Perceived Synchrony and Positive and Negative Affect

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Abstract

In the current research we investigate the influence of perceived synchrony, focusing on how people's levels of positive and negative affect change after observing non-verbal synchrony. One hundred and thirty-one participants were shown a video of a dance crew performing a hip-hop dance routine in synchrony or in asynchrony, after which their levels of positive and negative affect were measured. We hypothesised that people will experience more positive affect after observing the synchronous dance performance, compared to after observing the asynchronous dance performance. In addition, we hypothesised that people will experience fewer negative affect after observing synchronous dancing, contrasted to after observing asynchronous one. We found that there was no difference in the levels of positive affect and in those of negative affect between conditions, thus perceived synchrony does not influence positive affect or negative affect. Additionally, we tested whether gender plays a moderator role in the relation between synchrony and affect. Contrary to our hypothesis, gender did not moderate the relationship either between perceived synchrony and positive affect or between perceived synchrony and negative affect.

Keywords: observed synchrony, perceived non-verbal synchrony, positive affect, negative affect, gender difference, dance

Perceived Synchrony and Positive and Negative Affect

Human beings are social creatures, who need to connect and communicate with others in order to make sense of and deal with their lives. A crucial aspect of people's socialisation is the way they communicate. Their movement while communicating reveals, impacts, and represents their social appraisals and objectives. For example, people tend to mimic or coordinate with other people's movements when they are fond of the person they communicate with or when they want to reach a common objective with them (Chartrand and Lakin, 2013). Such type of coordinated movements, namely non-verbal synchrony, is a topic of interest in this paper. More specifically: what is the impact of observing synchrony on people's affective states- positive and negative affect. Additionally, we are interested whether such an effect is different for women and men, thus whether gender plays a role of a moderating variable.

Non-verbal synchrony is a particular kind of coordinated movement. In this paper, the definition of non-verbal synchrony is simultaneous, time-locked, and coordinated movement between two or more people, in which the aligned timing is more important than the movement itself. Examples of such movements are dancing in unison, rowing, marching, etc. A broad array of research has connected participating in non-verbal synchrony to a variety of social-affective phenomena. For example, Hove & Risen (2009) found that participating in non-verbal synchrony, in the form of finger-tapping tasks, increases affiliation. The participants who tapped in synchrony with the researcher experienced more affiliation towards the researcher than those who tapped asynchronously. Another social-affective phenomenon also influenced by participating in non-verbal synchrony is bonding. Tarr et al., (2015) allocated participants to one of three groups and made them perform different dance movements, either synchronously or asynchronously. What they found is that people feel more socially bonded in those groups that performed synchronised movements compared to

those who performed asynchronized movements. In addition to affiliation and social bonding Miles et al., (2009) found that experiencing non-verbal synchrony has a positive impact on feelings of rapport. The higher the level of coordination of walking synchrony the higher levels of rapport people reported. So, as far as we can see from the literature, participating in coordinated and synchronised movements have all kinds of positive benefits on people. Based on all these positive social effects participating in synchrony has, we would expect that they would feel more positively altogether. Thus we expect that participating in non-verbal synchrony would also influence their affect.

There are a few researchers who have investigated how participating in synchrony influences the affect of people. To begin with, Morgan et al., (2017) investigated the hypothesis of whether synchrony is positively associated with positive affect. They tried to distinguish the efficacy of various types of behavioural synchrony. They use running, walking, stepping, etc. They found that people who moved in synchrony with others experienced more positive affect, than those who moved asynchronously. Thus, synchrony is positively related with positive affect. Tschacher et al., (2014) were also interested in how affect and synchrony relate to each other. They used an automated algorithm to assess the level of synchrony between participants. They measured both positive and negative affect, and found that non-verbal synchrony is positively associated with positive affect, but negatively associated with negative affect. So in other words, people who participated in non-verbal synchrony experienced more positive affect and less negative affect than people who participated in non-verbal asynchrony.

All the literature presented above confirms that participating in non-verbal synchrony has positive social benefits on different social affective phenomena and on affect itself. However, in this research we are interested whether this effect of participating in non-verbal

synchrony will apply and replicate as well when people are passively observing. Van Mourik Broekman (2018) confirmed that the same social benefit of participating in synchronous movements is also present when people simply observe such coordinated movements. The participants in her research started to connect more to the target group, when the group acted in synchrony, compared to when the group acted in asynchrony. The participants felt more belonging to the group and supported it more when they moved in a coordinated way, compared to when they moved in an uncoordinated way. This suggests that the effect of synchrony can be found not only when performing it, but also when observing it. Another instance of such an effect is the research of Koehne et al., (2016). They investigated the association between observed synchrony and empathy. They found that participants who observed non-verbal synchrony performed better on cognitive empathy tasks compared to those who observed asynchrony. This means that observing synchrony makes people more empathic, compared to observing asynchrony. Additionally, the study of Lakens & Stel (2011) confirms that observing synchronous movements positively influences people's attributions of entitativity and rapport. All these studies demonstrate different social benefits of observing synchrony. It also shows that synchrony has effects on people not only when it is performed, but also when it is simply observed. Based on these findings we would expect that observing synchrony would have an effect on people's affect the same way it has on other social affective phenomena.

