Postures and Pain Tolerance

Vinay Kumar and Shubham Singh
Department of Electrical Engineering

Mentored By:
Dr. Amitabha Mukherjee
Department of Computer Science and Engineering

Indian Institute of Technology, Kanpur

Abstract

According to research done by (Carney, Cuddy, & Yap, 2010) postures have a correlation with hormonal level in humans. Adopting a powerful pose changes people's hormonal levels and increases their inclination to take risks in the same ways that possessing actual power does. In this project, we explore whether adopting physical postures associated with power, or simply interacting with others who adopt these postures, can similarly influence sensitivity to pain. For his we conducted two experiments. In Experiment 1, participants who adopted dominant poses displayed higher pain thresholds than those who adopted submissive or neutral poses. In Experiment 2, we manipulated power poses via an interpersonal interaction and found that power posing engendered a complementary (Tiedens & Fragale, 2003) embodied power experience in interaction partners. Participants who interacted with a submissive confederate displayed higher pain thresholds than participants who interacted with a dominant confederate.

Introduction

The management of pain has presented an enduring puzzle for medical patients, practitioners, and researchers alike because the experience of pain is not only extremely distressing, but also highly subjective. Indeed, pain appears to be as psychological as it is physiological and both individual differences and contextual factors affect how individuals experience pain. Pain researchers have examined the role of self-efficacy beliefs and perceptions of control as determinants of pain tolerance . We explore in our project that whether simply adopting physical postures associated with power or interacting with others who adopt these postures can similarly influence sensitivity to pain. In examining these issues, our project fuses research on embodied power with research on interpersonal complementarity to hypothesize that a factor as subtle as the way an interaction partner (e.g., a doctor, a significant other) is standing (i.e., in a high or low power position) can affect an individual's pain threshold. Attributes related to physical toughness , such as physical strength and resistance to pain, have traditionally been seen as causes, not effects, of dominance displays. Across species, individuals who are physically strong and/or “alpha” members of the social pecking order typically signal their power through expansive postures that take up more space and intrude into others' personal territory. Yet recent research suggests that the nature of the relationship between actual power and displays of power may be bidirectional. It has been found that postures associated with power can produce elements of actual power.

Postures associated with dominance and power may similarly affect how people experience pain. Both objective and subjective experiences of power engender perceptions of control, i.e., “the availability of a response”, and self-efficacy, i.e., “one's confidence in one's ability to effect that response”. In one study, individuals who reported engaging in more submissive behaviors in their relationships also reported lower perceptions of pain control. Further, perceptions of control and self-efficacy have been linked to reduced sensitivity to pain. For instance, perceptions of control and self-efficacy have been shown to affect sensitivity to pain during childbirth

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Hypothesis

We came up with two hypothesis which we'll discuss about next:

Hypothesis 1: Given that posing as if one possesses power produces many of the same effects as actually possessing power, simply that posing individuals in postures associated with dominance (submissiveness) would increase(decrease) their pain thresholds.

Explanation:

As adopting postures led to hormonal changes, the hormones associated with power posing have been linked to both self-efficacy and pain. Testosterone has been associated with expectations of success and overconfidence , as well as higher pain tolerance . Elevated cortisol, which is associated with low power, is a response to pain. Altogether, these hormone data corroborate our proposed link between power posing, self-efficacy, and pain tolerance.

Hypothesis 2: Individuals would spontaneously adopt such postures to complement an interaction partner's behavior and would consequently experience the same physiological effects as in Hypothesis 1.

Explanation:

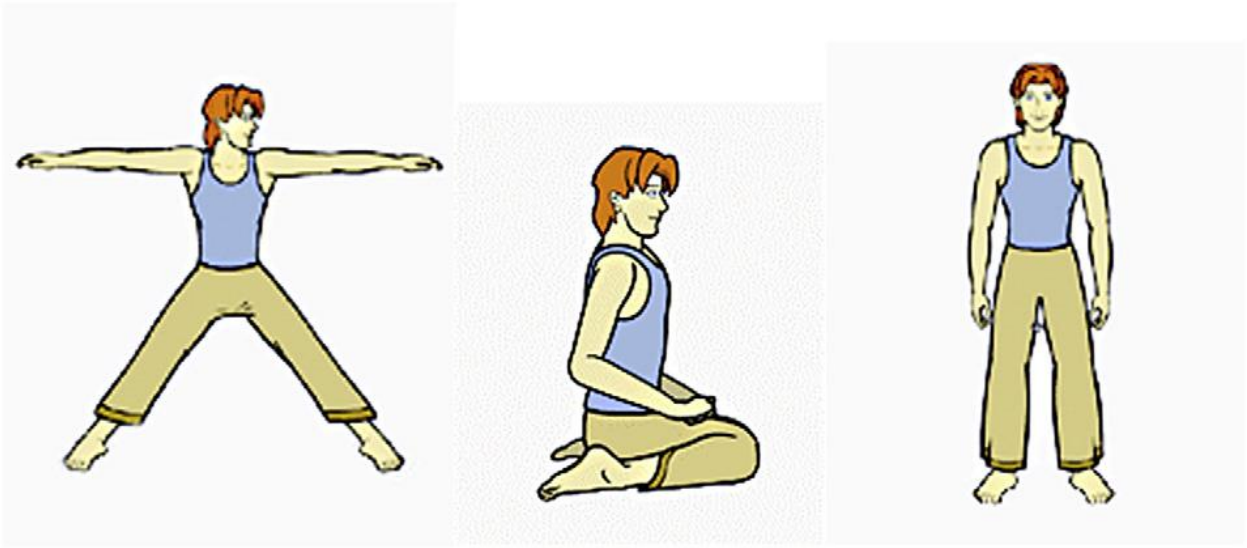
Research has shown that when one interaction partner displays a "power pose" (an expansive, open posture), the other interaction partner is likely to display a submissive pose in response (a constricted, closed posture). Then we would be utilising the applicability of hypothesis 1 to complete the experiment.

Set Up to measure pain threshold

To measure pain threshold, we used the tourniquet technique, participants donned a blood pressure cuff. The experimenter then inflated the cuff at a fixed rate, which induced pain by reducing blood flow to the participant's arm. The participant has to say STOP the moment he feels uncomfortable. The readings on the sphygmomanometer were noted (in mmHg) and that would reflect the pain threshold of the person. Before beginning the experiment the pain threshold of each person was measured individually.

Experiment 1

35 participants were told they were participating in a study about the health benefits of exercise at work and that they would be adopting a series of yoga poses. Participants were randomly assigned to one of two postural conditions: **an expansive posture** associated with dominance, **a constricted posture** associated with submissiveness, or control. The different postures are shown in the figure below.



Dominant **Submissive** **Neutral**

Participants were then tasked to hold their assigned yoga pose for thirty seconds. Finally, they repeated the pain threshold test.

Results

We predicted that participants in the dominant pose condition would display a higher pain threshold than participants in the submissive one

