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Powerful and confident children through expansive body postures? A preregistered study of fourth graders

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Abstract

Do expansive body postures increase self-esteem in children? Power posing is a popular but also controversial topic. Still, there has been no research on the possible effects in children. To investigate the influence of power posing in children, 108 German fourth graders were randomly assigned to a high versus a low power posing group. Self-esteem was self-reported; feelings were assessed indirectly. There was an effect of power posing on self-reported global and school self-esteem. Furthermore, children who had performed high power poses in comparison with those who had performed low power poses mentioned more positive feelings, higher power feelings, and a more positive student–teacher relationship. Results are interpreted with regard to the context and the cultural dependency of the power posing effect. Implications for school practice are addressed.

Keywords

power posing, school, self-esteem, embodiment, nonverbal behavior

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Most parents hope that their children will be confident, happy individuals who love to go to school and have good interpersonal relationships, but this dream does not always come true. Can simple interventions boost children's self-regard? There have been efforts to improve children's self-esteem through various programs (e.g. Gurney, 1987), but doubt has been voiced whether such programs are useful (Baumeister et al., 2003). Such programs are rather time-consuming and costly, and it may be interesting to know whether very basic interventions can also have an effect on children's self-regard and feelings. Power posing is a technique that was both promoted and criticized in the media in the early 2010s. Might it be a tool that can be used to foster positive feelings and self-esteem in students? The present study was aimed at understanding effects of expansive versus contractive body postures in children.

Power posing

Power posing connects the fields of power research and embodiment. Power can be understood as "an individual's relative capacity to modify others' states by providing or withholding resources or administering punishments" (Keltner et al., 2003, p. 265). Having power typically leads to changes in perception and behavior such as increased action-orientation (Galinsky et al., 2003) and an increased tolerance for risk (Anderson & Galinsky, 2006). Advocates of power posing have assumed that such perceptions can also be achieved if people simply engage in nonverbal expressions of power (Carney et al., 2015), for example, by exhibiting open, expansive body postures such as standing tall with the chest out and the hands on the hips. By contrast, low power poses are understood as closed and contracted body postures in which people take up as little space as possible.

In initial studies, power posing was found to be connected to hormonal and behavioral changes in adults (Carney et al., 2010). Furthermore, high power posing was associated with an increased likelihood of being hired in a simulated job interview (Cuddy et al., 2015). However, these effects have not been replicated (e.g. Bombari et al., 2017; Keller et al., 2017; Klaschinski et al., 2017; Ranehill et al., 2015; Turan, 2015). Still, with respect to self-reports, the findings seem rather stable. Whereas occasionally, there was no increase of power feelings as a result of expansive body postures (e.g. Smith & Apicella, 2017), in several studies (e.g. Cuddy et al., 2018; Fischer et al., 2011; Peña & Chen, 2017) and a meta-analysis (Gronau et al., 2017), high power posing instilled feelings of power. Moreover, expansive body postures increased the experience of positive emotions and reduced the experience of negative emotions (e.g. Nair et al., 2014; Veenstra et al., 2017).

However, all such research pertains to adults. To our knowledge, no studies have tested effects of expansive versus contractive postures in children in school settings. But postures can be observed and interpreted by children: there is evidence that children (five to six years) can use nonverbal cues like upright postures to understand whether a person is in charge (Brey & Shutts, 2015) and at the age of seven to nine years, children develop an understanding of social power that is close

to that of adults (Gülgöz & Gelman, 2017). Thus, engaging in expansive postures may also have effects on children's self-perception and experience. Such effects would have practical relevance: students could learn how to regulate their mental processes through postures. We aimed to test effects of body postures on children's self-perceptions in the present study.

Postural interventions in children

The literature on effects of body posture interventions in children is sparse. In Japan, Inagaki et al. (2018) observed greater vitality and pleasure and better scores on a calculation test and a listening comprehension test after students had assumed an upright sitting posture for 15 minutes when compared with students with normal postures. However, the sample was small and comprised boys only. Also in Japan, Noda and Tanaka-Matsumi (2009) tested a behavioral intervention package aimed at improving children's seated postures and found positive effects on academic writing productivity. Finally, there is evidence from a literature review that mind-body techniques such as yoga can promote mental health, self-esteem, and well-being in children (Hagen & Nayar, 2014). Our research ties into this discussion of effects through postural interventions.