Lastly, it is also important to consider possible factors that could moderate the strength of this relationship. In this research we want to test whether the effect of observing synchrony will differ for males and females. Tschacher et al., (2014) assessed whether gender moderate the relation between synchrony and affect. Their analysis showed that it plays a moderating role. Female participants were found to experience more positive affect then men, after participating in synchrony compared to asynchrony. Additionally, women experienced

less negative affect than men after taking part in synchronous movements, as opposed to asynchronous ones. Thus, gender moderated both the relation between synchrony and positive affect, and the one between synchrony and negative affect. Based on these findings, we expect to find the same moderating effect of gender when observing synchrony, as Tschacheret al., (2014) found when participating in it.

The aim of the current research is to test whether observed non-verbal synchrony is indeed associated with positive and negative affect. Derived from the research done by van Mourik Broekman (2018) we speculate that the effect of observing synchrony on informing social perception will also be transferred to the contexts of observing synchrony and feelings of positive and negative affect. Based on the research of Tschacher et al., (2014) we expect that people will experience more positive affect when observing synchronous movement, compared to asynchronous (H1). We further want to test whether synchrony would also influence negative affect, and we hypothesise that people will experience less negative effect after observing synchrony compared to observing asynchrony (H3). Lastly, we want to check whether gender has a moderating effect on the relationship. Based again on the results in the study of Tschacher et al., (2014), we predict that women, compared to men, will experience more positive affect and less negative affect after observing synchrony versus observing asynchrony (H3).

Methods

Exclusion Criteria

Prior to conducting our statistical analysis, 96 of our 237 respondents were removed from the data set. Firstly, we removed respondents who were under the age of 16 (1 participant), respondents who found the video offensive, disturbing or inappropriate (22 participants), and respondents who did not agree to their data being used (6). Secondly, based upon technical criteria: respondents who had difficulties with their audio or video (28

participants). Thirdly, based upon respondents' perceptions of our conditions: respondents who did not perceive the synchrony, or asynchrony, corresponding to their condition were excluded (30 participants) based on their answer on the scale regarding to what extent they perceived synchrony. Lastly, based upon manner of completion: respondents who failed the attention check question were assumed to be not following our instructions and were excluded (23 participants). Fifteen respondents were further excluded for not completing the questionnaire, 9 of whom quit before they had viewed the video, and 6 after viewing. These six participants who viewed the video, but did not complete the questionnaire were removed because we did not have information about whether they had good video or audio and whether they filled the questionnaire seriously.

Participants

Our sample consisted of 141 participants- 109 female and 32 male, age range 17-31, M_{age} = 21.22, SD_{age} = 2.84. The ratio between women and men (3.41) was comparable between both synchrony and asynchrony conditions. Our sample was diverse in terms of nationality, with the most frequent nationalities being: Dutch, German and Bulgarian which together accounted for roughly 60% of our sample. Participants were randomly assigned to one of two conditions: asynchrony condition (n = 83) or synchrony condition (n = 58).

Materials and Procedure

After having obtained ethical approval from the Ethical Committee of the University of Groningen, the researchers obtained participants through social media advertisements, personal networking, and SONA. SONA is a credit-based system that rewards students with study credits for participation in psychological research. Our participants received 0.5 SONA credits for their participation. The survey was conducted online via Qualtrics (Qualtrics, Provo, UT). Participants were informed about their rights and asked for their consent before

being introduced to the study with a welcome text. They were then asked to indicate their nationality, age, and gender. The full questionnaire is available in the appendix.

When having completed these pre-measures, participants were randomly assigned to watch a video of either a synchronised or an asynchronized dance performance. The videos in both conditions showed a dance group consisting of the same five dancers, in the same setting, with the same music, and same clothes, performing a modern hip-hop routine either synchronously or asynchronously (see Figure 1 for examples). Both videos were 59 seconds long, participants were asked to watch it only once and without paying attention to anything in particular.

Fig. 1. Depicts representative screenshots from the video in asynchrony condition (left) and synchrony condition (right).

