Mirrored Moves:
The Interplay between Non-verbal Synchrony, I-sharing, Positive Affect and Task Performance

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Abstract

Currently, the positive effects of non-verbal synchrony and I-sharing between two or more people are widely known. Non-verbal synchrony and I-sharing are both related to more prosocial behaviour, liking and social bonding towards other people. However, the effects of non-verbal synchrony and I-sharing on individual outcomes remain underexplored. Through the social skills humans hold, the ability arises to cooperate. Positive emotions arise while cooperating with other people. Furthermore, positive affect facilitates more efficacious cooperation. Current study tested whether non-verbal synchrony and I-sharing both are related to increased positive affect, and if non-verbal synchrony and I-sharing lead to better task performance. Additionally, the role of positive affect as a mediator between non-verbal synchrony and task performance, and between I-sharing and task performance was investigated. In this study, 40 dyads took part in an experiment consisting of a synchronised movement dance, an affect questionnaire, and a tangram puzzle task. Contrary to expectations, none of the hypotheses were supported. These findings indicate that there is no difference in the effect of non-verbal synchrony and I-sharing on positive affect and task performance. Additionally, this study shows that different tasks benefit from different types of dyadic behaviour beforehand. Future research should explore which specific behaviours are most beneficial for enhancing cooperation in different contexts.

Keywords: Non-verbal Synchrony, I-sharing, Positive Affect, Task Performance

The Interplay between Non-verbal Synchrony, I-sharing, Positive Affect and Task Performance

Humans do not like to live in solitude, they are social creatures (Galbusera et al., 2019). Therefore, being part of a group and having social interactions is important for humans (Over & Carpenter, 2012). During these social interactions, the ability arises to cooperate (e.g., assembling furniture or making an assignment together). In order to let cooperation run smoothly and bond with other people, humans tend to imitate and automatically synchronise their movements (Tomasello, 2014). The act of sharing an experience with another individual, such as doing synchronised movements together, has been found to facilitate the ability to compromise with one another. Also, working together has beneficial consequences, because positive emotions arise while cooperating with other people (Watzek et al., 2019). Therefore, current research will investigate the interplay between non-verbal synchrony, I-sharing, positive affect, and task performance.

Children are already aware of synchronized visual and auditory stimuli at four months old (Vink et al., 2017). This develops with age and therefore synchrony is common within humanity. Humans often engage in social interactions and synchrony is able to stimulate these social interactions (Miles et al., 2017). The process of synchronisation enables individuals to establish a connection with each other that facilitates the achievement of fundamental social goals, including communication, and affiliation. The meta-analysis of Mogan et al. (2017) showed that synchrony has a positive effect on prosocial behaviour, social cognition, and social bonding. Furthermore, their meta-analysis showed that synchrony is positively related to social behaviour towards group members. People feel more liking, social connectedness and positive affect towards group members after synchronized behaviour (Mogan et al., 2017). Thus, synchrony has positive outcomes for humans in relation to other persons. The

explanation behind these findings is that when synchronising with another person; the other person and the self are seen more as a single entity, which can create a sense of unity between these individuals (Swann et al., 2012). There are different types of synchrony, such as non-verbal synchrony. Non-verbal synchrony is the coordination between two or more individuals simultaneously in form and time without verbal interaction (Ramseyer & Tschacher, 2008).

I-sharing is a concept similar in definition to non-verbal synchrony, which can increase liking and helping other people as well (Huneke & Pinel, 2016). I-sharing is defined as two or more people who believe that they have the same subjective in-the-moment experience as a response to a stimulus (Pinel, 2018). I-sharing has an important function, namely that it increases an individual's confidence and sense of belonging. Therefore, I-sharing reduces the feeling of loneliness and isolation (Pinel et al., 2015). With I-sharing the person only needs to believe they experienced a shared experience, whereas synchrony needs a physical shared experience. The concept of I-sharing gets its name from William James who divided the Me and the I (Pinel et al., 2015). The Me is the objective part of the self and consists of every detail about people's life such as background or hobbies. The I is about the subjective part of the self and a flow of awareness, in other words, an in-the-moment experience. People do not know immediately if they share an experience, because they cannot know the experience of the other right away (Pinel et al., 2017). For this reason, is I-sharing an inference. Therefore, it is preferable if two individuals have the same reaction to a stimulus simultaneously. Non-verbal synchrony is not a subjective experience; rather, it is a tangible one that can be observed during the interaction. Consequently, it is possible for non-verbal synchrony to complement I-sharing by showing each other's expressions, thus indicating whether the experience is perceived in a similar manner.

Synchrony and I-sharing are both related to social behaviour towards the other, such as the experience of positive affect towards another other person. There is extensive research on the social impact of non-verbal synchrony and I-sharing on others (e.g., Mogan et al. (2017) and Huneke & Pinel (2016)), but the effect on the self has not been investigated extensively yet (Galbusera et al., 2019). In research about therapy, a positive link was found between synchrony and positive affect (Tschacher et al., 2014). Positive affect reflects levels of pleasurable engagement with the environment, such as happiness, joy, excitement, enthusiasm, and satisfaction (Clark et al., 1989). It is possible for positive affect to change due to in-the-moment experiences, which is also related to changes in health outcomes (Pressman et al., 2019). Positive affect reduces premature mortality rates and the development of physical illnesses (Steptoe & Wardle, 2005). Furthermore, in the research of Tschacher et al. (2014) a relationship between synchrony and positive affect was found with a larger effect for synchrony on positive affect than vice versa. This raises the question of whether synchrony and I-sharing only have an effect on feelings towards others or also on the self. The research of Galbusera et al. (2019) is the first to investigate the relation between non-verbal synchrony and positive affect. In their research, the effect of interpersonal synchrony on positive affect was investigated and it was found that interpersonal synchrony increases positive affect. However, the effects of non-verbal synchrony on the individual have been little studied and within the field of I-sharing the relation of I-sharing on the individual levels of positive affect is not investigated. According to Nowak et al. (2017), synchrony allows a dyad to exchange facial expressions, which promotes sharing the same emotional state such as positive affect. I-sharing does not create this opportunity. For this reason, the possibility is that non-verbal synchrony and I-sharing are complementary to one another. Where I-sharing creates the opportunity of sharing a subjective in-the-moment experience, synchrony allows

the exchange of tangible expressions. Together, this may form the dyadic interaction. The expectation for current study is that non-verbal synchrony will yield a higher increase of positive affect than I-sharing.

Additionally, positive affect can be beneficial for task performance. The research of Davis et al. (2007) shows that participants performed better on brain-storming tasks, where uses for common objects needed to be generated, when in a positive mood. Furthermore, Tsai et al. (2007) found that employees with higher levels of positive affect show better performance. Therefore, it is expected that the effect of non-verbal synchrony leading to better task performance, will be mediated by positive affect. Knight and Eisenkraft (2015) explain the relation through bonding and cohesion. Positive affect develops bonding and cohesion through which task performance is enhanced. Next to positive affect, non-verbal synchrony is also related to cooperation between dyads (Allsop et al., 2016). Non-verbal synchrony creates bonding and cohesion as well, which in turn enhances the level of cooperation. Cooperation is a recurring phenomenon in people's lives. Whether it is in sports, work, or an orchestra, people often work together. Therefore, knowing what could encourage cooperation is important. Non-verbal synchrony is able to increase task performance between dyads (Henning et al., 2001; Reddisch et al., 2013). Beneficial effects have been found in synchrony on simple tasks with an explicit goal. Synchrony creates a collective spirit through which cooperation with others is easier (Valdesolo et al., 2010). In the field of I-sharing this is rarely investigated, but Gehman et al. (2022) found that dyads who I-shared but did not know each other were better at compromising. The explanation behind this finding is that I-sharing increases helping others, which can be beneficial for dyads while performing a task. However, actual synchronised movements enhance task performance, whereas I-sharing only facilitates (Valdesolo et al., 2010; Gehman et al., 2022). For this reason, current research hypothesised

that non-verbal synchrony leads to better task performance compared to I-sharing. Furthermore, it is expected that I-sharing together with the effects of non-verbal synchrony boosts task performance to a higher degree compared to non-verbal synchrony alone.