Power posing and feelings

The approach-inhibition theory of power postulates that power leads to positive emotions (Keltner et al., 2003). Empirical research has suggested that power posing can affect emotions and feelings of power (e.g. Fischer et al., 2011), and there is evidence that postural interventions may already be effective in children (e.g. Inagaki et al., 2018). In bringing the literature on power posing and the literature on effects of posture in children together, we argue that students engaging in high power poses should report stronger feelings of power and more positive feelings than students engaging in low power poses. Moreover, we would expect such positive self-perceptions to generalize to the perception of interpersonal relationships and that children may feel more positive about their day-to-day relationships. Power poses are typically adopted in a social context (Carney et al., 2015) which is why we assumed that perceptions of the social environment would also be affected. Thus, we expected to find more positive reports of relevant relationships in children who assume high power poses in comparison with children who assume low power poses.

Self-esteem in children

Different stages can be distinguished in the development of self-esteem. Verbal self-descriptions are usually observed around the age of two. In early childhood, very specific descriptions about one's abilities are typical. At this age, children do not discuss their overall value as a person. Moreover, they are not capable of differentiating between their wishes and reality. In middle childhood, children infer

abstract evaluations from specific observations. Self-perceptions also become more realistic (Marsh et al., 1998). In late childhood, children can compare themselves with others. Around Grade 3, children develop a concept about their value as a person (Rosenberg, 1979) and can respond to questionnaire items (e.g. about how happy they are with themselves; Harter, 2015).

Beginning in the 1980s, there have been attempts to enhance self-esteem. High levels of self-esteem were assumed to be a panacea against social ills such as school underachievement, crime, drug abuse, delinquency, and teen pregnancy (Harter, 2015). In 1990, the state of California even developed an initiative to raise self-esteem on a societal level (California Task Force to Promote Self-Esteem and Personal and Social Responsibility, 1990). However, there has been controversy regarding the effectiveness of such programs (Baumeister et al., 2003; Tice & Gailliot, 2006). Still, it has been agreed that positive self-esteem is a resource that is linked to productive and healthy lives, whereas students with low self-esteem are more likely to feel depressed and hopeless (Harter, 2015). Thus, fostering self-esteem in children with negative self-representations or traumatic experiences (Bolger et al., 1998; Putnick et al., 2019) seems desirable because post-traumatic stress in children is associated with low self-esteem (Reynolds et al., 2001). Also, children with developmental difficulties may benefit from an increase in self-esteem (Humphrey & Mullins, 2002).

Power posing and self-esteem

There is evidence that power increases self-esteem (Wojciszke & Struzynska-Kujalowicz, 2007), that expansive postures have a self-esteem preservation function in stressful situations (Nair et al., 2014), and that open yoga poses increase state self-esteem (Golec de Zavala et al., 2017). Furthermore, in recent studies, high power posing was found to be associated with increased state self-esteem in adults (Körner et al., 2019). Possible explanations for a self-esteem-elevating effect through engaging in expansive body postures can be found in self-perception theory (Bem, 1967), grounded cognition theory (Barsalou, 2008), and the approach-inhibition theory of power (Keltner et al., 2003). Self-perception theory postulates that people develop emotions and attitudes on the basis of observations of their own behavior. According to Barsalou's approach, it can be assumed that body postures activate memories of past experiences and thus affect current experience. The approach-inhibition theory of power postulates that power increases approach behavior and positive emotions—tendencies that are typical of people with high self-esteem. Thus, there may also be an increase in self-esteem. We aimed to test whether the power-self-esteem link found in adults would be apparent in children too. Even though children are likely to have had somewhat less experience with power than adults, feedback through significant others, competition, and fights at school may have created situations in which power and self-esteem are salient (Gülgöz & Gelman, 2017; Pellegrini, 2003). We tested the following hypotheses: when children engage in high power poses,

they will report higher state self-esteem than those who engage in low power poses, and this will pertain to the areas of school, leisure, and family.

Method

Design and participants

We preregistered our hypotheses, research design (independent variable [IV], dependent variable [DV]), data analytic choices, and considerations about the planned sample size (<http://aspredicted.org/blind.php?x=sn4su9>). The design was an independent samples posttest design to avoid sensitizing participants to the topic of the study through the administration of a pretest (cf. Wilson & Putnam, 1982).

Fourth graders were used to test effects of power posing in children. To allow for early interventions, we wanted to choose a relatively young group and chose that age group because children at that age have the cognitive ability to read, understand, and answer the self-esteem questionnaire. Moreover, children at that age begin to develop a clear evaluation of themselves (Harter, 1999).

G*Power (Faul et al., 2007) was used to determine the required sample size. Using a *t* test (one-tailed) with an alpha level of .05, an a priori power ($1 - \beta$) of .80, and an estimated effect size of $d = 0.50$ from previous research (Latu et al., 2017), the required *N* was 102. We contacted seven German elementary schools to reach a minimum of 102 fourth graders. Four schools responded and agreed to participate, which resulted in a pool of 135 fourth graders. Because 18 students were ill and nine parents did not agree to let their children participate in the study, the final sample consisted of 108 fourth graders (41% girls; $M_{age} = 9.89$ (9–11), $SD_{age} = 0.56$). The children were randomly assigned to the high power posing condition (55 students) or the low power posing condition (53 students).