After seeing the video, the participants were presented with PANAS; the positive and negative affect schedule (Watson et al., 1988) to assess the current positive and negative affect they were experiencing. It consisted of 20 items, 10 for positive and 10 for negative affect. Each item was an adjective that described an emotion or feeling and was rated on a five-point Likert scale ranging from 1 (*not at all*) to 5 (*very much*). The participants were instructed to indicate the extent to which they felt these 20 emotions or feelings at the time of filling the questionnaire. The adjectives that comprise the positive affect score were interested, excited, strong, enthusiastic, proud, alert, inspired, determined, attentive, and active. The ones that comprise the negative affect score were depressed, upset,

guilty, scared, hostile, irritable, ashamed, nervous, jittery, and afraid.[1] The analysis of reliability of the measurement suggested a high internal consistency (Cronbach's α=.87).

Next, because some of the dance moves could have been perceived as offensive or disturbing by some of the individuals, a few statements followed to assess whether someone felt disturbed by the video. These questions were included to make sure to not obscure any effect because participants were offended. For instance, "I felt disturbed by the video" is an example of such an item. Subsequently, a manipulation check was presented to measure whether some of the participants did not perceive the video correctly and therefore to be excluded from the final analysis of the results. This was measured by asking the participants whether the dance crew moved in synchrony which they could answer with "yes", "no" or "I don't know". To assess this further they were requested to indicate how much they agree with the following statement: "The dancers in the video moved in synchrony". They rated this question on a seven-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). There were also questions to check whether the participant's managed to watch the whole video and if they watched it with sound. In the end, there was an additional opportunity for participants to write comments and give feedback about the study. Lastly, people were debriefed about the true purpose of the research and were asked to not discuss this information with other prospective participants.

Results

The preliminary analysis of the data showed a slight difference in the mean scores between the two conditions for both positive and negative effects. All the relevant descriptives are presented in the table below.

[1] In addition to PANAS, the questionnaire included also scales measuring personality (Ten Item Personality Measure, TIPI; Gosling, Rentfrow & Swann, 2003), cultural orientation, assessed through the individualism/collectivism scale (Kim & Cho, 2011), belongingness to the dance group, using adapted items from the Need Threat Scale (Van Beest & Williams, 2006), participant's prosocial behaviour (Caprara et al., 2005), and participants liking and their willingness to use social media. They are not discussed in detail because they are not relevant for this research. For the full version of the questionnaire and the different measures see Appendix.

Table 1.

Descriptive Statistics

Variable	Synchrony *M*(*SD*)	Asynchrony *M*(*SD*)
Positive affect	2.49 (0.77)	2.34 (0.78)
Negative affect	1.23 (0.31)	1.29 (0.48)

Note: Descriptive statistics for positive affect and negative affect per condition

Correlations between positive affect, negative affect, and gender were calculated. All correlations were not significant, except for the one between positive and negative affect, r=-.26, p=.002.

An independent samples t-test and a 2 (synchrony vs asynchrony) x 2 (male vs female) analysis of variance (ANOVA) were conducted to test the hypothesis. All the assumptions were met. Contrary to our hypothesis, positive affect scores were not higher when people observed synchrony compared to when they observed asynchrony, t(139)= -0.95, p=.342,Cohen's d=-0.16. In addition, there was no difference in the scores for negative affect between the two conditions (synchrony vs asynchrony), which also contradicted our expectations, t(139)=0.81, p=.420, Cohen's d=0.14.

The two-way ANOVA also yielded insignificant results, showing that neither the main effect of synchrony, F=2.01, p=.158, Cohen's d= 0.014 nor the one of gender, F=0.32, p=.575, Cohen's d= 0.002, nor the interaction effect between them, F=1.11, p=.295, Cohen's d=0.01 influenced positive affect. For negative affect the results of the ANOVA were quite similar, all not significant, the main effect of synchrony: F= 0.03, p= .859, Cohen's d= 0.00; the main effect of gender- F=0.20, p= .659, Cohen's d= 0.00. However, a trend could be seen for the interaction effect, F= 3.02, p= .085, Cohen's d=0.02. The analysis of the simple main effects showed that females who had observed synchrony experienced slightly less, although not enough to reach significance, negative affect than those who had observed asynchrony,

F=1.2, *DF*=1 *p*=.275. For male participants, the results were reversed as men experienced slightly more, again not enough to reach significance, negative affect when observing synchrony compared to those who observed asynchrony, *F*=2.56, *DF*=1, *p*=.11.

Discussion

The aim of this experiment was to test whether observing synchronous dance performance would influence participants' levels of affect. More specifically, we hypothesised that observing synchrony would be positively associated with people's positive affect, thus those who observed synchronous dance performance will experience more positive affect than those who observed asynchronous dance performance (H1). Unfortunately, the results of the analysis of the data were not significant. The participants did not show different or higher levels of positive affect after observing the synchronised dance performance compared to the ones that observed asynchronized dance performance. Evidently, observing non-verbal synchrony did not influence the positive affect of the participants.

