

# THE EMBODIMENT OF POWER AND VISUAL DOMINANCE BEHAVIOUR

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## ABSTRACT

The objective of this study was to identify whether the changes in assuming power poses during a conversation between a pair of individuals, who were previously familiar with each other, influence the hierarchy of power, changes in it, as well as maintenance and adoption of different roles in the hierarchy. We assumed changes in roles of power on the basis of changes in visual dominance behaviour, which proved to be a reliable indicator of the social power of the individual in previous researches. Each pair conversed on predefined topics three times for three minutes. By placing individuals in a neutral or expansive posture, the purpose of which was covered by the use of a cover story, we created a difference in nonverbal expression of power between the two individuals. In the first conversation, both individuals adopted a neutral pose. In the second conversation, one individual adopted an expansive posture, while the other remained in a neutral one, and vice versa in the third conversation. Interactions were filmed with two cameras, which enabled us to analyse nonverbal behaviour. The results show that the differences in displays of power with expansive body postures between individuals are not associated with changes in visual dominance behaviour of individuals. From this we conclude that in the relations in which the social hierarchy of power is already established, the use of power poses does not help increase the power of the individual who adopts the posture.

## KEY WORDS

social power, embodiment, visual dominance behaviour

## CLASSIFICATION

JEL: C79, C90

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## **INTRODUCTION**

Hierarchy in its various forms is one of the most fundamental characteristics of social relations. Even when different models of organisation minimize the hierarchy, it is never completely absent. It inevitably occurs between and within groups and it is always possible to determine the position of a particular person in the social hierarchy with respect to the remaining persons in the group [1, 2]. Hierarchical differentiation is the process of establishing a hierarchical form of social relations. On the one hand, hierarchy may be the result of participating in formal systems with certain hierarchical positions, but different roles may also form in informal interactions spontaneously, by either individuals or groups [2].

The impression or assessment of the power and status that an observer or participant of a particular interaction gets about the power of other individual(s) may be based on their knowledge, for example, of the person's position in the hierarchy, their status, personality or competence. In cases when a relationship is not defined with a formal hierarchy, perceived power may be based on the observed behaviour of the partner within the interaction [3]. The latter forms the basis of informal hierarchy. Observed behaviour, both nonverbal as well as verbal, and the characteristics of appearance, such as for example the formality of one's clothing, are especially important for creating an impression when people meet for the first time and do not know each-other [3].

Some symbols of power and status are evident and easy to notice, however, the hierarchy may also be expressed more subtly. One of the important channels of communication in social hierarchy is the nonverbal channel that serves to communicate and maintain hierarchy, often at the unconscious level [4]. People can accurately assess the differences in power and status between individuals based on nonverbal behaviour [5]. People enter into relationships with the unconscious desire for hierarchical differentiation [6, 7]. Tiedens and Fragale [7] argue that the establishment of a hierarchy in a relationship takes place automatically; people are often unaware of the process.

In interactions, a pattern of complementarity can be seen between dominant and submissive nonverbal behaviour or states. When one member of the interaction displays a dominant posture and takes up more space, the other person generally responds with a submissive, constricted posture without even realising it and vice versa. Thus, dominance invites submissiveness and submissiveness invites dominance. The participants in the interaction feel more comfortable when they take on complementary roles and perceive the partners as more pleasing than when the poses are mirrored [7].

The described behaviour occurs automatically without individuals being aware that they responded to the partner's posture. Similarly, adopting dominant and submissive postures influences the feelings about the partner and the interaction subconsciously. These patterns show how rapidly people experience feelings and behave in a way that supports and maintains status differentiation within a relationship [7]. In a recent study, Holland, Wolf, Looser, and Cuddy [8] presented subjects with static photographs of individuals in dominant and submissive positions. Participants looked at faces and upper parts of the bodies of individuals displaying dominant positions for shorter periods and less frequently compared to photos of individuals who displayed submissive positions. The results suggest that the complementarity of behaviour may also occur in terms of visual attention. The results of the study are limited, as the observation of static photographs is difficult to compare with a genuine personal interaction. Nonverbal behaviour, which research consistently shows as linked to social power, is represented by the visual dominance ratio (VDR) [9]. VDR is the ratio between the percentage of the time an individual looks at their communication partner

during listening and when talking. The formula, used by Exline et al. [9] to calculate the ratio of visual dominance, features the percentage of a person's looking time while listening in the numerator, and the percentage of looking time while speaking in the denominator, which makes the more dominant visual behaviour appear in a low ratio. Subsequent authors [10, 11] set the nominator and denominator the other way around, associating a higher ratio with more dominant behaviour. Our study follows the formula of later authors.

$$\frac{\frac{\text{time of looking while speaking}}{\text{total speaking time}} \times 100}{\frac{\text{time of looking while listening}}{\text{total listening time}} \times 100} = \frac{\% \text{ of time looking while speaking}}{\% \text{ of time looking while listening}}$$

**Figure 1.** Formula for calculation of the visual dominance ratio [11; p.6].

Differences in visual dominant behaviour correlate to several important traits: differences in dominance as a personality trait [9, 12], differences in military rank [9], perceived status of the other person [12], expertise [13], gender-related knowledge of the subject [14] and status in teams [11]. Dovidio and Ellyson [10] found that individuals interpret patterns of visual dominance with high reliability. In the study in question, both male and female subjects interpreted different patterns of visual dominance during interaction captured on videos as individuals having different social power. By increasing the time of looking at the conversation partner while speaking, the estimated power of the speaker increases, while looking at the conversation partner more while listening leads to a lower estimated power of the speaker. Dominant visual behaviour is complex and can result from differences in direct looks during speech, while listening, or both [12].