Procedure

After receiving approval from the State Examination Office of the German Land of Saxony-Anhalt and the principals, the schools distributed consent forms to all parents of the children in Grade 4. Children participated if their parents gave consent. In the spring of 2019, the study was conducted during regular school hours in classrooms that were not in use at that time. To participate, students took a break from their regular lessons in groups of three or four. A stamp was awarded as a symbol of appreciation.

The experiment lasted about 30 minutes. Participants were given instructions, and then they provided demographic data on age, gender, school, and grade. During the intervention, each child performed two power poses in accordance with their assigned condition of high or low power posing. After posing, the self-report self-esteem measure and the indirect measures were administered.

As an intervention, the poses (two high power poses vs. two low power poses), instructions, and duration (1 minute) from the original study (Carney et al., 2010) were used. In the high power posing condition, participants sat in a chair with their feet on a table and their hands behind their backs with head tilted up. For the other high power pose, children leaned toward a desk and with their hands in a “tent fingers” pose. In the low power posing condition, participants sat slumped in a chair with their legs together, hands folded between their legs, and head tilted down. For the other low power pose, participants stood with one leg crossed in front of the other, arms crossed in front, and head bent down slightly (see Figure 1). The experimenter provided verbal instructions for the poses. While posing, participants engaged in an impression formation task as in the standard paradigm (Carney et al., 2015). As an impression formation task, we used pictures appropriate for the age group: the children were presented with two busy pictures (Wimmelbilder). These pictures provided a social context that is considered relevant for the power posing effect to occur (Cesario & McDonald, 2013).

Measures

Self-report measure. The Statement List of Self-Esteem in Children and Youths (Schauder, 2011), which consists of three subscales with 18 items each, was used with an instruction to measure self-esteem as state: “How do you feel right now?” The subscales are: family (e.g. “I am satisfied with myself at home”), school (e.g. “I am satisfied with myself at school”), and leisure (“I am satisfied with myself with friends”). Cronbach’s alpha coefficients are displayed in Table 1 and were comparable to the results obtained by Schauder (2011) who had reported consistency coefficients between .82 and .84.

Indirect measures. As an indirect measurement of the children’s momentary feelings and self-regard, we presented the children with three pairs of pictures of a cartoon figure (see Figure 2): a powerful versus a powerless Winnie the Pooh (i.e. to show power feelings), a happy versus a sad Winnie the Pooh (i.e. to show mood), and a Winnie the Pooh indicating a good versus a bad student–teacher relationship (i.e. to show feelings about the student–teacher relationship). For each pair, children were asked to indicate: “Which one is more like what you feel right now?” The pictures are culture-fair and can also be understood by children with delayed development or language difficulties (Lewis, 2001).

Data analysis plan

Missing values were replaced with the expectation–maximization algorithm, and we tested the comparability of the two experimental groups with respect to age and gender. Finally, independent-samples *t* tests and chi-square tests were calculated to assess differences between high and low power posers in the dependent variables. The conventional alpha level of .05 was used.



Figure 1. Sitting and standing high and low power poses.

Results

With respect to missing values, Little's MCAR test was not significant, $\chi^2 = 130.613$ ($df = 112$, $p = .110$), which suggested that the data were missing completely at random (MCAR). For two participants, one missing value each was replaced with the expectation-maximization method. Participants in the high power posing condition did not differ from those in the low power posing

Table 1. Internal consistency and descriptive statistics for self-esteem in the high power posing and low power posing groups.

	Cronbach's alpha	High power posing M (SD)	Low power posing M (SD)
SLSE	.91	3.93 (0.41)	3.78 (0.47)
School	.82	3.63 (0.51)	3.40 (0.54)
Leisure	.78	3.92 (0.50)	3.85 (0.49)
Family	.75	4.25 (0.42)	4.10 (0.53)

SLSE: Statement List of Self-Esteem in Children and Youths.

Note. Values ranged from 1 = not clear, not correct at all to 5 = clear, completely correct.