Secondly, we explored the relationship between synchrony and negative affect. We predicted that observing synchrony would be negatively associated with negative affect, thus people who observed the synchronous dance performance will experience less negative affect than those who observed the asynchronous dance performance (H2). However, the results of the analysis again were insignificant. The levels of negative affect of the participants who observed the synchronous dance routine were not lower or different than those who observed the synchronous dance routine. Evidently, negative affect is not influenced by observing synchrony.

Thirdly, we wanted to check whether the relationship between synchrony and affect is moderated by gender. We hypothesised that the effect of synchrony would be stronger for women, compared to men (H3). The result of the ANOVA analysis, and more specifically the

interaction effects between synchrony and gender, for both positive and negative affect, were not significant enough to support the hypothesis. However, the ones for negative affect were leaning towards a trend. The data of the male participants showed that men experienced less negative affect after observing asynchrony, compared to after observing synchrony. The opposite can be seen in the results of women- they experience more negative affect after observing asynchrony, compared to after observing synchrony. Although this trend is not strong enough to reach significance, it can be a direction for future research. For instance, Morgan et al., (2017) confirmed that the size of the group is positively related to the extent to which non-verbal synchrony influences affect- the bigger the group the bigger the effect. Therefore this trend could be an actual effect, and if our sample was larger we would have found it.

The fact that the results of this experiment are different from what we hypothesised may be due to a variety of reasons. To begin with, a core explanation for the lack of significant effects found may be due to the dance performance we have chosen for the participants to observe, thus the operationalizing the dependent variable- perceived synchrony. The type of dance routine was modern hip-hop, in which it is not unusual for the dancers to have different moves while dancing. Although the dancers did dance asynchronously and differently from each other in the asynchrony condition, it still looked like a really nice and true performance. This could have resulted in participants enjoying and liking it equally as the synchronous one, which could be a core reason for not finding a difference in the levels of affect between the two conditions. The results could have been different, and even significant, if we had chosen a type of dance performance in which it is customary for the dancers to move in complete synchrony with each other, such as (the corps de) ballet, synchronous swimming, etc.

Another explanation for the lack of significant effects found could be that in all of those experiments presented in the introduction the participants were experiencing synchronicity, in contrast with our participants, who were observing it. Although we argued that the effect of participating in synchrony should replicate to and apply for passively observing, the lack of significant results could be suggesting the opposite. Contrary to our hypothesis, the case here could be that perceived synchronised movements and enacted synchronised movements might differ in the influence they have on both positive and negative affect. Synchrony might have an effect on people's effective states only when people are taking part in it themselves. The interaction between people when they are performing synchronous movements with each other may also play a role in how they feel (Mogan et al., 2019).

Limitations and Future Directions

A core limitation of the study is the type of dance, as explained in details above. The control condition of asynchrony actually looked like a really nice performance, even though the dancers were doing different moves from each other. If we had made this condition more disorganised, uncoordinated and chaotic, we might have found an effect. For future research, I would suggest using a different type of dance, in which it is uncustomary for the dancers to dance asynchronously.

Another limitation of the research is that it was conducted online. Due to the situation with the COVID-19 pandemic and the preventive measures, we were unable to perform it in a laboratory. This is a limitation because we had no control over the different factors that may have influenced the participants' attention while filling out the questionnaire. Some of these factors are the quality of video and audio, the screen size, the noise in the environment, etc. They are all important since they all may have influenced the observers' levels of affect. If a person has watched the video from a small mobile phone screen with low resolution, and low

volume it would be natural for him to feel less positive or more negative effect for example, compared to one who has watched it from a big TV screen, with a loud volume and good resolution. Although we have tried to neutralise the effects of these factors with random sampling and exclusion criteria, for future research, it would be better to perform it in a laboratory, where the researcher would have full control over all these essential factors, and they would be the same for all the participants.

A third possible limitation of the study is the proportion between male and female participants. There were 109 female participants, which is above three times more than the 32 men who participated. This big difference may have influenced the analysis of whether gender plays a moderator role in the relationship between synchrony and affect. A future solution to this limitation would be sampling equal or at least closer numbers of males and females.

Conclusion

In this study, we failed to confirm that observed synchrony has an effect on people's affective states. Evidently, neither the perception of synchrony nor of asynchrony changed the levels of positive and negative affect people were feeling. In addition, gender was not found to play a role as a moderator of the effect. Although we hypothesised that the effect of synchrony would replicate from participating in it to simply observing, the results failed to reach significance. Future work would benefit from different operationalizing of the dependent variable, as we speculate that this is the main reason why we did not find significant results. We believe that more research is required in order to confirm whether there is or there is not an actual relationship between observed synchrony and affect.