Nonverbal behaviour is not only a reflection of an individual's inner state, but can also have a significant effect on the formation and maintenance of inner states. Research has shown that emotional behaviour may at times be enough for feelings to occur [15-20]. In addition to emotions, non-verbal behaviour can also reflect a number of internal states or characteristics of an individual. One of the characteristics exhibited nonverbally in the form of so-called power poses or open, expanded body postures, is power. Carney, Cuddy and Yap [21] found that taking two power poses and holding each for a minute led to an increase in testosterone levels in contrast to low-power postures that lowered the levels of testosterone. Power poses lowered cortisol levels, while cortisol increased in case of low-power postures. Individuals who adopted expanded power poses in the afore-mentioned research reported feeling more powerful and displayed more risk-taking behaviour in gambling tasks. Expanded poses thus led to the subjects becoming more alike to powerful individuals at the hormonal level as well as the psychological and behavioural level. Carney et al. [21] argue that in certain situations when power is needed, people have the ability to pretend until they achieve it, or in other words *fake it till they make it*. In time, such minimal changes in posture and related changes may potentially improve overall health and well-being. Authors emphasize the importance of potential benefits for individuals who feel a chronic lack of power either due to lack of resources, low hierarchical position in organizations, or because they belong to low-status social groups. Cuddy, Wilmuth, Yap and Carney [22] find that adopting an expanded pose signalling power in comparison to adopting a submissive pose before a job interview affects the increase in the assessment of nonverbal presence during the interview. Nonverbal presence was assessed by the following variables: confident, enthusiastic, captivating and awkward (reverse-scored). Adopting an expansive or power pose before the interview, however, did not lead to adopting the pose during the conversation. Because of the latter finding and due to the fact that the assessment of nonverbal presence during the interview in the afore-mentioned study was defined as a sum of different, broad concepts, the research failed to provide a link between specific nonverbal behaviours and the adoption of expanded body postures.

More recent research calls into question the robustness of the effects of power poses. Ranehill et al. [23] tried to replicate the results of Carney et al. [21] and found that the participants who adopted power poses reported a higher sense of power compared to participants who adopted submissive poses, while there were no statistically significant differences in testosterone, cortisol, and financial risk between groups. There were some significant differences between the two studies: thus, for example, participants in the study by Ranehill et al. [23] received instructions for taking a power pose on a computer, they were informed about the purpose of the research and did not observe face images while displaying a power pose. With regard to the latter conditions, the study by Ronay, Tybur, van Huijsteevin at Morssinkhof [24] was the same as the study by Carney et al. [21], and found that there were no statistically significant differences in perceived power among individuals who adopted a power pose or those in a submissive posture. Moreover, there were no differences in risk-taking or levels of testosterone and cortisol. Davis et al. [25] found that adopting a power pose did not result in an increase in testosterone levels, reduced cortisol, or the reduction in the subjective sense of fear during exposure in individuals with social anxiety. Keller, Johnson and Harder [26] study, on the other hand, investigated how the participants' awareness of the purpose of adopting power poses affected study results. They found no differences in perceived power, risk-taking, or improved performance/hireability in a job interview, between individuals who adopted submissive vs. power poses, irrespective of the awareness of their purpose. In their study, Garrison, Tang and Schmeichel [27], even found that individuals who adopted power poses felt less powerful than those in poses that were more submissive. The latter study did not find any significant correlations between the display of power poses and risk-taking in a gambling task.

Previous research has not yet dealt with the question of whether displaying poses of power affects specific nonverbal behaviour. Another unanswered question that remains is whether power poses could result in increased power within the relationship. Some authors [21, 28] claim power poses to have a direct impact on psychological aspects of power, regardless of the actual role that an individual occupies within a relationship, which Cesario and McDonald [29] contradict. Regardless of their findings, the existing studies created the interpersonal context in which dominance and submissiveness takes place in a way that is quite distant from daily reality, i.e. by looking at images of faces, or by remembering or thinking about different events.

## **RESEARCH AIM AND HYPOTHESES**

The main aim of our study was to broaden the understanding of the embodiment of power and shed light on the process of hierarchical differentiation within pairs. We wanted to observe the impact of power poses in real-life situations, i.e. a conversation between two individuals. Our aim was to answer two interrelated questions by manipulating the poses of individuals engaged in a conversation and by analysing nonverbal behaviour at the micro level. The first question was whether the adoption of expansive poses as nonverbal expressions of power influenced visually dominant behaviour. The second question was whether individuals could change the already established hierarchical differentiation by adopting power poses. According to previous studies, visual dominance behaviour can be seen as a robust indicator of power; we thus interpreted any changes in visual dominance behaviour as changes in the structure of power in the relationship. Schmid Mast [30] found that dominance in the relationship related to more speech in the relationship. Therefore, we also checked whether open, expansive body postures or power poses influenced the changes in the amount of speech.