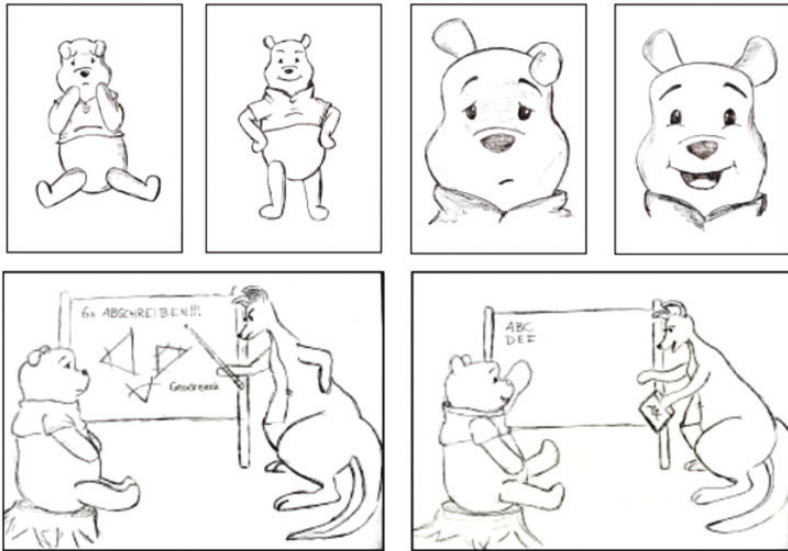


Figure 2. Indirect measures: powerless versus powerful Winnie the Pooh, sad vs. happy Winnie the Pooh, and bad vs. good student–teacher relationship.

condition with respect to age, $t(104) = -1.831$, $p = .070$, $d = 0.359$, or gender, $\chi^2(1) = 0.304$, $p = .581$, $\phi = -.053$.

Data from the self-report scale were analyzed via t tests (one-tailed). The means and standard deviations are presented in Table 1. The difference between the overall self-esteem scores between conditions was significant, $t(106) = 1.771$, $p = .040$, $d = 0.346$. In looking at the subscales, there was a medium-sized effect with respect to school self-esteem such that children in the high power posing condition reported higher self-esteem than those in the low power posing condition, $t(106) = 2.264$, $p = .013$, $d = 0.441$. Differences with respect to leisure-related self-esteem, $t(106) =$

0.691, $p = .246$, $d = 0.141$, and family self-esteem, $t(106) = 1.653$, $p = .051$, $d = 0.323$, were not statistically significant, but they did go in the expected direction.

Chi-square tests were used to compare the outcomes of the indirect measures between conditions (high vs. low power posing). There were no expected cell frequencies below five. Participants in the high power posing condition more frequently chose the picture indicating high power feelings than participants in the low power posing condition, $\chi^2(1) = 12.381$, $p < .001$, $\phi = -.339$. Only two high power posers chose the powerless Winnie the Pooh, whereas 15 participants in the low power posing condition chose that picture. The data also provided evidence for the mood hypothesis because participants in the high power posing condition more frequently chose the happy Winnie the Pooh than participants in the low power posing condition, $\chi^2(1) = 9.850$, $p = .002$, $\phi = -.302$. Only two students chose the sad picture after high power posing, whereas 13 students chose it in the low power posing group. Finally, there was a significant difference between the two groups regarding the pictures related to the student–teacher relationship: high power posers more frequently chose the picture showing a good student–teacher relationship than low power posers, $\chi^2(1) = 11.181$, $p = .001$, $\phi = -.322$. Only five participants in the high power posing condition but 19 participants in the low power posing condition chose the picture showing a negative student–teacher relationship.

Discussion

The study aimed to analyze the influence of power posing on children's self-regard and feelings. Children's reactions in the high power posing condition suggested that they experienced higher overall state self-esteem and especially higher school-related state self-esteem, stronger feelings of power, and a better mood. They also had a more positive representation of the student–teacher relationship than children in the low power posing condition. These findings are in line with previous research that showed effects of postural interventions in children (e.g. Inagaki et al., 2018). The findings are also similar to effects of power posing found in adults (Körner et al., 2019). Thus, it seems that power posing is a technique that has the potential to induce positive feelings in children.

The differences in state self-esteem were not significant for self-esteem regarding leisure and family. The findings suggest that effects of power posing may be strongest in the domain that the person is in during posing—school-related self-esteem showed clear effects. It is possible that effects might not easily generalize across situations and domains. Conducting an intervention in a different situation may have an impact in different areas. For example, an intervention during leisure time may have a stronger impact on leisure-related self-esteem.

Why was self-esteem higher in the expansive body postures group? Self-perception is one source of self-esteem. Students in the high power posing condition may have observed their own body postures, noted the expansiveness, and self-attributed high self-esteem (Bem, 1967) when they engaged in such open,

expansive postures. Furthermore, with regard to Barsalou's (2008) grounded cognition approach, open body postures may have activated past experiences of success and these states may be linked to high self-esteem and positive feelings. Finally, self-esteem could be seen as a downstream consequence of experiencing power in the approach-inhibition theory of power (Keltner et al., 2003): holding a posture may lead to feelings of power, which in turn may impact self-esteem. Power and status are concepts that are understood by students (Gülgöz & Gelman, 2017; Terry & Coie, 1991) which is why power postures may have effects in children already. The effect of low power posing may be explained by the same mechanisms that work in high power posing. For example, on the basis of Barsalou's approach, one may assume that contractive poses activate past experiences of failure that are associated with low self-esteem and feelings of low power. This may explain why students in the low power posing condition indicated less positive self-evaluations than those in the high power posing condition. Clearly, future research is needed to shed more light on the specific processes in the effects of power posing.