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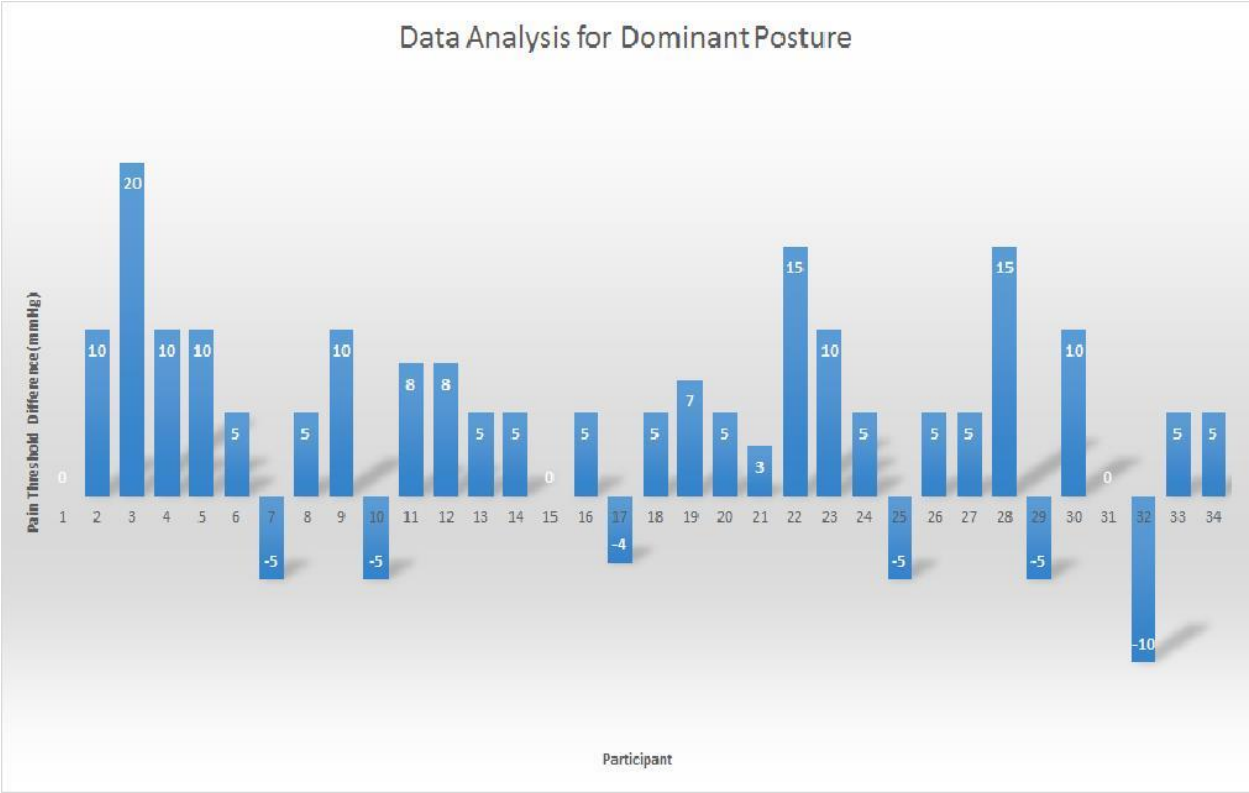