**H1: In neutral condition, with both participants adopting a neutral body pose, there would be no important differences in VDR.**

Subjects in pairs were either acquaintances or friends of the same gender and approximately the same age. In neutral condition both subjects adopted a neutral body posture. Consequently, we hypothesized that the status differentiation would not be big enough for it to be reflected in changes in VDR between the two subjects.

**H2: Subjects would exhibit higher VDR when adopting a power pose in comparison to a neutral pose.**

We hypothesized that the adoption of power poses would lead to more visual dominance behaviour.

**H3: Participants who adopted a power pose first would exhibit a higher VDR than their partners who would adopt a neutral pose at the time.**

We hypothesized that adopting a power pose would hold a communicative role and influence the power relation within the relationship. Our hypothesis was that individuals displaying power poses would exhibit more dominant behaviour than their conversation partners in neutral poses.

**H4: Participants in a neutral posture would exhibit a lower VDR when the conversation partner would adopt an expansive body posture (power pose) than when the partner adopted a neutral posture.**

According to research findings, e.g. in the study by Tiedens and Fragale [7], dominant behaviour is characterized by complementarity. We anticipated that when subjects adopted power poses, their conversation partners in neutral poses would respond with less dominant behaviour that complemented the pose, and in our case result in less dominant visual behaviour.

**H5: Subjects would exhibit a higher VDR when a neutral body posture was preceded by an expansive body posture (power pose)**

Carney et al. [21] found that participants who adopted a power pose for 2 minutes exhibited a decrease in the level of cortisol and an increased level of testosterone 17 minutes after adopting a power pose. We hypothesized that the display of a power pose from the previous condition would still bear an influence on the participants when they returned to a neutral body posture as there would only be 2 minutes' difference between the two conditions.

## **METHOD**

### **PARTICIPANTS**

The study involved 22 people (14 men and 8 women). The average age of the participants was  $M = 24,75$  year (with standard deviation  $SD = 4,68$  year), the age ranged from 18,33 years to 40,25 years. We divided participants of the study into 11 pairs. Pairs were of the same sex, as gender affects the power distribution in relationships [31]. Among the first (with median  $Mdn = 23,17$  year) and the second participants in pairs (with  $Mdn = 25,08$  year), there were no statistically significant differences with regard to their age,  $Z = -0,222$ ,  $p = 0,824$ ,  $r = 0,67$ . Individuals in pairs were acquaintances, friends or classmates, as we were interested in potential changes in the already established power hierarchy. Each participant received a consent form for voluntary participation in the study as well as to be filmed during the study, where recordings would later be used for research purposes.

## **PROCEDURE**

### **Cover story about the purpose of the study**

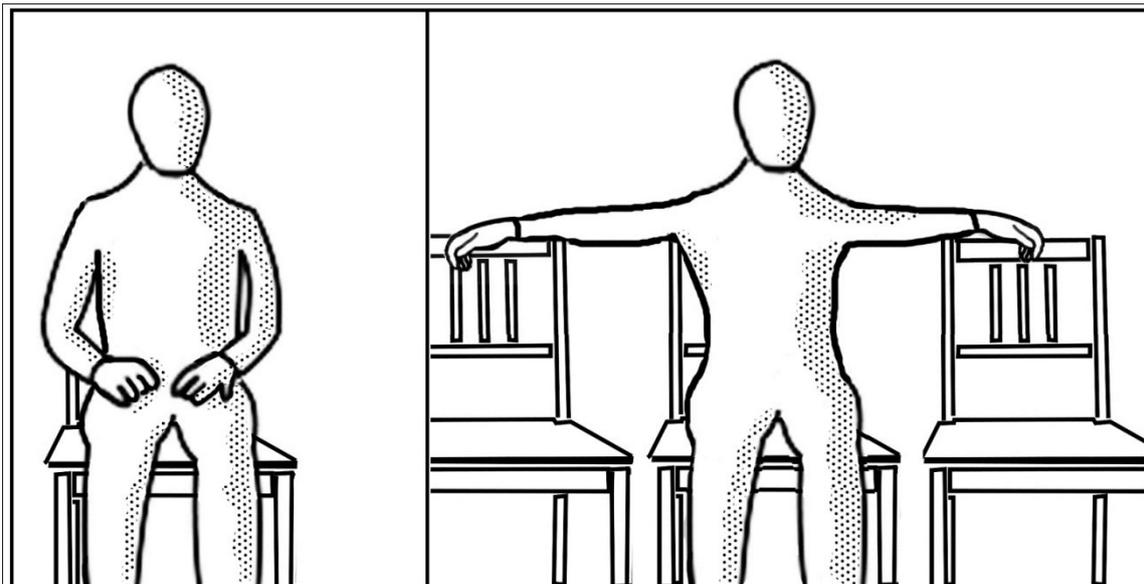
In order to avoid bias due to the participants being aware of the research hypothesis, i.e. in order to avoid the manipulation of the independent variable (posture) in the study, we used a cover story about the measurement of psychophysiology similar to that used by Carney et al. [21]. We only pretended to be using instruments for measuring galvanic skin response, however, the participants were not aware of the fact during our experiment.