More and more practitioners in therapeutic as well as in school settings recommend using power poses as a tool to better one's emotional experience. Based on our results, power posing implemented in school settings may be a simple technique to increase self-esteem and to induce power feelings and positive emotions in students. This could be important because effects on other self-report variables like pride or subjective well-being (Yang et al., 2018) may also be possible. Furthermore, empowering students in victim roles through expansive body postures may lead to more power balance in classes and less bullying (Atik & Güneri, 2013; Craig et al., 2007; Sharp, 1996).

When applying power poses in school contexts, teachers should pay close attention to students' respective needs because expansive poses may elicit negative feelings in some children. We did not measure negative past life events in our participants, and most practitioners in schools will not know whether some students have experienced domestic violence, sexual abuse, or other traumatic situations. However, in future research and practice, it may be important to pre-screen students for traumatic experiences so that they do not re-experience negative states (see Barsalou, 2008). Moreover, power posing is just a simple technique that may help to improve students' momentary self-esteem or feelings, but other issues such as learning difficulties and experiences of negative or traumatic life events cannot be addressed with this technique. Under such circumstances, other professional sources of help should be considered.

Furthermore, cultural factors need to be attended to. Power can only be understood by taking into account the meaning power has in a given culture (see, e.g. power distance as the degree to which rather powerless people accept unequally distributed power, Hofstede, 2001; or power as value, Schwartz, 1994). Whereas in rather egalitarian, low power-distance cultures (e.g. North America, Europe), the embodiment of power may be effective, and in hierarchical high power-distance

countries (e.g. Japan, China), there may be no effects or the opposite effects. In high power-distance cultures, differences in status are based on age, seniority, or sex (Matsumoto, 2007). Thus, a power pose exhibited by a junior person may have adverse effects in these cultures because it may contradict cultural norms and the expectations of the respective hierarchical positions. There is evidence that certain bodily changes are associated with different meanings in different regions of the world (e.g. Farsani, 2015; Galanti, 2014; Mulyana, 2013). A multistudy paper by Park et al. (2013) supported this claim with respect to power posing: whereas some expansive postures (upright sitting; the standing high power pose as used in this study) led to increased feelings of power for Americans and East Asians, the expansive-feet-on-desk pose (the first high power pose used in the present study) increased feelings of power and action orientation in Americans but led to decreases in East Asian participants. The authors concluded that poses that violate norms of modesty, humility, and restraint are not effective in some cultures. Thus, future research should take the symbolic meaning of power poses and societal factors such as power distance into account in order to thoroughly test the power pose effect in adults as well as in children from different countries of origin.

As an initial test of the power posing effect in children, this study has some limitations. First, no control group was used. This decision was based on the considerations that most power posing studies only compared high power poses with low power poses (for an overview, see Carney et al., 2015), and in previous research, effects of low power poses were very similar to those from control groups (Bohns & Wiltermuth, 2012; Körner et al., 2019; Kwon & Kim, 2015). Second, the indirect measures were three pictorial tests that had been developed for the study but had not been psychometrically tested. Third, the study demonstrated short-term effects on state measurements. It is not clear how long such effects may persist. It would be interesting to test whether the power posing effect in children could have long-term effects if poses were assumed repeatedly over the course of a school year. However, due to ethical concerns, a low power posing group could not be included in such a design. Finally, we tested only German fourth graders. The generalizability of the results should be tested in further studies using other age groups and students of other nationalities.

The present study is the first known to test effects of power posing in children and followed recommendations to increase replicability in research (e.g. preregistration). The procedure was very similar to the original procedure by Carney et al. (2010), thus allowing for a direct comparison of results between children and adults. The findings may be relevant to teachers and parents. Apparently, expansive, open body postures—held only for one or two minutes—can impact a child's self-regard. However, further research is needed to test long-term effects and the possibility of generalization across domains. Finally, it should be noted that increasing positive feelings and self-esteem might be useful in children with problems with self-assertion, whereas inflated self-esteem should not be the goal of such interventions (Schütz et al., 2019).