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Appendix A

Greeting

Welcome to our study! Before we introduce you to the topic, you will read some general information about participation. Please read it carefully and ask all questions you might have.

Information form

INFORMATION ABOUT THE RESEARCH
Feel Like Dancing

Why do I receive this information?

You have been invited because we are interested to research how people respond to observing dance. You have been invited through social media via the researchers' personal networks and/or because you are a student at the University of Groningen.

This research is conducted as part of the bachelor thesis by M.N. Genova (student), H.N. Graul (student), O.M. Rofifah (student), T. Simkins (student), E. Tsvetanova (student), and A. van Mourik Broekman (principal investigator, a.van.mourik.broekman@rug.nl).

Do I have to participate in this research?

Participation in the research is voluntary. However, your consent is needed. Therefore, please read this information carefully. Ask all the questions you might have (to a.van.mourik.broekman@rug.nl), for example if you do not understand something. Only afterwards you decide if you want to participate.

If you decide not to participate, you do not need to explain why, and there will be no negative consequences for you. You have the right to withdraw your participation at all times, including after you have consented to participate in the research.

Why this research?

In this research we are interested in how you feel after watching a short dance performance.

What do we ask of you during the research?

Before the research starts, we will ask for your consent to participate.

Then we will ask you some questions about you and your personality by asking you to indicate to what extent you agree or disagree with certain statements. Following this, you will watch a short clip of a dance performance. Finally, we will ask you some questions about what you thought about the performance and how you feel by asking you to indicate to what extent you agree or disagree with certain statements.

This research will take approximately 10-15 minutes to finish.

What are the consequences of participation?

Your participation is entirely voluntary; therefore, no compensation is provided. Your participation is highly appreciated and will help us understand what the social impact is of watching performing art and physical movement.

The dance performance shown in this research does not contain nudity or offensive gestures. However, some of the movements may be considered somewhat explicit. Although we do not expect that this will have negative consequences for most participants, we advise you not to participate if you are sensitive to and/or could be offended by such content.

You may also terminate your participation at any time during the research without any

consequences.

How will we treat your data?

You will be asked to provide personal data such as age, gender and nationality. The data collected in this research will be used for educational purposes (i.e., a bachelor thesis).

Data will be collected anonymously and will not be traced back to you as an individual. The personal data collected will be age, gender, and nationality. Data on age and nationality will be stored separately from the other data after data collection is completed.

Data will be handled (collected, prepared, analyzed) by the aforementioned researchers. All data will be stored for 10 years. Because data is collected anonymously, we cannot access, rectify or erase individual data after participation.

What else do you need to know?

You may always ask questions about the research: now, during the research, and after the end of the research. You can do so by emailing the principal investigator (a.van.mourik.broekman@rug.nl).

Do you have questions/concerns about your rights as a research participant or about the conduct of the research? You may also contact the Ethics Committee of the Faculty of Behavioural and Social Sciences of the University of Groningen: ec-bss@rug.nl.

Do you have questions or concerns regarding the handling of your personal data? You may also contact the University of Groningen Data Protection Officer: privacy@rug.nl.

As a research participant, you have the right to a copy of this research information.

informed consent

INFORMED CONSENT

Feel Like Dancing

- I have read the information about the research. I have had enough opportunity to ask questions about it.
- I understand what the research is about, what is being asked of me, which consequences participation can have, how my data will be handled, and what my rights as a participant are.
- I understand that participation in the research is voluntary. I myself choose to participate. I can stop participating at any moment. If I stop, I do not need to explain why. Stopping will have no negative consequences for me.

Consent to participate in the research:

○ Yes, I read the research information and consent to participate; this consent is valid until 01-06-2022

If you do not consent or want to withdraw you can quit the questionnaire now without any consequences.

Welcoming Text

Welcome and thank you for taking part in our study!

We would like to ask you to to first answer a few questions or to evaluate a few statements, so we can get to know you. Then, you will see a video of a dance performance and you will be asked to answer questions about what you have seen.

It is very important that you read the questions thoroughly, to ensure that you understand what is asked of you. However, there is no right or wrong answer. Please answer as

truthfully and as honestly as possible.

Demographics

What is your nationality?

How old are you? (please enter a number and do not add a space after)

What is your gender?

- ○ Male
- ○ Female
- ○ Other:
- ○ I don't want to say

TIPI

Here are a number of personality traits that may or may not apply to you. Please fill in the scale next to each statement to indicate the extent to which you agree or disagree with that statement. You should rate the extent to which the pair of traits applies to you as a whole.