The purpose of the research was explained to the participants in the following words:

“I am examining the psychophysiological responses during dialogues. I am interested in the information exchange during the process and the psychophysiological changes that take place in the process. I am going to define the topic of your conversation. It is your task to try and develop as broad a discussion as possible about my statements. The statements I will make do not have a right or wrong answer; therefore, rather than trying to find a single answer, focus on the broadest possible reflection on the topic. Because of the generality of the statements, you are both equivalent partners. If you run out of topics for the conversation, you can talk about possible reasons why you ran out of topics. Since we only have one instrument for measuring skin conductivity available, we will conduct three consecutive series of dialogues. The first dialogue is going to take place without measurement, the other two with measurement. The dialogue without measurement is just as important, since it will allow us to eliminate disruptive factors in the subsequent analysis of the data. In order for psychophysiological measurements to be accurate, the arms need to be in line with the heart during measurement (as the sensor is going to be attached to the finger on one of your arms). Therefore, the arms of the person with the sensor on their finger will rest on the backrests of the empty seats next to them during measurements. In a few moments, you are going to move to the table where the dialogue is to take place. We will start with the condition without psychophysiological measurements. Due to the standardization of the procedure, both of you will sit with your hands in your lap. I will move behind the table with a barrier and after some time, I will announce the topic of the conversation. I am going to ring a bell to mark the beginning of your 3-minute dialogue. Your conversation lasts until the bell sounds again. We are going to record your conversation with two cameras so that we can link the information to the right person subsequently.”

### **Manipulation of body posture**

By manipulating the postures that were either neutral or dominant (Figure 1), we established three conditions. The first condition was neutral-neutral (N-N), where both participants were sitting on a chair, their hands relaxed in their laps. In the condition of high-neutral (H-N), one person changed their posture into an expansive or dominant posture, under the pretext of psychophysiological measurements – the hands of the person were laid on the backrests of chairs next to them. In a neutral condition, the participants remained in the same posture as during the previous discussion, sitting straight on a chair with arms in their lap. In the third condition, participants' body postures were neutral-high (N-H) with regard to power, with the first and second participant changing positions. A person who was previously in a condition of high power was now in a neutral position, while the other participant switched from a neutral to high power body pose.



**Figure 2.** A sketch of a neutral body posture (left) and a sketch of a dominant posture (right).

The participants sat on chairs facing each other at a distance of about 1 meter. First, they were placed in a neutral condition (N-N). Each condition lasted about 5 minutes: two minutes of preparation followed by a three-minute discussion. According to research, two minutes should already lead to psychological and physiological changes due to a change in posture [21]. We gained those two minutes by taking the time to place participants in appropriate positions before the interaction started. After manipulating the posture, the researcher retreated to a table behind a barrier. After two minutes of manipulation, the participants were acquainted with the topic of the conversation and the researcher rang a bell to announce the beginning of the conversation. A three-minute discussion on topics followed. The topics allowed a broad discussion and had no predetermined right or wrong answer. The researcher asked the participants to try to develop as wide a discussion as possible based on the statements or questions. The researcher orally presented the following topics: “What does one need to feel happy?”, “Sometimes it is better to lie than tell the truth.”, “Internet brings people closer together.” The topics were given in the written order, one for each condition. We assumed that the open nature of the discussion would prevent one of the individuals to have more knowledge of the topic, which, according to studies, influences VDR [13, 14].

After three minutes of dialogue, the researcher rang the bell again and announced the end of the dialogue. The other two conditions (H-N) and (N-H) followed in a random sequence, and the participants’ body posture was manipulated in line with the assigned condition. Participants therefore started a dialogue in neutral positions, and in the conditions that followed one of the participants adopted an expansive posture followed a neutral posture, while the other participant adopted a neutral posture followed by an expansive posture.

The face of each individual in a pair was recorded with a camera during a 3-minute conversation. We produced three video clips for each of the participants, one for each condition. Video clips were imported into Adobe Premiere Pro CS3. For each condition, we synchronized the footage of the two participants and marked the beginning and the end of the interaction determined by the sound of the bell, which we used for this purpose during the study. In order to obtain relevant data for calculating the visual dominance ratio, we first divided each clip into three parts. The three parts consisted of: a) the period when the recorded participant was talking, b) the period when the recorded person listened to their conversation partner and c) the period of mutual silence during the conversation. We next

divided parts where participants were either speaking or listening according to whether they were looking at their conversation partner or not.

By adding and combining the times of the relevant parts of video clips, we obtained the following data for each person: the time each participant was speaking, the time the participant was looking at their conversation partner during speech, the time of listening to the partner, and the entire time of looking at the conversation partner while listening. The obtained results were then used to calculate the VDR for each condition.

To examine the potential effect of body poses on the proportion of speaking time, we calculated the speaking ratio for each of the participants in every condition. By combining the time the first and the second participant was speaking, we calculated the entire speaking time of the participant in the condition. We could thus calculate the proportion of the speaking time of the participant relative to the entire speaking time – speaking ratio.

## RESULTS

**Table 1.** Basic descriptive statistic and paired t-tests of variables for our hypotheses. In all conditions  $N = 11$ . H stands for hypothesis, Con for condition, Pax for person. Poses are N (neutral pose) or H (power pose), and VDR means visual dominance ratio.