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Author contributions

All three authors contributed to the conceptualization and design of the research. The second author conducted the experiments. The first author analyzed the data and drafted the manuscript. The third author wrote the manuscript along with the first author.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethics approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

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Informed consent

Informed consent was obtained from the parents of all individual participants included in the study. Informed consent was obtained from the parents of the children used as models in Figure 1. The authors own the copyright of the pictures for the indirect measures (Figure 2).

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References

- Anderson, C., & Galinsky, A. D. (2006). Power, optimism, and the proclivity for risk. *European Journal of Social Psychology, 36*, 511–536. doi:10.1002/ejsp.324
- Atik, G., & Güneri, O. Y. (2013). Bullying and victimization: Predictive role of individual, parental, and academic factors. *School Psychology International, 34*(6), 658–673. doi:10.1177/0143034313479699
- Barsalou, L. W. (2008). Grounded cognition. *Annual Review of Psychology, 59*, 617–645. doi:10.1146/annurev.psych.59.103006.093639
- Baumeister, R. F., Campbell, J. D., Krueger, J. I., & Vohs, K. D. (2003). Does high self-esteem cause better performance, interpersonal success, happiness, or healthier lifestyles? *Psychological Science in the Public Interest, 4*(1), 1–44. doi:10.1111/1529-1006.01431
- Bem, D. J. (1967). Self-perception: An alternative interpretation of cognitive dissonance phenomena. *Psychological Review, 74*(3), 183–200. doi:10.1037/h0024835

- Bohns, V. K., & Wiltermuth, S. S. (2012). It hurts when I do this (or you do that): Posture and pain tolerance. *Journal of Experimental Social Psychology*, 48(1), 341–346. doi:10.1016/j.jesp.2011.05.022
- Bolger, K. E., Patterson, C. J., & Kupersmidt, J. B. (1998). Peer relationships and self-esteem among children who have been maltreated. *Child Development*, 69(4), 1171–1197. doi:10.2307/1132368
- Bombardi, D., Schmid Mast, M., & Pulfrey, C. (2017). Real and imagined power poses: Is the physical experience necessary after all? *Comprehensive Results in Social Psychology*, 2(1), 44–54. doi:10.1080/23743603.2017.1341183
- Brey, E., & Shutts, K. (2015). Children use nonverbal cues to make inferences about social power. *Child Development*, 86(1), 276–286. doi:10.1111/cdev.12334
- California Task Force to Promote Self-Esteem and Personal and Social Responsibility. (1990). *Toward a state of self-esteem*. California Statement of Education.
- Carney, D. R., Cuddy, A. J. C., & Yap, A. J. (2010). Power posing brief nonverbal displays affect neuroendocrine levels and risk tolerance. *Psychological Science*, 21(10), 1363–1369. doi:10.1177/0956797610383437
- Carney, D. R., Cuddy, A. J. C., & Yap, A. J. (2015). Review and summary of research on the embodied effects of expansive (vs. contractive) nonverbal displays. *Psychological Science*, 26(5), 657–663. doi:10.1177/0956797614566855
- Cesario, J., & McDonald, M. M. (2013). Bodies in context: Power poses as a computation of action possibility. *Social Cognition*, 31, 260–274. doi:10.1521/soco.2013.31.2.260
- Craig, W., Pepler, D., & Blais, J. (2007). Responding to bullying: What works? *School Psychology International*, 28(4), 465–477. doi:10.1177/0143034307084136
- Cuddy, A. J., Wilmoth, C. A., Yap, A. J., & Carney, D. R. (2015). Preparatory power posing affects nonverbal presence and job interview performance. *Journal of Applied Psychology*, 100(4), 1286–1295. doi:10.1037/a0038543
- Cuddy, A. J. C., Schultz, S. J., & Fosse, N. E. (2018). P-curling a more comprehensive research on postural feedback reveals clear evidential value for power posing effects: Reply to Simmons and Simonsohn (2017). *Psychological Science*, 29, 656–666. doi:10.1177/0956797617746749
- Farsani, D. (2015). *Making multi-modal mathematical meaning in multilingual classrooms* [Doctoral dissertation]. <https://etheses.bham.ac.uk/id/eprint/5752/>
- Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39(2), 175–191. doi:10.3758/BF03193146
- Fischer, J., Fischer, P., Englich, B., Aydin, N., & Frey, D. (2011). Empower my decisions: The effects of power gestures on confirmatory information processing. *Journal of Experimental Social Psychology*, 47(6), 1146–1154. doi:10.1016/j.jesp.2011.06.008
- Galanti, G. A. (2014). *Caring for patients from different cultures*. University of Pennsylvania Press.
- Galinsky, A. D., Gruenfeld, D. H., & Magee, J. C. (2003). From power to action. *Journal of Personality and Social Psychology*, 85(3), 453–466. doi:10.1037/0022-3514.85.3.453
- Golec de Zavala, A. G., Lantos, D., & Bowden, D. (2017). Yoga poses increase subjective energy and state self-esteem in comparison to ‘power poses’. *Frontiers in Psychology*, 8, 752. doi:10.3389/fpsyg.2017.00752
- Gronau, Q. F., Van Erp, S., Heck, D. W., Cesario, J., Jonas, K. J., & Wagenmakers, E. J. (2017). A Bayesian model-averaged meta-analysis of the power pose effect with informed