	Strongly disagree	Moderately disagree	Disagree a little	Neither agree nor disagree	Agree a little	Moderately agree	Strongly agree
I see myself as extraverted,	○	○	○	○	○	○	○

enthusiastic.

I see myself as critical, quarrelsome.	○	○	○	○	○	○	○
I see myself as dependable, self-disciplined.	○	○	○	○	○	○	○
I see myself as anxious, easily upset.	○	○	○	○	○	○	○
I see myself as open to new experiences, complex.	○	○	○	○	○	○	○

	Strongly disagree	Moderately disagree	Disagree a little	Neither agree nor disagree	Agree a little	Moderately agree	Strongly agree
I see myself as reserved, quiet.	○	○	○	○	○	○	○
I see myself as sympathetic, warm.	○	○	○	○	○	○	○
I see myself as disorganized, careless.	○	○	○	○	○	○	○
I see myself as calm, emotionally stable.	○	○	○	○	○	○	○
I see myself as conventional, uncreative.	○	○	○	○	○	○	○

I/C

In the next paragraph you will read several statements about how people relate to each other. Each question will include two opposite statements. Please read the statements

carefully and indicate which statement you agree more with, and how strongly you agree with it. A higher negative number means you agree more strongly with the statement on the left side, a higher positive number means you agree more strongly with the statement on the right side.

If you are answering this questionnaire on the phone, you might have to put it in landscape/horizontal screen mode to see all of the text.

	-3	-2	-1	0	+1	+2	+3	
People are defined based on the attributes of the individual.	○	○	○	○	○	○	○	People are defined based on the attributes of engaged social groups.
People are independent of social groups.	○	○	○	○	○	○	○	People are defined by social groups.
Individuals and groups can be separated.	○	○	○	○	○	○	○	Individuals and groups cannot be separated.
Individual goals are more important.	○	○	○	○	○	○	○	Group goals are more important.
Individual's behaviors should follow individual goals.	○	○	○	○	○	○	○	Individual's behaviors should follow group goals.
To achieve group goals, individual interests cannot be sacrificed.	○	○	○	○	○	○	○	To achieve group goals, individual interests can be sacrificed.
For group members, individual rights are more important.	○	○	○	○	○	○	○	For group members, individual responsibilities are more important.
At work or at play, it is important to win.	○	○	○	○	○	○	○	At work or at play, it is important to harmonize.
The source of group success is competition.	○	○	○	○	○	○	○	The source of group success is cooperation.
Groups are better with competition.	○	○	○	○	○	○	○	Groups are better with harmony.
People should follow free-will.	○	○	○	○	○	○	○	People should follow group norms and practices.
When you disagree with others, follow your opinion.	○	○	○	○	○	○	○	When you disagree with others, follow group decisions.

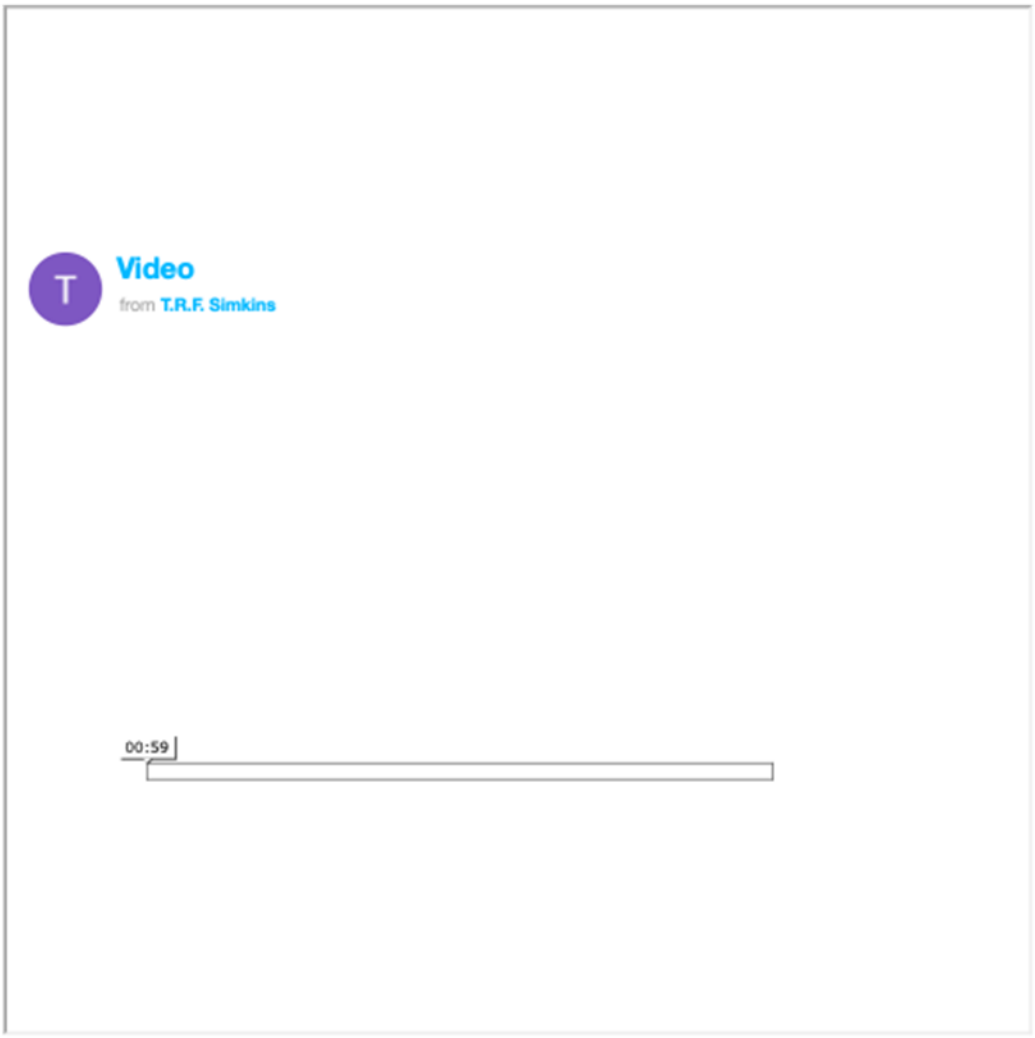
Within groups, individuality is respected.	○ ○ ○ ○ ○ ○ ○	Within groups, group uniformity is respected.