These findings suggest that there is a difference between non-verbal synchrony and I-sharing. Non-verbal synchrony requires a real shared in-the-moment experience, whereas I-sharing only needs the thought that an in-the-moment experience is shared. Wigget et al. (2012) found that action execution in comparison to action perception alone, leads to more brain activation and stronger representations within the brain. So, synchronised action performance activates the brain more and shows stronger representations than the mere thought of performing that action together. Therefore, the suggestion is raised that only the thought of sharing an experience, which happens with I-sharing, activates the brain less compared to performing synchronised movements together. Action perception combined with action performance complements each other and shows the strongest representations within the brain (Wigget et al., 2012). However, the definitions of non-verbal synchrony and I-sharing do overlap. Both non-verbal synchrony and I-sharing are related to increased levels of liking towards interaction partners and social connectedness with group members (Huneke & Pinel, 2016; Mogan et al., 2017). This may possibly be due to the same mechanism behind synchrony and I-sharing (Gehman et al., 2022). Therefore, it can produce similar outcomes for people, such as liking and helping. However, this has not been thoroughly investigated, making it impossible to say with certainty. For this reason, the current research will investigate the effect of non-verbal synchrony and I-sharing on the same constructs.

It follows from the above information that the focus of current research is on the relationship between non-verbal synchrony, positive affect and cooperative performance on a task. Moreover, this study aims to compare I-sharing with synchrony to assess potential

differences between these two factors and their effects on positive affect and task performance. An experiment with a synchronised dancing task and a jigsaw puzzle task is developed to examine the effects. In sum, these are the hypotheses of current research: *Hypothesis 1: Non-verbal synchrony will yield a higher increase of post-test positive affect than I-sharing compared to pre-test positive affect. Hypothesis 2: Non-verbal synchrony leads to better task performance as evidenced by greater speed/accuracy in completing a tangram puzzle task compared to I-sharing. Hypothesis 3: I-sharing interacts with the effects of non-verbal synchrony such that task performance is boosted to a higher degree than would be expected based on the main effects of non-verbal synchrony and I-sharing, Hypothesis 4: The effect of non-verbal synchrony leading to better task performance, as evidenced by greater speed/accuracy in completing a tangram puzzle task, will be mediated by positive affect.* In addition, the possible mediation between I-sharing, positive affect and task performance, and the possible interaction effect between I-sharing and non-verbal synchrony on positive affect will be investigated exploratory. New information about synchrony and I-sharing and their possible influences can be gathered from the results. Due to the little information available and the frequent occurrence of synchrony and I-sharing, this is essential. Currently, synchrony is already used in real-life settings, such as the classroom. According to Liu et al. (2021), synchrony positively influences the collaboration quality among students. The potential addition of novel data by current research may enhance the effectiveness of the synchrony used in real-world settings.

Methods

Participants

Using a power analysis in G*power 3.1 with the analysis ANOVA: Repeated measures, within factors, an effect size of f = .325, an alpha of .05 and power of .80, it was

determined that a minimum sample of 24 participants was needed. The effect size was derived from Galbusera et al. (2019), who conducted research into the impact of synchrony on positive affect. Consequently, the power analysis for the current study was based on the within-subjects effect of positive affect. Because this research investigates an interaction effect, the participants are equally divided among the conditions to maximalise statistical power (Ramsey, 2002).

The participants have been recruited through a convenience sample, resulting in a large portion of the sample stemming from the researchers' social networks (e.g., fellow students). Pre-screening was done to determine whether they met the inclusion criteria. Participants had to be at least 18 years of age and strangers to the other person with whom they did the experiment. Prior to commencing the experiment, participants were asked whether they knew the other participant via email or WhatsApp. At the beginning of the experiment participants had to indicate how well they knew the other person on a slider scale from 0-100. Participants were excluded from the study if their score was 40 or above. None of the participants were excluded based on the exclusion criteria. Furthermore, the Utrecht University recruiting service was used to recruit participants with 1 course credit as compensation for their participation. The final sample consisted of N= 80, age ranging from 18 to 63 (M= 24.18 SD= 6.98).

This study was reviewed and approved by the Faculty Ethical Review Committee (FETC) of the Faculty of Social Sciences of Utrecht University with UU-SER approval number: 24-0293. Before participants could start their participation, they read through the information letter and gave informed consent by giving their signature on paper.

Materials

All the questionnaires were filled in via Qualtrics on a HP Elitebook 840 G3 laptop with the browser FireFox. The dancing videos were displayed on a HP Elitebook 830 G6, which was connected to an Acer X138WH beamer with a 1280x800 resolution. The participants both wore a Roland monitor headphone RH-5. In Figure 1 the set-up of the room is shown including the placement of all equipment. Furthermore, in Figure 2 a picture of the room is shown.

Figure 1

Map of Laboratory Space

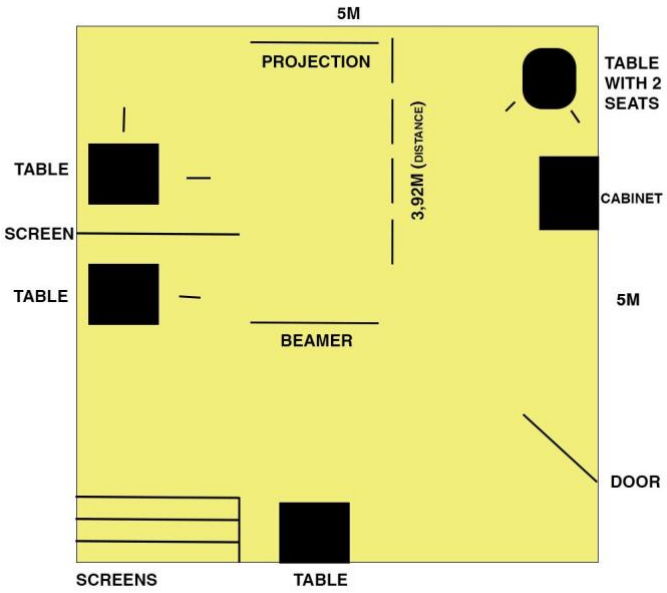


Figure 2

Laboratory Space

Design

Current research had an experimental design in which there are two independent variables each having two levels. Non-verbal synchrony is the first independent variable with the level's synchrony and asynchrony; I-sharing is the second independent variable with I-sharing and no I-sharing as the two levels. Furthermore, the participants were randomly allocated to one of the four conditions, with the conditions repeating in linear sequence from one to four. Below is explained how the two independent variables are manipulated.

Synchrony

Synchrony was manipulated through a dancing video. Participants were asked to copy the dance of the avatars on the screen. There was a distance of 1 meter between participants while dancing to ensure no physical contact could be made with each other and the materials. The dyad saw the same video when in de synchrony condition and danced the same dance at the same time for 5:30 minutes to manipulate synchrony in time and motion. The dances were retrieved from Just Dance Asia and YouTube (Appendix E). In the asynchronous condition, participants were presented with a video for a period of 5:30 minutes while simultaneously

engaging in an asynchronous dance. The dyad danced at the same time but each saw a different video. This resulted in an asynchronous dance executed at the same time.