- and default priors: The case of felt power. *Comprehensive Results in Social Psychology*, 2(1), 123–138. doi:10.1080/23743603.2017.1326760
- Gurney, P. (1987). Self-esteem enhancement in children: A review of research findings. *Educational Research*, 29(2), 130–136. doi:10.1080/0013188870290205
- Gülgöz, S., & Gelman, S. A. (2017). Who's the boss? Concepts of social power across development. *Child Development*, 88(3), 946–963. doi:10.1111/cdev.12643
- Hagen, I., & Nayar, U. S. (2014). Yoga for children and young people's mental health and well-being: Research review and reflections on the mental health potentials of yoga. *Frontiers in Psychiatry*, 5, 35. doi:10.3389/fpsyt.2014.00035
- Harter, S. (1999). *The construction of the self: A developmental perspective*. Guilford Press.
- Harter, S. (2015). Self-development in childhood and adolescence. In J. Wright (Ed.), *International encyclopedia of the social & behavioral sciences* (pp. 492–497). Elsevier.
- Hofstede, G. H. (2001). *Culture's consequences: Comparing values, behaviors, institutions and organizations across nations* (2nd ed.). Sage.
- Humphrey, N., & Mullins, P. M. (2002). Self-concept and self-esteem in developmental dyslexia. *Journal of Research in Special Educational Needs*, 2(2), 29–36. doi:10.1111/j.1471-3802.2002.00163.x
- Inagaki, K., Shimizu, T., & Sakairi, Y. (2018). Effects of posture regulation on mood states, heart rate and test performance in children. *Educational Psychology*, 38(9), 1129–1146. doi:10.1080/01443410.2018.1504003
- Keller, V. N., Johnson, D. J., & Harder, J. A. (2017). Meeting your inner super(woman): Are power poses effective when taught? *Comprehensive Results in Social Psychology*, 2(1), 106–122. doi:10.1080/23743603.2017.1341186
- Keltner, D., Gruenfeld, D. H., & Anderson, C. (2003). Power, approach, and inhibition. *Psychological Review*, 110(2), 265–284. doi:10.1037/0033-295X.110.2.265
- Klaschinski, L., Schnabel, K., & Schöder-Abé, M. (2017). Benefits of power posing: Effects on dominance and social sensitivity. *Comprehensive Results in Social Psychology*, 2(1), 55–67. doi:10.1080/23743603.2016.1248080
- Körner, R., Petersen, L.-E., & Schütz, A. (2019). Do expansive or contractive body postures affect feelings of self-worth? High power poses impact state self-esteem. *Current Psychology*. Advance online publication. <https://link.springer.com/article/10.1007%2Fs12144-019-00371-1>
- Kwon J., & Kim, S. Y. (2015). The effect of posture on stress and self-esteem: Comparing contractive and neutral postures. In J. Rotschedl, & K. Cermakova (Eds.), *Proceedings of the 18th international academic conference* (pp. 397–404). International Institute of Social and Economic Sciences, Prague, Czech Republic.
- Latu, I. M., Duffy, S., Pardal, V., & Alger, M. (2017). Power vs. persuasion: Can open body postures embody openness to persuasion? *Comprehensive Results in Social Psychology*, 2(1), 68–80. doi:10.1080/23743603.2017.1327178
- Lewis, J. D. (2001). Language isn't needed: Nonverbal assessments and gifted learners. In *Growing partnerships for rural special education* (pp. 118–121). American Council on Rural Special Education.
- Marsh, H. W., Craven, R., & Debus, R. (1998). Structure, stability, and development of young children's self-concepts: A multicohort–multioccasion study. *Child Development*, 69(4), 1030–1053. doi:10.2307/1132361
- Matsumoto, D. (2007). Individual and cultural differences on status differentiation: The status differentiation scale. *Journal of Cross-Cultural Psychology*, 38(4), 413–431. doi:10.1177/0022022107302311