Video sync

Please watch the following video. You do not have to pay attention to anything in particular, just sit back and enjoy.

If you are on the phone, please makes sure to use landscape/horizontal screen mode to see the whole video.
The audio of the video is turned high, so if you are wearing headphones, make sure to turn the audio down a little.

Please make sure your audio is on and please only watch the video once, afterwards press the red button below the video to proceed with the survey.



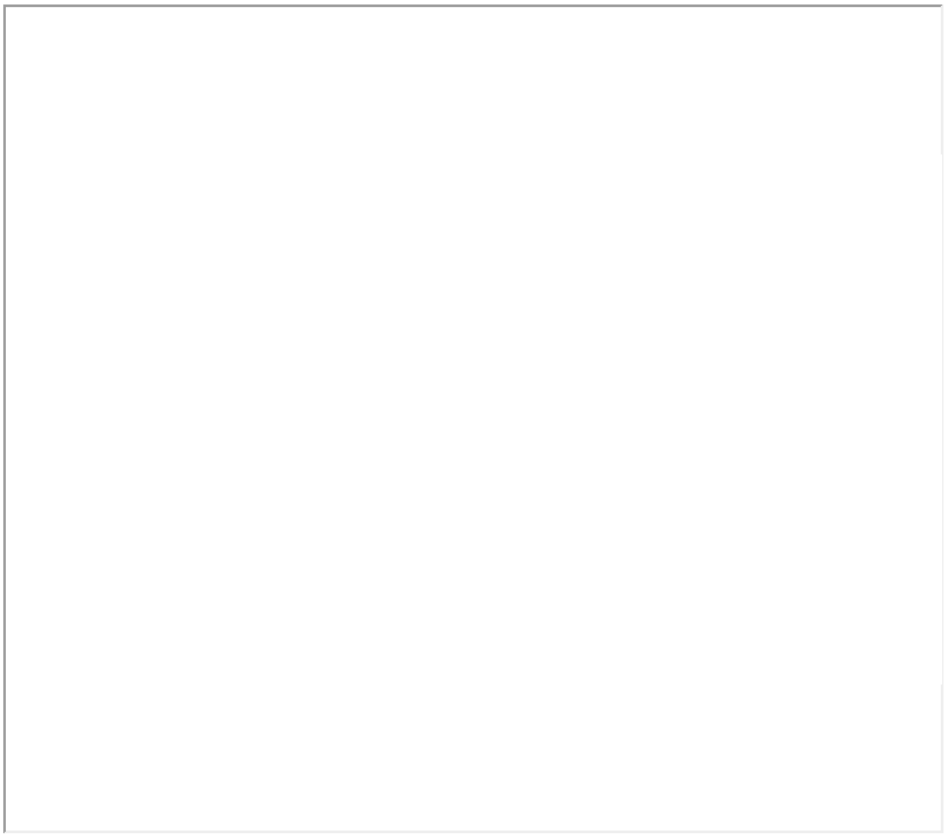
Video async

Please watch the following video. You do not have to pay attention to anything in particular, just sit back and enjoy.