I-sharing

To manipulate I-sharing, a questionnaire was developed with the following questions: "I enjoyed this exercise", "I felt uncomfortable during this exercise", and "I thought the dancing exercises were hard to execute". Participants had to rate their feelings based on the dancing exercise on a scale ranging from 1 (very slightly or not at all) to 5 (extremely). The answers were not actually used. In the I-sharing condition participants were told by the researcher: 'Funny to see, you both share the same experience. You both found this exercise equally fun and awkward to perform.' In the no I-sharing condition the researcher told participants: 'Funny to see, you both had a different experience. You found it both differently fun and awkward to do.'

Instruments

This study was a collaboration in which more data was collected than reported here. Additional tasks included the SSES, IL-6, and IOS questionnaire (Heatherton & Polivy, 1991; Aron et al., 1992; Veksler & Eden, 2017). Furthermore, participants needed to rate pictures of people on attractiveness. For more details and results refer to De Lang (2024) and Kloet (2024). The instruments described below are used to measure the variables part of current research.

Positive affect

To measure positive affect, the PANAS-scale was used. The PANAS questionnaire is validated by Watson et al. (1988). Sample items include "interested", "determined", and "active". Participants rate their feelings based on the present moment and on a slider scale ranging from 0 (very slightly or not at all) to 100 (extremely). To measure a possible change

in positive affect after the synchrony and I-sharing task, positive affect was measured twice. Once before the tasks and then after the synchrony and I-sharing task. Cronbach's Alpha showed a good reliability with $\alpha = .85$ for PANAS pre-test and a good reliability for PANAS post-test $\alpha = .88$. After reversing half of the items, a sum score was made. A higher sum score on the PANAS means higher levels of positive affect.

Task Performance

To measure task performance of the dyad, their time and accuracy were recorded on a tangram task (Appendix D). The dyad had to lay a tangram, divided into seven basic geometric figures, correctly. One participant had a coloured picture of the correct figure and needed to instruct the other participant, who had to lay that figure accurately, within the set time, and with black tangram pieces. The dyad was separated by a 4,5 cm thick screen. Therefore, one participant could not see the tangram pieces and the other could not see the tangram figure. If the dyad thought they were done, they raised their hand or said to the researcher that they were finished. If the tangram was laid correctly, the task was over. Incorrect results were obtained when the dyad told the researcher that the puzzle was correct, but in fact it was not, or when the puzzle was not completed in time.The time was recorded in seconds by the researcher on a stopwatch to avoid cheating by the dyad. If the dyad did not complete the jigsaw puzzle in 420 seconds, the researchers made the dyad stop. A task performance score was made by the following formula, which is derived from the linear integrated speed-accuracy score (LISAS; Vandierendonck, 2016): Task Performance = Time + (SD time / SD number of incorrect results) * the number of incorrect results. Hereby, a score was created that gave feedback about the accuracy and speed of the dyad laying the tangram. Through this, feedback is given to dyads who did not lay their tangram correctly or did not finish the task in time. In short, a higher score means a worse task performance.

Procedure

The data collection phase of the experiment took place between February 21st and concluded on April 19th. Before arrival participants were asked not to communicate with anyone waiting at the reception of the building. Both participants were collected by the researcher at the same time to walk towards the laboratory, thus ensuring that they had the same experience from their arrival at the laboratory until their departure. Synchrony occurs automatically, indicating the importance of the absence of communication between the dyad and the pickup by the researcher. Upon arrival in the lab, participants were directed to a desk where they were instructed to review the information letter (Appendix A). Once they had clarified any queries and expressed understanding, they were then requested to sign the consent letter (Appendix B). When signed, the participants were asked to fill in the PANAS questionnaire. Then the participants had to stand in front of the beamer with headphones on. The dyad saw both a video and needed to mimic the dance of the avatars in the video. Thereafter, the participants needed to sit again at the same desk and fill in the I-sharing questionnaire. Then the SSES, IL-6, IOS, and PANAS questionnaires were filled in. The tangram task came thereafter. After the tangram task, the participants were instructed to sit back at the same desk and asked to fill in a questionnaire about rating the attractiveness of people. The researcher told the participants that they could stop any time and instructed the participants to meet the researcher in the hallway when finished. In the hallway the participants read the debrief letter (Appendix C) and could ask questions to the researcher about the study. The total duration of the experiment was 40 minutes.

Data check

The assumptions for the analyses were checked. No outliers were spotted on the variables positive affect and task performance, so all the data of the participants could be used

in the analysis. For the variable positive affect all other assumptions were met. However, the variable task performance violated the normality assumption. The normality violation is overcome by using a sufficient enough sample size (N=80) according to the central limit theorem (Kwak & Kim, 2017).

Data analysis

The analyses are performed with the program IBM statistics SPSS (v. 29). To test whether positive affect is influenced by synchrony and I sharing, a two-way repeated measures ANOVA was performed (H1). The second and third hypothesis are tested through a two-way ANOVA. To test the possible mediation between non-verbal synchrony, positive affect and task performance a simple mediation analysis was carried out with Process Macro, version 3.5, model 4 (Hayes, 2017). Hereby, the independent variable was non-verbal synchrony, the mediator was positive affect, and task performance was the dependent variable. I-sharing was included in the analysis as covariate.

In addition, an exploratory analysis was carried out. To test the possible interaction effect between I-sharing and non-verbal synchrony on positive affect, a two-way repeated-measures ANOVA was used. The possible mediation between I-sharing, positive affect, and task performance was explored through a simple mediation analysis in Process Macro, version 3.5, model 4 (Hayes, 2017). The independent variable was I-sharing, the mediator was positive affect, and task performance was the dependent variable. Non-verbal synchrony was included in the analysis as covariate.

Results

Descriptive statistics

First, the descriptive statistics and correlations of the variables pre-test positive affect, post-test positive affect, and task performance are shown in Table 1.

The variable post-test positive affect shows descriptively higher minimum, maximum, mean, and standard deviation scores compared to pre-test positive affect.

Confirmatory Analysis

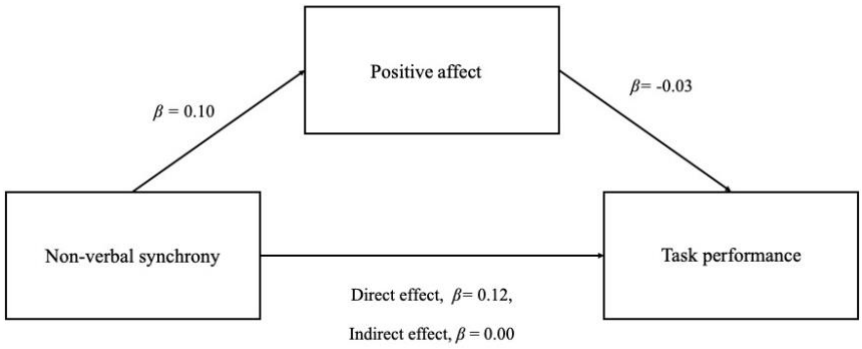
A two-way repeated measures analysis was performed to test hypothesis 1. The results show that there was no main effect from pre-test positive affect to post-test positive affect $F(1, 76) = 2.42$, $p = .124$, partial $\eta^2 = .031$. There was no significant main effect of synchrony, indicating that synchronising movements did not influence the feelings of positive affect of participants $F(1, 76) = 0.223$, $p = .638$, partial $\eta^2 = .003$. Also, I-sharing did not significantly influence positive affect, indicating that I-sharing did not influence the feelings of positive affect of participants $F(1, 76) = 0.027$, $p = .869$, partial $\eta^2 = .000$. For this reason, hypothesis 1 is not confirmed.