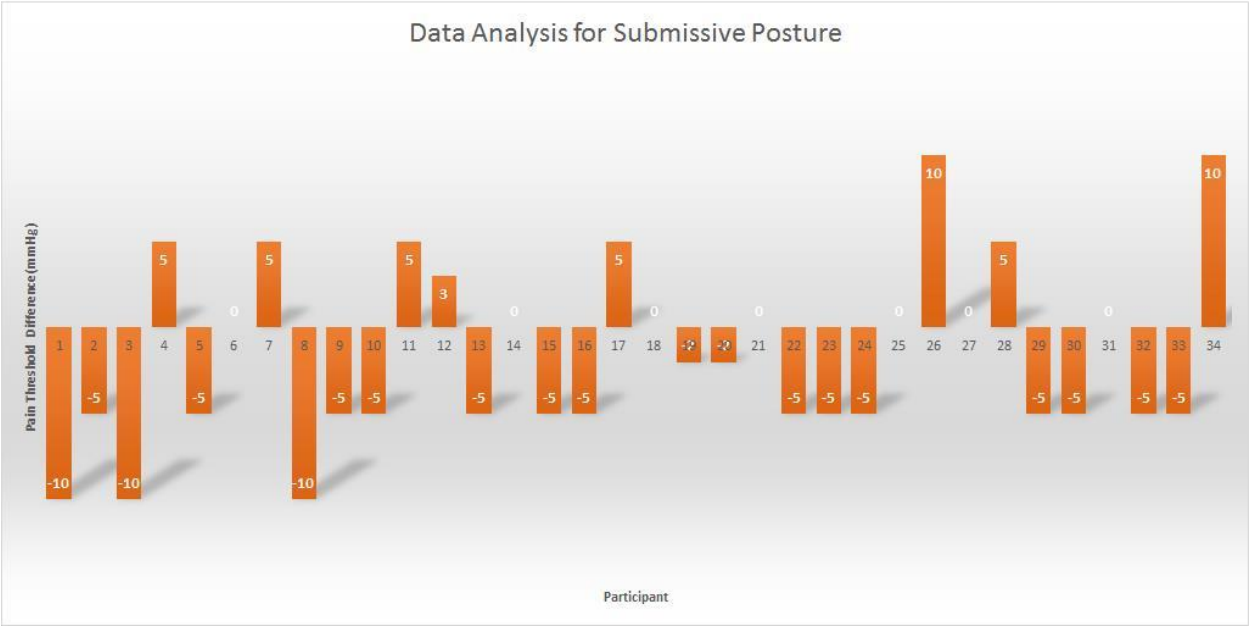
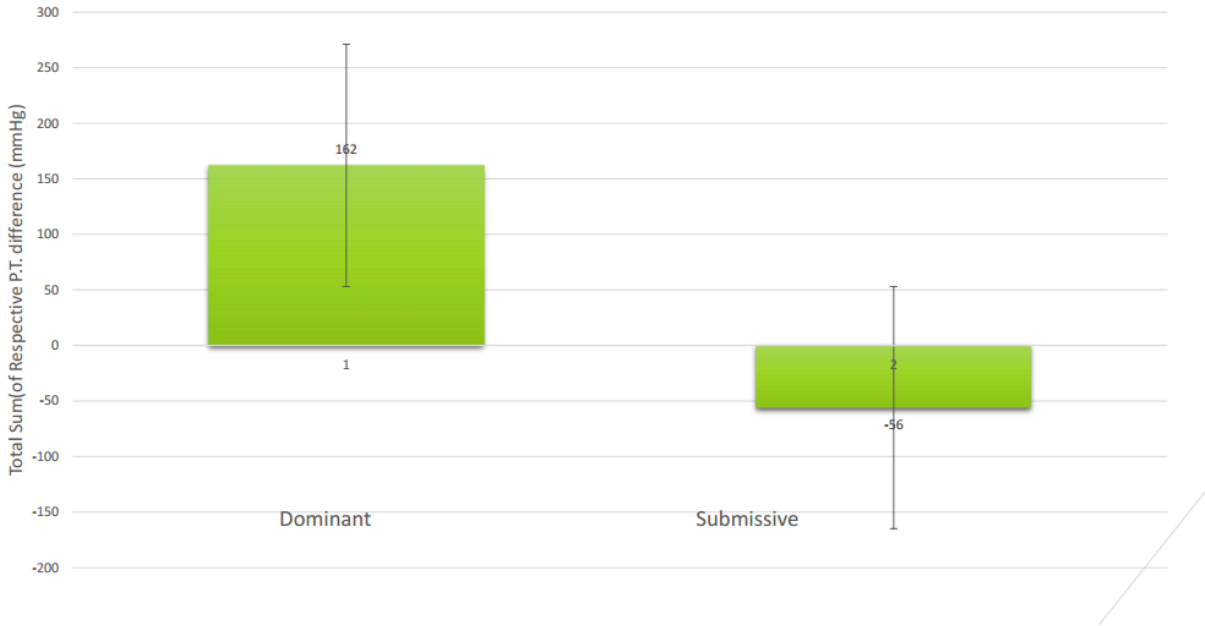