If you are on the phone, please makes sure to use landscape/horizontal screen mode to see the whole video. The audio of the video is turned high, so if you are wearing

headphones, make sure to turn the audio down a little.

Please make sure your audio is on and please only watch the video once, afterwards press the red button below the video to proceed with the survey.



Affect

Indicate to what extent you feel the following:

	Not at all	A little	Moderatly	Quite a bit	Extremely
Interested	○	○	○	○	○
Distressed	○	○	○	○	○

Excited	○	○	○	○	○
Upset	○	○	○	○	○
Strong	○	○	○	○	○
Guilty	○	○	○	○	○
Scared	○	○	○	○	○
Hostile	○	○	○	○	○
Enthusiastic	○	○	○	○	○
Proud	○	○	○	○	○
Irritable	○	○	○	○	○
Alert	○	○	○	○	○
Ashamed	○	○	○	○	○
Inspired	○	○	○	○	○
Nervous	○	○	○	○	○
Determined	○	○	○	○	○
Attentive	○	○	○	○	○
Jittery	○	○	○	○	○
Active	○	○	○	○	○
Afraid	○	○	○	○	○

Belonging

The following statements are concerned with the dance crew you just saw in the video. How strongly do you agree or disagree with the following statements?

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
When watching							

the video I felt as one with the dance crew.	○	○	○	○	○	○	○
I had a feeling that I belonged to the dance crew when watching the video.	○	○	○	○	○	○	○
I did not feel accepted by the dance crew.	○	○	○	○	○	○	○
When watching the video I felt connected with one or more of the dancers.	○	○	○	○	○	○	○
I felt like an outsider while watching the video.	○	○	○	○	○	○	○

Prosociality

The following statements are concerned with the dance crew you just saw in the video. How strongly do you agree or disagree with the following statements?

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I feel like I intensely experience what the dancers are experiencing.	○	○	○	○	○	○	○
I am willing to donate money to this dance crew.	○	○	○	○	○	○	○

I would immediately help one of the dancers if they are in need.	○	○	○	○	○	○	○
I feel happy when I see the dance crew enjoying themselves.	○	○	○	○	○	○	○
I would easily lend money to one of the dancers if they ask me to.	○	○	○	○	○	○	○
For this particular statement please select the answer "Strongly disagree".	○	○	○	○	○	○	○
I would share something personal with the dance crew.	○	○	○	○	○	○	○
I would spend time with one of the dancers if he/she feels lonely.	○	○	○	○	○	○	○
If one of the dancers is in need, I would take care of him/her.	○	○	○	○	○	○	○

Liking

The following statements are concerned with the dance crew you just saw in the video. How strongly do you agree or disagree with the following statements?

Neither

media I would give it a "like".	○	○	○	○	○	○	○
If I see the video on social media I would re-post it.	○	○	○	○	○	○	○
If I see the video on social media I would leave a positive comment.	○	○	○	○	○	○	○
If I see the video on social media I would share it with friends.	○	○	○	○	○	○	○
If I see the video on social media I would bookmark/save it.	○	○	○	○	○	○	○

offense

Following you will find a few questions concerning your attitude towards the video. For every statement give an indication of how strongly you agree or disagree.

	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
I felt offended by the video.	○	○	○	○	○	○	○
I felt disturbed by the video.	○	○	○	○	○	○	○
I found the video inappropriate.	○	○	○	○	○	○	○

Manipulation check

Did you answer the questions genuinely? If you did not, or you see any other r eason why we shouldn't be using your data, please select 'Do not use my data'. Ther e will be no consequences for that, it just helps us with the validity of our data.

- ○ You can use my data
- ○ Do not use my data

Further Questions

Do you have any further comments?

Debriefing

Thank you for participating in our research.

In this research we were interested to investigate the social impact of observing a dance performance (how connected you feel with the dancers, whether you like then, and whether you support them). What you did not know is that, you either saw the dancers move in synchrony or not. We want to find out whether people respond differently depending on how the dancers coordinate their movement. Furthermore, we will investigate whether this is affected by your personality as well as whether you are more or less individualistic versus collectivistic.

Please do not talk about the true purpose of the study to people who ar e still going to participate.

If you have any questions about this research, please contact the principal investigator (a.van.mourik.broekman@rug.nl).

Credit

As researchers we would also like to say a big thank you to the Wrong Generation Crew for performing for the videos you watched earlier.

The Wrong Generation Crew is a dance crew from Sofia, Bulgaria. If you would like to check them out or support them, you can visit their Instagram channel @wronggenerationofficial; or copy this link: https://www.instagram.com/wronggenerationofficial/

PLEASE CLICK ">>" TO RECORD YOUR RESPONSES

and receive SONA course credits (in case you are participating via the SONA platform)