A two-way ANOVA was performed to test hypotheses 2 and 3. The results indicated that non-verbal synchrony did not significantly affect task performance $F(1, 76) = 0.286$, $p = .594$, partial $\eta^2 = .004$. Therefore, hypothesis 2 is rejected. I-sharing also did not significantly affect task performance $F(1, 76) = 0.329$, $p = .568$, partial $\eta^2 = .004$. The interaction effect between I-sharing and non-verbal synchrony on task performance was not significant either $F(1, 76) = 1.407$, $p = .239$, partial $\eta^2 = .018$. For this reason, hypothesis 3 is not confirmed.

Finally, a mediation analysis was used to test hypothesis 4. There was no significant indirect effect of non-verbal synchrony on task performance through positive affect, $b = 0.49$, 95% BCa CI [-13.84, 11.02]; which means that hypothesis 4 is not confirmed. For a graphic representation of the results, see Figure 3.

Figure 3

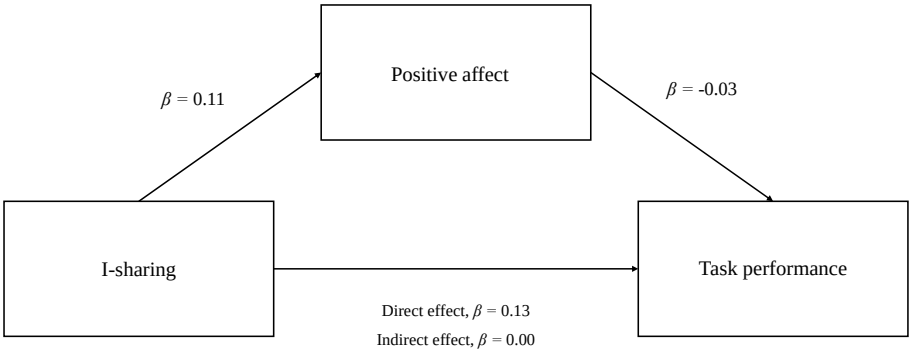
The Mediation Model of Non-Verbal Synchrony, Positive Affect, and Task Performance



There was also no significant indirect effect of I-sharing on task performance through positive affect, *b* = -0.51, 95% BCa CI [-12.25, 13.35]. For a graphic representation of the results, see Figure 4.

Figure 4

The Mediation Model of I-sharing, Positive Affect, and Task Performance



Discussion

As people are social creatures and automatically synchronise when together, it is important to investigate the possible effects of non-verbal synchrony. The purpose of this research was to investigate whether non-verbal synchrony and I-sharing have an effect on positive affect and whether non-verbal synchrony and I-sharing have an effect on task performance. Furthermore, the possible mediation of positive affect between non-verbal synchrony and task performance was investigated. Exploratory, it was investigated whether positive affect mediates the relationship between I-sharing and task performance. This study hypothesised that non-verbal synchrony would yield a higher increase of post-test positive affect than I-sharing compared to pre-test positive affect. Furthermore, the expectation was that non-verbal synchrony leads to better task performance as evidenced by greater speed/accuracy in completing a tangram puzzle task compared to I-sharing. Hereby it was expected that I-sharing interacts with the effects of non-verbal synchrony such that task performance is boosted to a higher degree than would be expected based on the main effects of non-verbal synchrony and I-sharing. At last, the expectation was that positive affect mediated the effect between non-verbal synchrony and better task performance. However, no significant effects were found. Therefore, I-sharing is not able to boost the main effects, positive affect cannot mediate the relationship between non-verbal synchrony and task performance or the relationship between I-sharing and task performance. Given that the hypotheses have not been substantiated, it is important to discuss the findings of current research.

First, since current research did not find any difference between the effects of non-verbal synchrony and I-sharing, the possibility arises that both are not completely distinct concepts, but rather complementary ones that are interrelated. The definition of non-verbal

synchrony and I-sharing already are similar. With I-sharing the opportunity is created of sharing a subjective in-the-moment experience and non-verbal synchrony allows the exchange of tangible expressions. Thus, non-verbal synchrony allows a dyad to exchange actual expressions, whereas I-sharing only creates the opportunity to think that the experience is shared. Consequently, it may be posited that non-verbal synchrony and I-sharing are complementary to one another. Together, this may be one process rather than two distinct ones causing the dyadic interaction. The current study did not provide an opportunity for dyads to exchange expressions as both participants were looking at the screen while dancing. Consequently, it was not possible to ascertain whether I-sharing and non-verbal synchrony are complementary to one another. It is recommended that future research investigate this further.

Second, the unexpected non-significant finding of non-verbal synchrony on positive affect is in line with the longitudinal research of Hudson et al. (2017). Their research showed that humans have stable day-to-day positive emotions. The study measured the emotions and moods of people for over two years and found that within this period of time the experienced positive affect was relatively stable. Therefore, in the current study it could be possible that the variable positive affect was difficult to increase by non-verbal synchrony. The minimum, maximum, and mean scores of post-test positive affect were higher compared to pre-test positive affect. So, there was a slight change in positive affect, but it may be due to the stability of this variable that the change was not significant. Another explanation for why non-verbal synchrony did not have an effect on positive affect is about emotional ceiling. The participants in the current research were already high in positive affect, as shown by the scores on the PANAS questionnaire, and may be less susceptible to experiences that increase positive affect (Froh et al., 2009). The task to induce non-verbal synchrony was a social event, namely dancing in a room with another person, and people high in positive affect often

join social activities (Fleeson et al., 2002). For this reason, people high in positive affect are used to social activities and have a smaller change in positive affect after a social activity compared to people low in positive affect. Participants in current research did not report low levels of positive affect on average and might therefore not feel a change in positive affect after the non-verbal synchrony task. In accordance with the aforementioned arguments, the research of Galbusera et al. (2019) shows that social attunement is not always beneficial for the self. Their research did find that interpersonal synchrony increases positive affect, but also found that intrapersonal synchrony diminishes positive affect. Therefore, Galbusera et al. (2019) acknowledged the necessity to achieve a balance between being in harmony with others and maintaining a sense of separation from them. In summary, the stability of day-to-day positive emotions suggests that non-verbal synchrony may not have increased positive affect in the current research.

Furthermore, current study unexpectedly found that non-verbal synchrony does not lead to better task performance as evidenced by greater speed/accuracy in completing a tangram puzzle task compared to I-sharing. This finding is at odds with other research, such as that of Miles et al. (2017) who found that synchrony is beneficial between dyads during a problem-solving task. The non-significant result can be explained by the difficulty of the task. Additional analyses were performed after the non-significant results, and it was found that 24 dyads completed the task in time and 16 dyads did not complete the task in time. This finding indicates that the tangram puzzle task was difficult to complete. The number of incorrect results has been included in the speed-accuracy trade-off score; i.e. more incorrect results result in a higher task performance score. A higher score indicates poorer task performance. With 16 dyads not completing the task on time, there were many high scores in the data.

Also, the non-significant finding is in line with Vink et al. (2017) who investigated synchrony in relation to task performance and found that synchrony is not related to better task performance. Vink et al. (2017) had participants lay as many tangram puzzles as possible in 10 minutes and examined synchronisation between the dyads through postural sway during the task. In addition, Abney et al. (2015) investigated weak and strong synchrony in relation to task performance by having dyads construct towers from uncooked spaghetti and marshmallows. The research found that dyads with stronger synchrony tend to perform worse on a task compared to dyads who had weaker synchrony. Valdesolo et al. (2010) investigated the relation of synchrony and task performance with a synchronized task and found a significant relationship. This indicates that the type of task matters in order for synchrony to have an effect. The tangram puzzle task in the current study requires dyadic coordination rather than synchronised movements, which may not be the optimal situation for nonverbal synchrony to work. (Vink et al., 2017). For this reason, the complementary behaviour tangram puzzle task might explain the non-significant finding in the current study.