H	Con	Pax	Pose	Variable	M	SD	T	df	p	D
H1	1	1	N	VDR	0,636	0,265	-0,062	10	0,952	0,019
	1	2	N		0,643	0,233				
H2	1	1	N	VDR	0,636	0,265	1,072	10	0,155	0,323
	2	1	H		0,568	0,222				
H2	2	2	N	VDR	0,643	0,233	-0,666	10	0,264	0,198
	3	2	H		0,682	0,278				
H3	2	1	H	VDR	0,568	0,222	0,370	10	0,36	0,11
	2	2	N		0,604	0,192				
H3	3	1	N	VDR	0,622	0,279	0,217	10	0,416	0,065
	3	2	H		0,591	0,277				
H4	1	2	N	VDR	0,643	0,233	1,082	10	0,15	0,33
	2	2	N		0,604	0,192				
H5	1	1	N	VDR	0,636	0,265	0,280	10	0,382	0,084
	3	1	N		0,622	0,279				

Table 1. shows that there were no statistically significant differences in participants' VDR in any condition. We can thus conclude that the adoption of expanded poses did not lead to changes in visual dominance behaviour of participants in the power poses and their conversation partners.

To compare the speaking ratio of the first participant in the first (N), second (H) and third (N) condition, we used one-way analysis of variance for repeated measurements. Results show that there were no statistically significant differences in the ratio of speaking time  $F(2, 20) = 0,011, p = 0,989$ . To compare the ratio of speaking time of the second participant in the first (N), second (N) and third (H) condition, we used Friedman's test. The test revealed no statistically significant differences in speaking ratio between conditions  $\chi^2(2) = 0,545, p = 0,761$ . We were further interested in whether adopting power poses while speaking would lead to complementary behaviour. Pair t-test showed no significant differences in the first condition between the first ( $M = 52,594, SD = 11,232$ ) and the second participant ( $M = 47,043, SD = 11,284$ ) with regard to speaking time  $t(10) = 0,819, p = 0,432, d = 0,247$ . Similarly, there were no significant differences between the first ( $M = 52,935,$

SD = 12,468) and second participant ( $M = 47,064$ ,  $SD = 12,467$ ) in the second condition  $t(10) = 0,761$ ,  $p = 0,453$ ,  $d = 0,235$ . For the statistical analysis of the third condition, we used Wilcoxon's signed-ranks test as the distribution of data about the other person's speaking ratio was not normal. In third condition, results showed no statistical differences between the first (Mdn = 55,170) and second participant (Mdn = 48,760)  $Z = -0,356$ ,  $p = 0,722$ ,  $r = 0,107$ .

## DISCUSSION

Results of our study reveal four key findings: (1) in the condition with both participants in neutral poses, there were no statistically significant differences in the visual dominance ratio (VDR); (2) adoption of power poses did not affect changes in visual dominance behaviour of the participants in the posture; (3) displaying a power pose did not lead to complementary visual dominance behaviour of the other individual in the pair; (4) power pose did not lead to changes in the ratio of speaking time within the pair.

The study only confirmed the first hypothesis that predicted the absence of differences in VDR between two individuals when both adopted neutral postures. We deliberately included matching couples by age and gender in the research procedure. Discussion topics were general, which reduced the likelihood of one of the conversation partners having more knowledge about the topic. We related the latter aim to participants when giving instructions. Moreover, as the participants were instructed to adopt a neutral posture, the possibility of having large spontaneous differences in nonverbal expression of power was reduced. The results show that the first condition of the experiment enabled the establishment of equivalence in the power hierarchy between participants. There were no differences in visual dominance behaviour and the speaking ratio in the first condition. Thus, the first condition was an appropriate control for the following two conditions, where participants adopted expansive body postures (power poses).

Nonverbal communication is an interconnected system with changes in one dimension affecting other dimensions. A change in a single behavioural component in an individual may lead to compensatory behaviour of another individual, in either the same or another area [32]. The latter may explain why there were no changes at the individual level and at the level of the diad, contrary to our expectations in the second, third and fourth hypothesis. It is possible that power poses led to the participant's compensatory behaviour or such behaviour of their conversation partner in areas that we did not observe. The present study only observed visual behaviour and speaking ratio. Tiedens and Fragale [7] found that expansive body postures of participants invited the other participants to constrict the posture. In our study, there could have been some complementary response at the level of posture, however, the latter was not part of our examination. Additionally, power could have been expressed through other forms of behaviour, for example through specific facial expressions and speech characteristics that can be associated with an individual's dominance [33, 34].

Since there was no increase in visual dominance behaviour during the display of power poses in our study, we cannot confirm the fifth hypothesis related to the prolonged effect of power poses on visual dominance behaviour. We formed the hypothesis based on a study by Carney et al. [21], in which they found that a 2-minute adoption of a power pose led to a decreased level of cortisol and increased testosterone levels 17 minutes after taking the pose. Our results suggest that power poses do not lead to an increase in visual dominance behaviour, either during or after its display.

Ellyson et al. [12] found that a belief about a higher or lower status of an individual affects changes in VDR. Results of our research suggest that changes in body posture of participants do not correlate with changes in VDR of their conversation partner. It can therefore be

assumed that the mere expansion of the body posture is not enough for an increase in power status within the pair. Considering that we have studied changes in status differentiation in pairs where individuals knew each other, the finding seems reasonable.