- Mulyana, D. (2013). Body language in therapeutic communication: A cross-cultural perspective. *Communication*, 4(1), 1–16. doi:10.36080/comm.v4i1.48
- Nair, S., Sagar, M., Sollers, J., Consedine, N., & Broadbent, E. (2014). Do slumped and upright postures affect stress responses? A randomized trial. *Health Psychology*, 34(6), 632–641. doi:10.1037/hea0000146
- Noda, W., & Tanaka-Matsumi, J. (2009). Effect of a classroom-based behavioral intervention package on the improvement of children's sitting posture in Japan. *Behavior Modification*, 33(2), 263–273. doi:10.1177/0145445508321324
- Park, L. E., Streamer, L., Huang, L., & Galinsky, A. D. (2013). Stand tall, but don't put your feet up: Universal and culturally-specific effects of expansive postures on power. *Journal of Experimental Social Psychology*, 49(6), 965–971. doi:10.1016/j.jesp.2013.06.001
- Pellegrini, A. D. (2003). Perceptions and functions of play and real fighting in early adolescence. *Child Development*, 74(5), 1522–1533. doi:10.1111/1467-8624.00620
- Peña, J., & Chen, M. (2017). Playing with power: Power poses affect enjoyment, presence, controller responsiveness, and arousal when playing natural motion-controlled video games. *Computers in Human Behavior*, 71, 428–435. doi:10.1016/j.chb.2017.02.019
- Putnick, D. L., Hahn, C. S., Hendricks, C., & Bornstein, M. H. (2019). Developmental stability of scholastic, social, athletic, and physical appearance self-concepts from pre-school to early adulthood. *Journal of Child Psychology and Psychiatry*, 61(1), 95–103. doi:10.1111/jcpp.13107
- Ranehill, E., Johannesson, M., Leiberg, S., Sul, S., Dreber, A., & Weber, R. A. (2015). 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. doi:10.1177/0956797614553946
- Reynolds, M. W., Wallace, J., Hill, T. F., Weist, M. D., & Nabors, L. A. (2001). The relationship between gender, depression, and self-esteem in children who have witnessed domestic violence. *Child Abuse & Neglect*, 25(9), 1201–1206. doi:10.1016/S0145-2134(01)00269-1
- Rosenberg, M. (1979). *Conceiving the self*. Basic Books.
- Schauder, T. (2011). *Aussagen-Liste zum Selbstwertgefühl für Kinder und Jugendliche* [Statement-list about self-esteem for children and youths]. Hogrefe.
- Schütz, A., Fehn., T., & Baumeister, R. F. (2019). The self. In V. Zeigler-Hill & T. K. Shackelford (Eds.), *Encyclopedia of personality and individual differences*. Springer International Publishing.
- Schwartz, S. H. (1994). Are there universal aspects in the structure and contents of human values? *Journal of Social Issues*, 50(4), 19–45. doi:10.1111/j.1540-4560.1994.tb01196.x
- Sharp, S. (1996). Self-esteem, response style and victimization: Possible ways of preventing victimization through parenting and school based training programmes. *School Psychology International*, 17(4), 347–357. doi:10.1177/0143034396174004
- Smith, K. M., & Apicella, C. L. (2017). Winners, losers, and posers: The effect of power poses on testosterone and risk-taking following competition. *Hormones and Behavior*, 92, 172–181. doi:10.1016/j.yhbeh.2016.11.003
- Terry, R., & Coie, J. D. (1991). A comparison of methods for defining sociometric status among children. *Developmental Psychology*, 27(5), 867–880. doi:10.1037/0012-1649.27.5.867
- Tice, D. M., & Gailliot, M. (2006). How self-esteem relates to the ills and triumphs of society. In M. H. Kernis (Ed.), *Self-esteem: Issues and answers*. Psychology Press.

- Turan, B. (2015). Is a submissive posture adaptive when being evaluated negatively? Effects on cortisol reactivity. *Neuroendocrinology Letters*, 36(4), 394–398. doi:26454497
- Veenstra, L., Schneider, I. K., & Koole, S. L. (2017). Embodied mood regulation: The impact of body posture on mood recovery, negative thoughts, and mood-congruent recall. *Cognition and Emotion*, 31(7), 1361–1376. doi:10.1080/02699931.2016.1225003
- Wilson, V. L., & Putnam, R. R. (1982). A meta-analysis of pretest sensitization effects in experimental design. *American Educational Research Journal*, 19(2), 249–258. doi:10.3102/00028312019002249
- Wojciszke, B., & Struzynska-Kujalowicz, A. (2007). Power influences self-esteem. *Social Cognition*, 25(4), 472–494. doi:10.1521/soco.2007.25.4.472
- Yang, Q., Tian, L., Huebner, E. S., & Zhu, X. (2018). Relations among academic achievement, self-esteem, and subjective well-being in school among elementary school students: A longitudinal mediation model. *School Psychology*, 34(3), 328–340. doi:10.1037/spq0000292

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