.

Limitations

The limitations of the study include above all the aspect that no concrete assumptions were made in advance with regard to the numerous constructs and their correlations, but that a wide variety of variables were collected in a partly exploratory approach without more precise expectations, where a correlation could be plausible. However, it can also be argued that it is precisely this open approach that allows the subjective influences and effects to unfold in the first place due to the reduced control or reduced objectification within the framework of the theory to be researched. Nevertheless, the large and almost confusing number of variables is not advantageous for a simple evaluation of the data. With regard to the design, it should be noted that when conducting the online study

distractions can also affect the test subjects and could result in possible distortions. Finally, the categorization of the games into the two categories of "fun" and "not fun" should be viewed critically. After all, the subjective impressions of the test subjects show that even games that make demands on short-term memory can be quite enjoyable. In this case, this could be remedied by giving test subjects the opportunity to test a certain repertoire of games in advance, whereby individual preferences can also be recorded and taken into account.

Outlook

For future research, it may be relevant to continue the use of motivation for study participation, as this does not require any special induction, but comes about naturally. Furthermore, the number of variables to be recorded should be limited in order to create a more compact and therefore more efficient study design. In addition, it could be interesting to vary the default settings of the QZG so that a further game is not necessarily selected with a 50% probability, but other probabilities such as 60% are also selected for the presentation of a further game. It could also be relevant to investigate the gender-specific effects in the context of micro-psychokinesis in more detail by adapting the study design to different, possibly stereotypical, subject areas that are on average more popular with a specific gender in order to differentiate whether there may also be fundamental differences in the strength of the effect depending on gender.

Conclusion

Ultimately, this study was once again able to successfully replicate the effect of micro-psychokinesis, albeit with certain methodological complications and limitations. This study also emphasizes that motivation, especially intrinsic motivation, can have a significant influence on the outcome of quantum random processes.

More detailed information on the specific mechanisms of action and essential aspects of motivation that can exert this influence needs to be investigated more intensively in the future.

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Appendix A

The primary motivation for participating in the study was determined with the help of the following question created by the research team, for which the test subjects could select an answer option.

Why are you taking part in this study? - Please choose the reason that best applies to you.

1. I am doing someone a favor
2. I am interested in the topic of games
3. I want to support science
4. I am bored / have nothing better to do
5. I think I will have fun
6. I have heard that there will be something to win

Appendix B

The following items from the pressure/tension category of the Intrinsic Motivation Inventory (Ryan et al., 1983 and Ryan, 1982), reformulated for the purpose of the study, were asked of the subjects in order to assess their level of self-control. The response options were on a 5-point Likert scale: strongly disagree; disagree; partly agree; partly agree; agree; strongly agree

How much pressure/tension do you feel with regard to the upcoming games?

1. I feel nervous.
2. I am anxious.
3. I feel very tense.
4. I feel under pressure.
5. I feel very relaxed.

Appendix C

The following items from the interest/pleasure category of the Intrinsic Motivation Inventory (Ryan et al., 1983 and Ryan, 1982), reformulated for the purpose of the study, were asked of the subjects in order to assess the extent of self-regulation. The response options were on a 5-point Likert scale: strongly disagree; disagree; somewhat agree; somewhat agree; agree; strongly agree.

How much interest/enjoyment do you feel in relation to the study or the upcoming games? Please answer honestly how you feel about the study.

1. This study will be fun.
2. This study will not capture my attention at all.
3. I will find this study quite enjoyable.
4. I will find practicing this study quite enjoyable.
5. I will find this study interesting.
6. I will find this study boring.
7. I think a lot about how much I will enjoy this study.

Appendix D

The following three items (Buchner et al., 2022) were used to record the subjective vitality of the study participants. The scale ranged from 0 (= not at all true) to 10 (= completely true).

How do you feel at this moment? At this moment...

1. ... I feel alive and vital.
2. ... I am full of zest for action.
3. ... I have energy and zest for life.

Appendix E

With the help of the following question, which was formulated by the research team, after each game selected by the quantum random number generator, the respondents were asked how much fun they subjectively had in the previous game. One answer option could be selected and corresponded to a 5-point Likert scale.

What did you think of this game?

1. I had a lot of fun.
2. I had a lot of fun.
3. I enjoyed it moderately.
4. I didn't enjoy it very much.
5. I did not enjoy it at all.

Appendix F

These items (Lindner et al., 2019) were used to assess ego depletion and self-control capacity. A 5-point Likert scale from 1 (= completely inapplicable) to 5 (= applies exactly) was used.

Please answer the following statements about your current state of mind spontaneously. In each line, please check a box under the numbers between 1 = "completely inapplicable" and 5= "applies exactly" to express how much the respective statement applies to you at the moment.

1. I feel exhausted.
2. I feel balanced.
3. I feel listless.
4. I feel alert and focused.
5. I feel like I have no willpower left.

Appendix G

By using the items of the Implicit Theory of Willpower (Job et al., 2010), the subjects' willpower was measured on a 6-point Likert scale with the following response options: Not true at all, Not true, Rather not true, Rather true, Mostly true, Exactly true.

1. Strenuous mental activities (e.g. thinking about a difficult question, concentrating hard on something) use up my energy resources, which I then have to replenish (e.g. by taking breaks, doing nothing, watching TV, eating a snack).
2. In the course of a demanding mental activity, my energy is used up and I need a break to recharge my batteries.
3. After concentrating fully on something for a while, I sometimes feel energized and ready for more demanding activities.
4. My mental strength recharges itself. I can keep going for a long time, even when I'm doing a strenuous mental activity.
5. When I have completed a challenging mental activity, I cannot devote the same concentration to the next one straight away because I need to regain my mental strength.
6. After a challenging mental activity, I feel energized and ready for new tasks.