Because there is no significant relationship between non-verbal synchrony and task performance, positive affect is not able to mediate this relationship. However, it could also be that the effect of non-verbal synchrony had worn off by the time the dyad completed the tangram task. After the synchrony movement, three questionnaires had to be filled in before doing the tangram task. Therefore, the possibility is created that synchrony had no effect on task performance. Other research, which found significant results about synchrony and task performance, measured the coordination task immediately after synchronisation (Miles et al., 2017). This indicates that the effect of synchronisation is only measured directly after the task, and it is unknown when this effect wears off. Consequently, the potential exists for the effect of synchrony to dissipate at a relatively rapid pace. If the effect of non-verbal

synchrony on task performance in current research has indeed worn off before the task is performed, then it is impossible for positive affect to mediate this relationship.

Strengths, limitations, and future directions

This study has limitations, which are worth mentioning. First, participants were cut off when reaching 7 minutes, while doing the tangram puzzle task. Therefore, not all participants got an actual time score, and it is unknown what their actual time score would have been. Although the formula takes time and accuracy into account and awards penalty points, it does not fully reflect the actual score that would have been achieved without the maximum time. It is advisable for future research to extend the maximum time in order to reflect a more representative score.

Another limitation is that there was no usage of measurement material to measure the amount of non-verbal synchrony between dyads. Therefore, it is unknown whether the participants actually synchronised in time during the synchrony task. Participants were spotted hitting the beamer while dancing, causing them to lag behind and not be in synchrony with the other participant. Furthermore, participants indicated that some dance moves were difficult to perform, which may also harm the degree of non-verbal synchrony in movement and time with the other participant. For this reason, it is possible that the degree of synchrony between the participants was not as high as desired.

However, this research also has strengths. Current research is the first to compare non-verbal synchrony with I-sharing, a concept close to non-verbal synchrony. The two concepts are similar in definition, yet they have never been compared in a research context. By comparing both, the effect of non-verbal synchrony and I-sharing can be mapped on positive affect and task performance. This also allows for determining whether the mechanisms of both overlap. Non-verbal synchrony and I-sharing are by definition very similar. Current

research found that there is no difference in outcome on positive affect and task performance. Therefore, it is possible that both concepts have the same effect and do not differ in their effect on variables. However, the results are not significant and thus should be interpreted with caution. For this reason, future research is important to further investigate the effects of non-verbal synchrony and I-sharing.

For research in the future, it could be interesting to compare the effect of non-verbal synchrony on a complementary behaviour task and a synchronised movement task. As current research did not find a relationship between non-verbal synchrony and complementary task performance, but Valdesolo et al. (2010) found a significant relationship between synchrony and synchronised movement task performance. Also, Vink et al. (2017) stated that tasks, which require complementary behaviour, benefit from complementary movements between dyads beforehand. Therefore, the suggestion is to compare non-verbal synchrony on a complementary behaviour task and synchrony movement task between dyads. By doing this, a conclusion can be drawn about whether different tasks benefit from different types of behaviour between dyads.

In addition, future research could look into the effect of non-verbal synchrony and I-sharing on humans low in positive affect. As mentioned, people high in positive affect are used to social activities and their positive affect increases less easily. However, it could be interesting to investigate whether people low in positive affect benefit more from non-verbal synchrony and I-sharing compared to people high in positive affect. Already, synchrony is used in therapy to enhance people's social skills (Dvir et al., 2020). Therefore, synchrony may also be integrated into therapy for other goals, such as enhancing positive affect.

Practical implication

Task performance is a reoccurring phenomenon in the society humans live in. Whether

it is at work or in sports, people cooperate with each other. Therefore, it is convenient to know what could be beneficial to improve task performance. Synchrony is already implemented in educational settings (Liu et al., 2021). Hereby, it was found that synchrony is able to stimulate collaboration quality among students. The present study shows that not all types of synchrony are beneficial for task performance between dyads. By understanding the types of tasks for which synchrony is useful, specific forms of synchrony sessions can be used to improve task performance.

Conclusion

Current research investigated the interplay between non-verbal synchrony, I-sharing, positive affect, and task performance. Unexpectedly, it was found that non-verbal synchrony does not have an effect on positive affect, and I-sharing does not boost this effect. Furthermore, non-verbal synchrony and I-sharing do not improve the task performance between dyads. Also, positive affect does not mediate the relationship between non-verbal synchrony and task performance. In addition, positive affect does not mediate the relationship between I-sharing and task performance. In the future, it is important to compare the effect of non-verbal synchrony and I-sharing on a synchronised behaviour task to understand the working of non-verbal synchrony and I-sharing on task performance better. Current research is the first to compare the effect of non-verbal synchrony and I-sharing in one study. Synchrony is already used in educational and clinical settings. By deepening our understanding of these phenomena, we can enhance collaborative efforts and drive innovations in interpersonal and team-based settings. This, in turn, will facilitate more effective and harmonious interactions in diverse fields.

References

Abney, D. H., Paxton, A., Dale, R., & Kello, C. T. (2015). Movement dynamics reflect a functional role for weak coupling and role structure in dyadic problem solving. *Cognitive Processing*, *16*(4), 325–332. https://doi.org/10.1007/s10339-015-0648-2

Allsop, J. S., Vaitkus, T., Marie, D., & Miles, L. K. (2016). Coordination and collective performance: cooperative goals boost interpersonal synchrony and task outcomes. *Frontiers in Psychology*, *07*. https://doi.org/10.3389/fpsyg.2016.01462

Aron, A., Aron, E. N., & Smollan, D. (1992). Inclusion of Other in the Self Scale and the structure of interpersonal closeness. *Journal of Personality and Social Psychology*, *63*(4), 596–612. https://doi.org/10.1037/0022-3514.63.4.596

Clark, L. A., Watson, D., & Leeka, J. (1989). Diurnal variation in the Positive Affects. *Motivation and Emotion*, *13*(3), 205–234. https://doi.org/10.1007/bf00995536

Davis, M. A., Kirby, S. L., & Curtis, M. B. (2007). The influence of affect on goal choice and task performance. *Journal of Applied Social Psychology*, *37*(1), 14–42. https://doi.org/10.1111/j.0021-9029.2007.00144.x

De Lang, A. (2024). *Self-esteem Through Others: feeling better after dancing or sharing perspective?* [Unpublished master's thesis]. University of Utrecht.

Dvir, T., Lotan, N., Viderman, R., & Elefant, C. (2020). The body communicates: Movement synchrony during music therapy with children diagnosed with ASD. ˜ *the œArts in Psychotherapy*, *69*, 101658. https://doi.org/10.1016/j.aip.2020.101658

Fleeson, W., Malanos, A. B., & Achille, N. M. (2002). An intraindividual process approach to the relationship between extraversion and positive affect: is acting extraverted as" good" as being extraverted? *Journal of personality and social psychology*, *83*(6), 1409. https://doi.org/10.1037/0022-3514.83.6.1409

Froh, J. J., Kashdan, T. B., Ozimkowski, K. M., & Miller, N. (2009). Who benefits the most from a gratitude intervention in children and adolescents? Examining positive affect as a moderator. ˜ *the œJournal of Positive Psychology*, *4*(5), 408–422. https://doi.org/10.1080/17439760902992464

Galbusera, L., Finn, M. T. M., Tschacher, W., & Kyselo, M. (2019). Interpersonal synchrony feels good but impedes self-regulation of affect. *Scientific Reports*, *9*(1). https://doi.org/10.1038/s41598-019-50960-0

Gehman, R., Pinel, E. C., Johnson, L., & Grover, K. W. (2022). Emerging Ideas. A ripple effect: Does I-sharing with a stranger promote compromise in cohabiting couples? *Family Relations*, *72*(3), 794–801. https://doi.org/10.1111/fare.12677

Hayes, A. F. (2017). *Introduction to Mediation, Moderation, and Conditional Process Analysis, second edition: A Regression-Based Approach*. Guilford Publications.