In our study, the display of power postures was placed in an interpersonal context, which is one of the necessary conditions for influencing psychological processes [29]. At some level, people interpret their own and other people's behaviour depending on the context in which it occurs [35]. We should therefore also examine the context in our research. If a person spontaneously displayed an expansive body posture in everyday life, a possible interpretation of another person would be: "My conversation partner is dominant." However, when a participant in our study displayed a power pose, one of the possible interpretations would be "My conversation partner was ordered to display an expansive body posture." Such interpretation prevents the understanding of expansive body poses as power poses, as well as their ability to influence the structure of power within the relationship. In a study by Tiedens and Fragale [7], in which the complementarity of behaviour occurred, conversation partners of the study participants were in fact assistants who helped in the study. Participants of the study could interpret the assistants' deliberate display of expansive poses as spontaneous expansions of posture, while it is possible that the participants in our study did not interpret the poses the same way.

The simplest and most conspicuous interpretation of the absence of expansive postures' effect on the visual behaviour of participants is that expansive postures do not lead to an increase in power behaviours. Similarly, Cuddy's study [22] does not prove that adopting expansive body postures before an interview leads to an increase in nonverbal presence during the interview. In the study, Cuddy et al. [22] formed two groups of participants, a group that adopted a dominant/expansive posture, and a group that adopted a submissive/constricted posture. Differences in nonverbal presence and performance at a job interview between the groups do not prove expansive (power) poses' effect on nonverbal presence and greater success in the interview. Similarly, a recent study by Keller et al. [26] failed to confirm the display of power poses leading to better assessments of performance and employability. There is a growing body of research indicating that the adoption of power poses is not associated with changes in the level of hormones, subjective feelings and behaviour [23-25].

In addition to the aforementioned limitations of our study, it is worth noting our sample of participants was admittedly small and there were two additional potential limitations, the inclusion of a neutral pose and the behaviour of the experimenter. As pointed out by Cuddy et al. [22], studies of expansive body postures or power poses require a neutral condition. Neutral condition or neutral postures included in our study may be either a limitation or an advantage of our study. Cuddy et al. [22] state that it is theoretically and practically unclear how to establish a condition without power, i.e. a neutral condition. Bohns and Wiltermouth [36] thus reported finding no statistically significant differences between neutral and submissive postures when investigating the correlation between pain threshold and physical posture. Therefore, we cannot claim that neutral postures included in our study truly represented a neutral condition. It is possible that adopting a neutral posture with a conversation partner in an expansive posture, in itself, implies submissive behaviour. In case of the latter, our hypothesis about expansive body postures of one individual leading to a complementary behaviour of the participant in a neutral pose was based on false grounds, as a neutral pose in itself would have already satisfied the need for complementarity.

When considering the results, the role of the experimenter in the study should also be taken into account. The experimenter provided the instructions and the topics of conversations, determined participants' physical postures in different conditions, announced the end of the

conversation, etc. The experimenter's role could be seen to reflect characteristics of individuals with power. We need to ask ourselves whether an expansive posture can at all be interpreted as a power pose if the individuals display it instructed by another and in a certain way obey them. On the other hand, in the study by Carney et al. [21], the experimenter posed the participants in dominant and submissive postures through physical touch, and also gave the necessary instructions. Their study, however, found an effect of expansive postures on increasing the psychological and biological aspects of power, for example changes in risk taking behaviour and changes in testosterone and cortisol levels.

Our study results could contribute to a more critical questioning of the popular concept of the so-called *power posing* [21] that assumes a direct link between expansive body postures and acquisition of power within the relationship. With more than 43 000 000 views of the lecture by Amy Cuddy [37] on the TED webpage, the concept in question discussed in the lecture is currently one of the most popular concepts in nonverbal communication. Our study emphasizes the importance of context in which expanded poses are adopted; context may be the difference in the hierarchy of power, the behaviour of partners, intentional or spontaneous adoption of expanded body postures etc. Ignoring the difference between spontaneous and intentional adoption of power poses is one of the major points of our criticism directed at past studies [21, 22].

## CONCLUSION

Our study examined the effect of adopting expansive postures on changes in the structure of power in existing relationships. Results of our study found no significant correlation between the changes in the adoption of power poses and changes in visual dominance behaviour. Moreover, the individual in the pair adopting power poses did not result in complementary visual behaviour of the other study participant. Based on our results, it can be concluded that adopting a power pose in relationships with an already established hierarchy of social power does not result in the change of power. Research examining the physical aspect of power is still in its early days, admittedly, and the existing body of literature is still scarce, hence it is still too soon to reach clear conclusions about the value and possible practical aspects of the phenomenon.