Heatherton, T. F., & Polivy, J. (1991). Development and validation of a scale for measuring state self-esteem. *Journal of Personality and Social Psychology*, *60*(6), 895–910. https://doi.org/10.1037/0022-3514.60.6.895

Henning, R. A., Boucsein, W., & Gil, M. C. (2001). Social–physiological compliance as a determinant of team performance. *International Journal of Psychophysiology*, *40*(3), 221–232. https://doi.org/10.1016/s0167-8760(00)00190-2

Hudson, N. W., Lucas, R. E., Donnellan, M. B., & The Author(s). (2017). Day-To-Day Affect is Surprisingly Stable: A 2-Year Longitudinal Study of Well-Being. In *Social Psychological and Personality Science* (Vols. 8–1, pp. 45–54). https://doi.org/10.1177/1948550616662129

Huneke, M., & Pinel, E. C. (2016). Fostering selflessness through I-sharing. *Journal of Experimental Social Psychology, 63,* 10–18. https://doi.org/10.1016/j.jesp.2015.11.003

Kloet, H. (2024). *Groove to Give: can prosocial behavior be fostered through synchronized dancing and I-sharing?* [Unpublished master's thesis]. University of Utrecht.

Knight, A., & Eisenkraft, N. (2015). Positive is usually good, negative is not always bad: The effects of group affect on social integration and task performance. *Journal of Applied Psychology*, *100*(4), 1214–1227. https://doi.org/10.1037/apl0000006

Kwak, S. G., & Kim, J. H. (2017). Central limit theorem: the cornerstone of modern statistics. *Korean Journal of Anesthesiology, 70*(2), 144. https://doi.org/10.4097/kjae.2017.70.2.144

Liu, Y., Wang, T., Wang, K., & Zhang, Y. (2021). Collaborative learning quality classification through physiological synchrony recorded by wearable biosensors. *Frontiers in Psychology, 12*. https://doi.org/10.3389/fpsyg.2021.674369

Miles, L. K., Lumsden, J., Flannigan, N., Allsop, J. S., & Marie, D. (2017). Coordination matters: interpersonal synchrony influences collaborative Problem-Solving. *Psychology*, *08*(11), 1857–1878. https://doi.org/10.4236/psych.2017.811121

Mogan, R., Fischer, R., & Bulbulia, J. (2017). To be in synchrony or not? A meta-analysis of synchrony's effects on behavior, perception, cognition and affect. *Journal of Experimental Social Psychology, 72,* 13–20. https://doi.org/10.1016/j.jesp.2017.03.009

Nowak, A., Vallacher, R. R., Zochowski, M., & Rychwalska, A. (2017). Functional synchronization: the emergence of coordinated activity in human systems. *Frontiers in Psychology*, *8*. https://doi.org/10.3389/fpsyg.2017.00945

Over, H., & Carpenter, M. (2012). The social side of imitation. *Child Development Perspectives*, *7*(1), 6–11. https://doi.org/10.1111/cdep.12006

Pinel, E. C. (2018). Existential isolation and I-sharing: Interpersonal and intergroup implications. *Current Opinion in Psychology*, *23*, 84–87. https://doi.org/10.1016/j.copsyc.2018.01.002

Pinel, E. C., Bernecker, S. L., & Rampy, N. (2015). I-sharing on the couch: On the clinical implications of shared subjective experience. *Journal of Psychotherapy Integration*, *25*(2), 59–70. https://doi.org/10.1037/a0038895

Pinel, E. C., Yawger, G. C., Long, A. E., Rampy, N., Brenna, R., & Finnell, S. K. (2017). Human like me: Evidence that I-sharing humanizes the otherwise dehumanized. *British Journal of Social Psychology*, *56*(4), 689–704. https://doi.org/10.1111/bjso.12209

Pressman, S. D., Jenkins, B. N., & Moskowitz, J. T. (2019). Positive affect and health: What do we know and where next should we go? *Annual Review of Psychology*, *70*(1), 627–650. https://doi.org/10.1146/annurev-psych-010418-102955

Ramsey, P. H. (2002). Comparison of closed testing procedures for pairwise testing of means. *Psychological Methods*, *7*(4), 504–523. https://doi.org/10.1037/1082-989x.7.4.504

Ramseyer, F., & Tschacher, W. (2008). SYNCHRONY IN DYADIC PSYCHOTHERAPY SESSIONS. In *WORLD SCIENTIFIC eBooks* (pp. 329–347). https://doi.org/10.1142/9789812792426_0020

Reddish, P., Fischer, R., & Bulbulia, J. (2013). Let's Dance Together: Synchrony, Shared Intentionality and Cooperation. *PLOS ONE*, *8*(8), e71182. https://doi.org/10.1371/journal.pone.0071182

Steptoe, A., & Wardle, J. (2005). Positive affect and biological function in everyday life. *Neurobiology of Aging*, *26*(1), 108–112. https://doi.org/10.1016/j.neurobiolaging.2005.08.016

Swann, W. B., Jetten, J., Gómez, Á., Whitehouse, H., & Bastian, B. (2012). When group membership gets personal: A theory of identity fusion. *Psychological Review*, *119*(3), 441–456. https://doi.org/10.1037/a0028589

Tomasello, M. (2014). The ultra-social animal. *European Journal of Social Psychology*, *44*(3), 187–194. https://doi.org/10.1002/ejsp.2015

Tsai, W., Chen, C., & Liu, H. (2007). Test of a model linking employee positive moods and task performance. *Journal of Applied Psychology*, *92*(6), 1570–1583. https://doi.org/10.1037/0021-9010.92.6.1570

Tschacher, W., Rees, G. M., & Ramseyer, F. (2014). Nonverbal synchrony and affect in dyadic interactions. *Frontiers in Psychology*, *5*. https://doi.org/10.3389/fpsyg.2014.01323

Vandierendonck, A. (2016). A comparison of methods to combine speed and accuracy measures of performance: A rejoinder on the binning procedure. *Behavior Research Methods*, *49*(2), 653–673. https://doi.org/10.3758/s13428-016-0721-5

Valdesolo, P., Ouyang, J., & DeSteno, D. (2010). The rhythm of joint action: Synchrony promotes cooperative ability. *Journal of Experimental Social Psychology*, *46*(4), 693–695. https://doi.org/10.1016/j.jesp.2010.03.00

Veksler, A. E., & Eden, J. (2017). Measuring Interpersonal liking as a Cognitive Evaluation: Development and validation of the IL-6. *Western Journal of Communication*, *81*(5), 641–656. https://doi.org/10.1080/10570314.2017.1309452

Vink, R., Wijnants, M., Cillessen, A. H. N., & Bosman, A. (2017). Cooperative learning and interpersonal synchrony. *PubMed*, *21*(2), 189–215. https://pubmed.ncbi.nlm.nih.gov/28302190

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, *54*(6), 1063–1070. https://doi.org/10.1037/0022-3514.54.6.1063

Watzek, V., Anselmann, V., & Mulder, R. H. (2019). Team learning and emotions during teamwork: a qualitative study. *Research Papers in Education*, *34*(6), 769–789. https://doi.org/10.1080/02671522.2019.1568525

Wiggett, A. J., Hudson, M., Clifford, A., Tipper, S. P., & Downing, P. E. (2012). Doing, seeing, or both: Effects of learning condition on subsequent action perception. *Social Neuroscience*, *7*(6), 606–621. https://doi.org/10.1080/17470919.2012.686926

Table 1

Descriptive Statistics and Correlations

	Mean (SD)	Synchrony/I-sharing	Synchrony/No I-sharing	No synchrony/I-sharing	No synchrony/No I-sharing	1	2	3
1. Pre-test Positive Affect	1248.00 (221.91)	1298.25 (58.36)	1232.60 (42.03)	1227.35 (50.01)	1233.80 (48.85)			
2. Post-test Positive Affect	1264.11 (245.24)	1299.40 (63.20)	1253.90 (48.20)	1255.00 (60.66)	1248.15 (49.17)	.93**		
3. Task Performance	429.80 (192.32)	479.44 (40.83)	403.31 (35.72)	404.98 (48.77)	531.50 (46.57)	.02	-.02	

** $p < .01$

Appendix A: Information letter

Information letter

Dear participant,

Through this letter, we would like to ask your permission to participate in the research: "Birds of a Feather". This research aims to have a look at the effects of different types of shared experience between individuals.

Design of the study
The experiment will look as follows: we start by doing an exercise together with a fellow participant in which you will watch a video. Clear and more detailed instructions will be given by the experimenter. Thereafter, you will fill in some questionnaires. Then, you will do a puzzle task together with the other participant. Clear instructions will be given by the experimenter. After this task, you will answer a few more questions.

Expectation of you as the participant
When participating in our experiment, we expect you to be mentally and physically able to participate. You will do an exercise, answer questionnaires, and do a puzzle task. We expect you to listen to our instructions and comply with these instructions. In total, the experiment will take approximately 20 minutes.You will receive half a ppu for your participation.

Advantages and disadvantages of the research for the participant
The benefits of participation in this study include learning about research in psychology in general and the topic of this study. There are no personal benefits to participation. We want you to be aware of the possible side effects associated with participation in this research. You will be asked questions about your emotional state. For this reason, it may be confrontational for some people.

Confidentiality of the data
The research data (without your contact details) will be retained for a minimum of 10 years. This is according to the appropriate guidelines of the Universities of the Netherlands (formerly VSNU). Anonymized data from this research will eventually be included in a so-called open access database (Utrecht University Students Theses Repository) which means that other researchers will also be able to view these data. All personal information that could reasonably identify you will be removed or modified before the files are shared with other researchers or the results are made public. Other researchers [can] only access this data if they agree to maintain the confidentiality of the information as requested in this form.

Procedure coincidental findings
In case of coincidental findings concerning your mental or physical state, we advise you to contact your GP. There will be no clinical evaluation as the researchers at our faculty are not trained medical doctors.

Voluntary participation
Participation is voluntary. You will have the right of removal during the experiment at any time: you will be able to stop at any time without adverse consequences.

Contact address for questions and/or complaints
If you have questions or remarks about the study, you can contact:

- Hester Kloet: h.e.kloet@students.uu.nl
- Emma Verschuur: e.g.verschuur@students.uu.nl

- An de Lang: a.d.delang@students.uu.nl

If you have an official complaint about the study, please send an e-mail to the complaints officer at klachtenfunctionaris-fetcsocwet@uu.nl.

Questions about privacy
If you have any questions about the processing of your personal data, please direct them to privacy@uu.nl or privacy-fsw@uu.nl

If you want to read more about the UU's general privacy statement: https://www.uu.nl/organisatie/praktische-zaken/privacy/privacyverklaring-universiteit-utrecht/privacyverklaring-deelnemers-wetenschappelijk-onderzoek

More information on privacy can be read on the website of the Authority for Personal Data: https://autoriteitpersoonsgegevens.nl/nl/onderwerpen/avg-europese-privacywetgeving.

If, after reading this information letter, you decide to participate in the study, please sign the attached reply slip and hand it in to the researcher(s).

Informatiebrief

Beste deelnemer,

Via deze brief willen we uw toestemming vragen om deel te nemen aan het onderzoek "Birds of a Feather". Dit onderzoek heeft als doel om de effecten van verschillende soorten gedeelde ervaringen tussen individuen te onderzoeken.

Opzet van de studie
Het experiment zal er als volgt uitzien: we beginnen met een oefening samen met een mededeelnemer waarbij je een video zult bekijken. De experimentator zal duidelijke en gedetailleerde instructies geven. Daarna vul je enkele vragenlijsten in. Vervolgens voer je samen met de andere deelnemer een puzzeltaak uit. De experimentator zal ook hier duidelijke instructies geven. Na deze taak beantwoord je nog enkele vragen.

Verwachting van u als deelnemer
Bij deelname aan ons experiment verwachten we dat je mentaal en fysiek in staat bent om deel te nemen. Je zult een oefening doen, vragenlijsten invullen en een puzzeltaak uitvoeren. We verwachten dat je naar onze instructies luistert en deze opvolgt. In totaal zal het experiment ongeveer 45 minuten duren. Je ontvangt één ppu voor je deelname.

Voordelen en nadelen van het onderzoek voor de deelnemer
De voordelen van deelname aan deze studie zijn onder meer het leren over onderzoek in de psychologie in het algemeen en het onderwerp van dit onderzoek. Er zijn geen persoonlijke voordelen aan deelname. We willen dat je op de hoogte bent van de mogelijke bijwerkingen die verband houden met deelname aan dit onderzoek. Er zullen vragen worden gesteld over je emotionele toestand, wat voor sommige mensen confronterend kan zijn.

Vertrouwelijkheid van de gegevens
De onderzoeksgegevens (zonder uw contactgegevens) worden minimaal 10 jaar bewaard, volgens de juiste richtlijnen van de Nederlandse universiteiten (voorheen VSNU). Geanonimiseerde gegevens uit

dit onderzoek worden uiteindelijk opgenomen in een zogenaamde open access-database (Utrecht University Students Theses Repository), wat betekent dat ook andere onderzoekers deze gegevens kunnen bekijken. Alle persoonlijke informatie die u redelijkerwijs zou kunnen identificeren, wordt verwijderd of aangepast voordat de bestanden worden gedeeld met andere onderzoekers of de resultaten openbaar worden gemaakt. Andere onderzoekers kunnen alleen toegang krijgen tot deze gegevens als ze akkoord gaan met het handhaven van de vertrouwelijkheid van de informatie zoals gevraagd in dit formulier.

Procedure bij toevallige bevindingen
In geval van toevallige bevindingen met betrekking tot uw mentale of fysieke toestand, raden we u aan contact op te nemen met uw huisarts. Er zal geen klinische evaluatie plaatsvinden, aangezien de onderzoekers aan onze faculteit geen getrainde medische professionals zijn.

Vrijwillige deelname
Deelname is vrijwillig. Je hebt het recht om tijdens het experiment op elk moment te stoppen: je kunt op elk moment stoppen zonder nadelige gevolgen.

Contactadres voor vragen en/of klachten
If you have questions or remarks about the study, you can contact:
- Hester Kloet: h.e.kloet@students.uu.nl
- Emma Verschuur: e.g.verschuur@students.uu.nl
- An de Lang: a.d.delang@students.uu.nl

Als je een officiële klacht hebt over het onderzoek, stuur dan een e-mail naar de klachtenofficier naar klachtenfunctionaris-fetcsocwet@uu.nl.

Vragen over privacy
Als je vragen hebt over het verwerken van je persoonlijke data, stuur dan een email naar privacy@uu.nl or privacy-fsw@uu.nl

Als je meer wilt lezen over de UU's algemene privacy statement:
https://www.uu.nl/organisatie/praktische-zaken/privacy/privacyverklaring-universiteit-utrecht/privacyverklaring-deelnemers-wetenschappelijk-onderzoek

Meer informatie over privacy kan worden gelezen op de website van de Autoriteiten voor Persoonlijke Data: https://autoriteitpersoonsgegevens.nl/nl/onderwerpen/avg-europese-privacywetgeving.