## REFERENCES

- [1] Fiske, A.P.: *The four elementary forms of sociality: framework for a unified theory of social relations*. Psychological Review **99**(4), 689-723, 1992, <http://dx.doi.org/10.1037/0033-295X.99.4.689>,
- [2] Magee, J.C. and Galinsky, A.D.: *8 Social Hierarchy: The Self-Reinforcing Nature of Power and Status*. Academy of Management Annals **2**(1), 351-398, 2008, <http://dx.doi.org/10.1080/19416520802211628>,
- [3] Schmid Mast, M.: *Interpersonal behaviour and social perception in a hierarchy: The interpersonal power and behaviour model*. European Review of Social Psychology **21**(1), 1-33, 2010, <http://dx.doi.org/10.1080/10463283.2010.486942>,
- [4] Schmid Mast, M. and Cousin, G.: *Power, dominance, and persuasion*. In: Knapp M.L. and Hall J.A., eds.: *Nonverbal Communication*. De Gruyter Mouton, Boston, 2013, <http://dx.doi.org/10.1515/9783110238150.613>,
- [5] Schmid Mast, M. and Hall, J.A.: *Who is the boss and who is not? Accuracy of judging status*. Journal of Nonverbal Behavior **28**(3), 145-165, 2004, <http://dx.doi.org/10.1023/B:JONB.0000039647.94190.21>,

- [6] Tiedens, L.Z.; Unzueta, M.M. and Young, M.J.: *An unconscious desire for hierarchy? The motivated perception of dominance complementarity in task partners.* Journal of Personality and Social Psychology **93**(3), 402-414, 2007, <http://dx.doi.org/10.1037/0022-3514.93.3.402>,
- [7] Tiedens, L.Z. and Fragale, A.R.: *Power moves: complementarity in dominant and submissive nonverbal behavior.* Journal of Personality and Social Psychology **84**(3), 558-568, 2003, <http://dx.doi.org/10.1037/0022-3514.84.3.558>,
- [8] Holland, E.; Wolf, E.B.; Looser, C. and Cuddy, A.: *Visual attention to powerful postures: People avert their gaze from nonverbal dominance displays.* Journal of Experimental Social Psychology **68**, 60-67, 2017, <http://dx.doi.org/10.1016/j.jesp.2016.05.001>,
- [9] Exline, R.V.; Ellyson, S.L. and Long, B.: *Visual behavior as an aspect of power role relationships.* In: Pliner V.P.; Krames L. and Alloway T., eds.: *Nonverbal communication of aggression.* Springer US, 1975, [http://dx.doi.org/10.1007/978-1-4684-2835-3\\_2](http://dx.doi.org/10.1007/978-1-4684-2835-3_2),
- [10] Dovidio, J.F. and Ellyson, S.L.: *Decoding visual dominance: Attributions of power based on relative percentages of looking while speaking and looking while listening.* Social Psychology Quarterly **45**(2), 106-113, 1982, <http://dx.doi.org/10.2307/3033933>,
- [11] Koch, S.C.; Baehne, C.G.; Kruse, L.; Zimmermann, F. and Zumbach, J.: *Visual dominance and visual egalitarianism: Individual and group-level influences of sex and status in group interactions.* Journal of Nonverbal Behavior **34**(3), 137-153, 2010, <http://dx.doi.org/10.1007/s10919-010-0088-8>,
- [12] Ellyson, S.L.; Dovidio, J.F.; Corson, R.L. and Vinicur, D.L.: *Visual dominance behavior in female dyads: Situational and personality factors.* Social Psychology Quarterly **43**(3), 328-336, 1980, <http://dx.doi.org/10.2307/3033735>,
- [13] Ellyson, S.L.; Dovidio, J.F. and Corson, R.L.: *Visual behavior differences in females as a function of self-perceived expertise.* Journal of Nonverbal Behavior **5**(3), 164-171, 1981, <http://dx.doi.org/10.1007/BF00986133>,
- [14] Brown, C.E.; Dovidio, J.F. and Ellyson, S.L.: *Reducing Sex Differences in Visual Displays of Dominance Knowledge is Power.* Personality and Social Psychology Bulletin **16**(2), 358-368, 1990, <http://dx.doi.org/10.1177/0146167290162015>,
- [15] Duclos, S.E., et al.: *Emotion-specific effects of facial expressions and postures on emotional experience.* Journal of Personality and Social Psychology **57**(1), 100-108, 1989, <http://dx.doi.org/10.1037/0022-3514.57.1.100>,
- [16] Flack, W.F.; Laird, J.D. and Cavallaro, L.A.: *Separate and combined effects of facial expressions and bodily postures on emotional feelings.* European Journal of Social Psychology **29**(2-3), 203-217, 1999,
- [17] Siegman, A.W. and Boyle, S.: *Voices of fear and anxiety and sadness and depression: the effects of speech rate and loudness on fear and anxiety and sadness and depression.* Journal of Abnormal Psychology **102**(3), 430-437, 1993, <http://dx.doi.org/10.1037/0021-843X.102.3.430>,
- [18] Strack, F.; Martin, L.L. and Stepper, S.: *Inhibiting and facilitating conditions of the human smile: a nonobtrusive test of the facial feedback hypothesis.* Journal of Personality and Social Psychology **54**(5), 768-777, 1998, <http://dx.doi.org/10.1037/0022-3514.54.5.768>,