Als, na het lezen van deze informatiebrief, je besluit om mee te doen aan het onderzoek, teken dan alsjeblieft het bijgevoegde antwoordformulier en lever deze in bij de onderzoeker(s).

Appendix B: Informed consent

Consent letter:

I hereby declare that I have read the information letter regarding the ”Birds of a Feather” and agree to participate in the study.

This means that I agree to:

- The retention of my contact details for as long as necessary for the study
- The research data collected for the study being published or made available, provided that my name or other identifying information is not used.

Date of signing:

Name:

Signature:

Mail to: a.d.delang@students.uu.nl

Appendix C: Debriefing

Debriefing non-verbal synchrony and I-sharing experiment

This study is concerned with the difference between non-verbal synchrony and I-sharing and the influence on positive affect, teamwork, self-esteem, and prosocial behaviour. I-sharing is the perception of having the same in-the-moment experience with another person. Previous studies have found that non-verbal synchrony and I-sharing can be beneficial for positive affect, self-esteem, and prosocial behaviour. However, the difference between non-verbal synchrony and I-sharing is never researched and that is the reason why we investigate the subject.

How was this tested?
In this study, you were asked to dance with the video on the screen in synchrony or asynchronous with the person next to you. You performed these same tasks for 5:30 minutes each, and then you had to fill in some questionnaires. These questionnaires were to investigate the change in positive affect, self-esteem, and prosocial behaviour. Afterwards, you had to do a tangram task with another person. We told you whether the other person had the same reaction on the dance video as you or not. This was not the truth. No matter the answers on the questionnaire, we told you which participants had the same experience, and which did not have the same experience. Therefore, this was unrelated to your answer on the questionnaire about the dancing experience. Hereby, we tested whether having the same experience as the other person matters for task performance.

Hypotheses and main questions:
We expect to find that non-verbal synchrony has a stronger effect on positive affect, self-esteem, task performance, and prosocial behaviour compared to I-sharing.
We are also interested in the influence of the dancing task on the cooperation task. We suspect that when people synchronize together, that this has a stronger effect than I-sharing. So, we expect more points on the tangram task for people who synchronized than people who danced asynchronous during the dance video and then did the tangram task.

Why is this important to study?
Synchronizing and I-sharing have positive effects on people. Humans engage in complex social interactions and synchrony can reduce this complexity. In addition to reducing complexity, it increases liking, helping other people and reducing the subjective experience of pain. I-sharing can increase liking and helping other people as well. However, the difference between non-verbal synchrony and I-sharing is still very much open to psychological research.

What if I want to know more?
If you are interested in learning more about non-verbal synchrony and I-sharing, you may want to consult:

Pinel, E. C. (2018). Existential isolation and I-sharing: interpersonal and intergroup implications. Current Opinion in Psychology, 23, 84–87. https://doi.org/10.1016/j.copsyc.2018.01.002

Mogan, R., Fischer, R., & Bulbulia, J. A. (2017). To be in synchrony or not? A meta-analysis of synchrony's effects on behavior, perception, cognition and affect. Journal of Experimental Social Psychology, 72, 13-20.

If you would like to receive a report of this research when it is completed (or a summary of the findings), please contact Emma Verschuur at e.g.verschuur@students.uu.nl.

If you have concerns about your rights as a participant in this experiment, please contact the Data Protection Officer at privacy@uu.nl.

If you have complaints about the research or experiment, please contact the complaints officer at klachtenfunctionaris-fetcsocwet@uu.nl.
Thank you again for your participation.

Debriefing Non-verbale Synchronie en I-sharing-experiment

Deze studie richt zich op het verschil tussen non-verbale synchronie en I-sharing en de invloed op positief affect, teamwork, zelfwaardering en pro sociaal gedrag. I-sharing verwijst naar de perceptie van het op hetzelfde moment dezelfde ervaring hebben als een andere persoon. Eerdere studies hebben aangetoond dat non-verbale synchronie en I-sharing gunstig kunnen zijn voor positieve affectie, zelfwaardering en pro sociaal gedrag. Het verschil tussen non-verbale synchronie en I-sharing is echter nooit onderzocht, en dat is de reden waarom we dit onderwerp onderzoeken.

Hoe is dit getest?
In deze studie werd je gevraagd om te dansen met de video op het scherm synchroon of asynchroon met de persoon naast je. Je voerde deze taken elk 5:30 minuten uit, waarna je enkele vragenlijsten moest invullen. Deze vragenlijsten waren bedoeld om de verandering in positief affect, zelfwaardering en prosociaal gedrag te onderzoeken. Vervolgens moest je een tangramtaak uitvoeren met een andere persoon. We vertelden je of de andere persoon dezelfde reactie op de dansvideo had als jij of niet. Dit was niet waar. Ongeacht de antwoorden op de vragenlijst, vertelden we je welke deelnemers dezelfde ervaring hadden en welke niet dezelfde ervaring hadden. Daarom was dit niet gerelateerd aan je antwoord op de vragenlijst over de danservaring. Hiermee testten we of het hebben van dezelfde ervaring als de andere persoon van belang is voor de taakprestatie.

Hypotheses en hoofdvragen:
We verwachten te vinden dat non-verbale synchronie een sterker effect heeft op positief affect, zelfwaardering, taakprestatie en pro sociaal gedrag in vergelijking met I-sharing. We zijn ook geïnteresseerd in de invloed van de danstaak op de samenwerkingstaak. We vermoeden dat wanneer mensen samen synchroniseren, dit een sterker effect heeft dan I-sharing. Dus, we verwachten meer punten op de tangramtaak voor mensen die synchroniseerden dan voor mensen asynchroon danste tijdens de dansvideo en vervolgens de tangramtaak uitvoerden.

Waarom is dit belangrijk om te bestuderen?
Synchroniseren en I-sharing hebben positieve effecten op mensen. Mensen zijn betrokken bij complexe sociale interacties en synchronie kan deze complexiteit verminderen. Naast het verminderen van complexiteit vergroot het de sympathie, helpt het anderen en vermindert het de subjectieve ervaring van pijn. I-sharing kan ook de sympathie vergroten en anderen helpen. Het verschil tussen non-verbale synchronie en I-sharing staat echter nog steeds open voor psychologisch onderzoek.

Wat als ik meer wil weten?
Als je meer wilt weten over non-verbale synchronie en I-sharing, kun je raadplegen:
Pinel, E. C. (2018). Existential isolation and I-sharing: interpersonal and intergroup implications. Current Opinion in Psychology, 23, 84–87. https://doi.org/10.1016/j.copsyc.2018.01.002

Mogan, R., Fischer, R., & Bulbulia, J. A. (2017). To be in synchrony or not? A meta-analysis of synchrony's effects on behavior, perception, cognition and affect. Journal of Experimental Social Psychology, 72, 13-20.

Als je het verslag van dit onderzoek zou willen ontvangen wanneer het is afgerond, contacteer dan Emma Verschuur door te mailen naar e.g.verschuur@students.uu.nl.

Als je zorgen hebt over jouw rechten als participant tijdens dit experiment, contacteer dan de Data Protectie Officier door te mailen naar privacy@uu.nl.

Als je klachten hebt over dit onderzoek of het experiment, contacteer dan de klachtenofficier door te mailen naar klachtenfunctionaris-fetcsocwet@uu.nl.

Nogmaals heel erg bedankt voor jouw deelname aan dit onderzoek!

Appendix D: Tangram figure

Appendix E: Links to videos of synchrony and asynchrony

Link to asynchronous video: https://youtu.be/DdK70sbZ5bU

Link to synchrony video: https://youtu.be/rc_itVDsB1A