- [19] Laird, J.D.: *Self-attribution of emotion: the effects of expressive behavior on the quality of emotional experience*.  
Journal of Personality and Social Psychology **29**(4), 475-486, 1974,  
<http://dx.doi.org/10.1037/h0036125>,
- [20] Laird, J.D. and Lacasse, K.: *Bodily influences on emotional feelings: accumulating evidence and extensions of William James's theory of emotion*.  
Emotion Review **6**(1), 27-34, 2014,  
<http://dx.doi.org/10.1177/1754073913494899>,
- [21] Carney, D.R.; Cuddy, A.J. and Yap, A.J.: *Power posing brief nonverbal displays affect neuroendocrine levels and risk tolerance*.  
Psychological Science **21**(10), 1363-1368, 2010,  
<http://dx.doi.org/10.1177/0956797610383437>,
- [22] Cuddy, A.J.; Wilmoth, C.A.; Yap, A.J. and Carney, D.R.: *Preparatory power posing affects nonverbal presence and job interview performance*.  
Journal of Applied Psychology **100**(4), 1286-1295, 2015,  
<http://dx.doi.org/10.1037/a0038543>,
- [23] Ranehill, E., et al.: *Assessing the robustness of power posing: No effect on hormones and risk tolerance in a large sample of men and women*.  
Psychological Science **26**(5), 653-656, 2015,  
<http://dx.doi.org/10.1177/0956797614553946>,
- [24] Ronay, R.; Tybur, J.M.; van Huijstee, D. and Morssinkhof, M.: *Embodied power, testosterone, and overconfidence as a causal pathway to risk-taking*.  
Comprehensive Results in Social Psychology **2**(1), 28-43, 2017,  
<http://dx.doi.org/10.1080/23743603.2016.1248081>,
- [25] Davis, M.L., et al.: *A randomized controlled study of power posing before public speaking exposure for social anxiety disorder: No evidence for augmentative effects*.  
Journal of Anxiety Disorders **52**(2017) 1-7, 2017,  
<http://dx.doi.org/10.1016/j.janxdis.2017.09.004>,
- [26] Keller, V.N.; Johnson, D.J. and Harder, J.A.: *Meeting your inner super (wo) man: are power poses effective when taught?*  
Comprehensive Results in Social Psychology **2**(1), 106-122, 2017,  
<http://dx.doi.org/10.1080/23743603.2017.1341186>,
- [27] Garrison, K.E.; Tang, D. and Schmeichel, B.J.: *Embodying power: a preregistered replication and extension of the power pose effect*.  
Social Psychological and Personality Science **7**(7), 623-630, 2016,  
<http://dx.doi.org/10.1177/1948550616652209>,
- [28] Huang, L.; Galinsky, A.D.; Gruenfeld, D.H. and Guillory, L.E.: *Powerful postures versus powerful roles: Which is the proximate correlate of thought and behavior?*  
Psychological Science **22**(1), 95-102, 2011,  
<http://dx.doi.org/10.1177/0956797610391912>,
- [29] Cesario, J. and McDonald, M.M.: *Bodies in context: Power poses as a computation of action possibility*.  
Social Cognition **31**(2), 260-274, 2013,  
<http://dx.doi.org/10.1521/soco.2013.31.2.260>,
- [30] Schmid Mast, M.: *Dominance as expressed and inferred through speaking time*.  
Human Communication Research **28**(3), 420-450, 2002,  
<http://dx.doi.org/10.1111/j.1468-2958.2002.tb00814.x>,
- [31] Dovidio, J.F.; Brown, C.E.; Heltman, K.; Ellyson, S.L. and Keating, C.F.: *Power displays between women and men in discussions of gender-linked tasks: A multichannel study*.  
Journal of Personality and Social Psychology **55**(4), 580-587, 1988,  
<http://dx.doi.org/10.1037/0022-3514.55.4.580>,

- [32] Argyle, M. and Dean, J.: *Eye-contact, distance and affiliation*.  
Sociometry **28**(3), 289-304, 1965,  
<http://dx.doi.org/10.2307/2786027>,
- [33] Hall, J.A.; Coats, E.J. and LeBeau, L.S.: *Nonverbal behavior and the vertical dimension of social relations: a meta-analysis*.  
Psychological Bulletin **131**(6), 898-924, 2005,  
<http://dx.doi.org/10.1037/0033-2909.131.6.898>,
- [34] Tiedens, L.Z.: *Anger and advancement versus sadness and subjugation: the effect of negative emotion expressions on social status conferral*.  
Journal of Personality and Social Psychology **80**(1), 86-94, 2001,  
<http://dx.doi.org/10.1037/0022-3514.80.1.86>,
- [35] Bem, D.: *Self-perception theory*.  
Advances in Experimental Social Psychology **6**, 1-62, 1972,  
[http://dx.doi.org/10.1016/S0065-2601\(08\)60024-6](http://dx.doi.org/10.1016/S0065-2601(08)60024-6),
- [36] Bohns, V.K. and Wiltermuth, S.S.: *It hurts when I do this (or you do that): Posture and pain tolerance*.  
Journal of Experimental Social Psychology **48**(1), 341-345, 2012,  
<http://dx.doi.org/10.1016/j.jesp.2011.05.022>,
- [37] Cuddy, A.J.: *Your body language shapes who you are*.  
[http://www.ted.com/talks/amy\\_cuddy\\_your\\_body\\_language\\_shapes\\_who\\_you\\_are](http://www.ted.com/talks/amy_cuddy_your_body_language_shapes_who_you_are),  
accessed: 21<sup>st</sup> October, 2017,