In Case 1, the standard deviation came out to be 6.47, In case 2 it came out to be 5.22

The comparative data analysis is shown below:

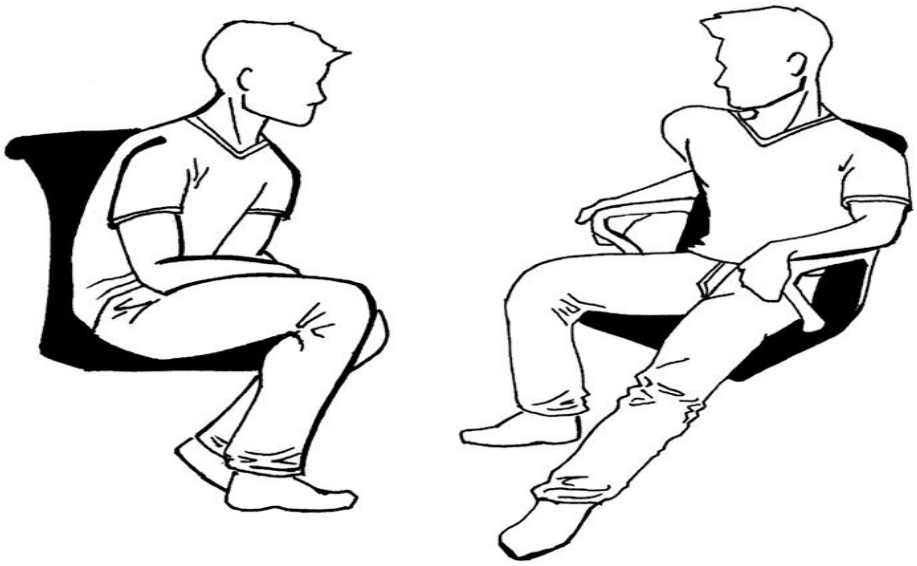


Experiment 2

12 participants were told they were participating in a study on relaxation that would require them to look at a series of nature photographs. We again measured pain threshold by means of the tourniquet technique.
Participants then engaged in a discussion task(on a particular topic) with a confederate.
In half of the sessions, confederates displayed dominance for the duration of the interaction by enacting behaviors that showed to be associated with dominance. In the remaining sessions, confederates displayed submissiveness.

We hypothesized that interacting with a “power posing” partner would engender a complementary experience of embodied power. Specifically, we hypothesized that interacting with a dominant confederate would lead participants to display lower pain thresholds (as a result of adopting the complementary constricted posture) than participants who interacted with a submissive confederate.

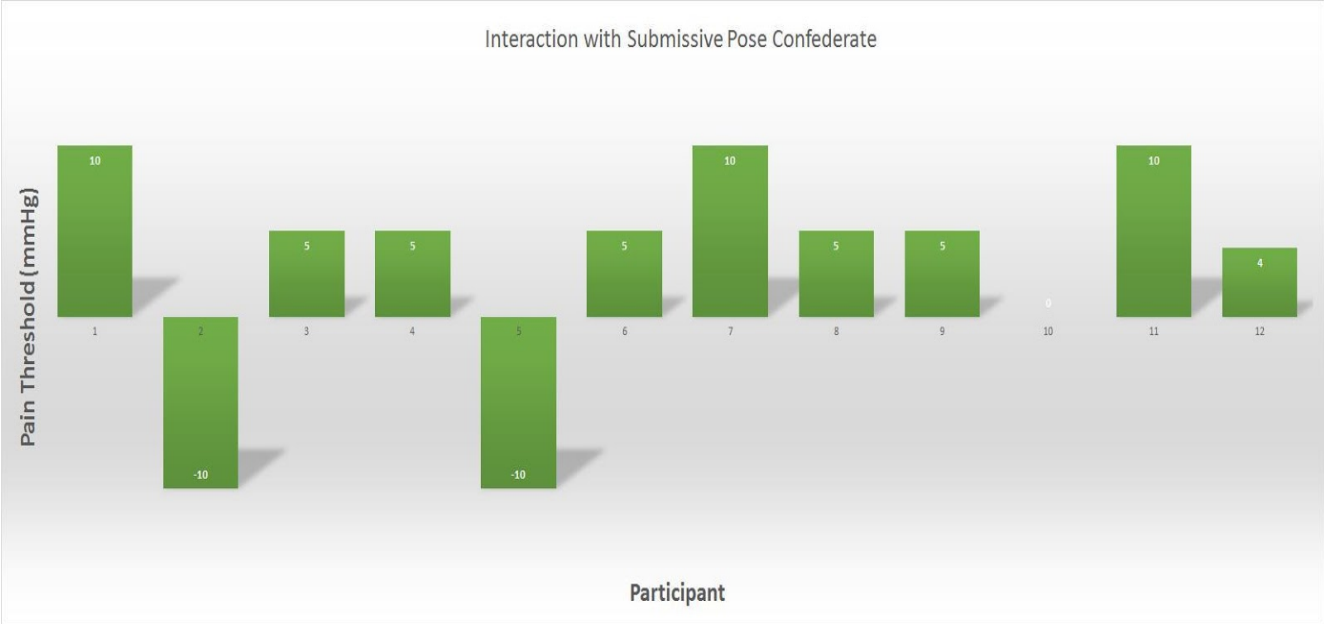
The posture adopted by the confederate is shown in the figure below while the other posture is being taken subconsciously by the participant.

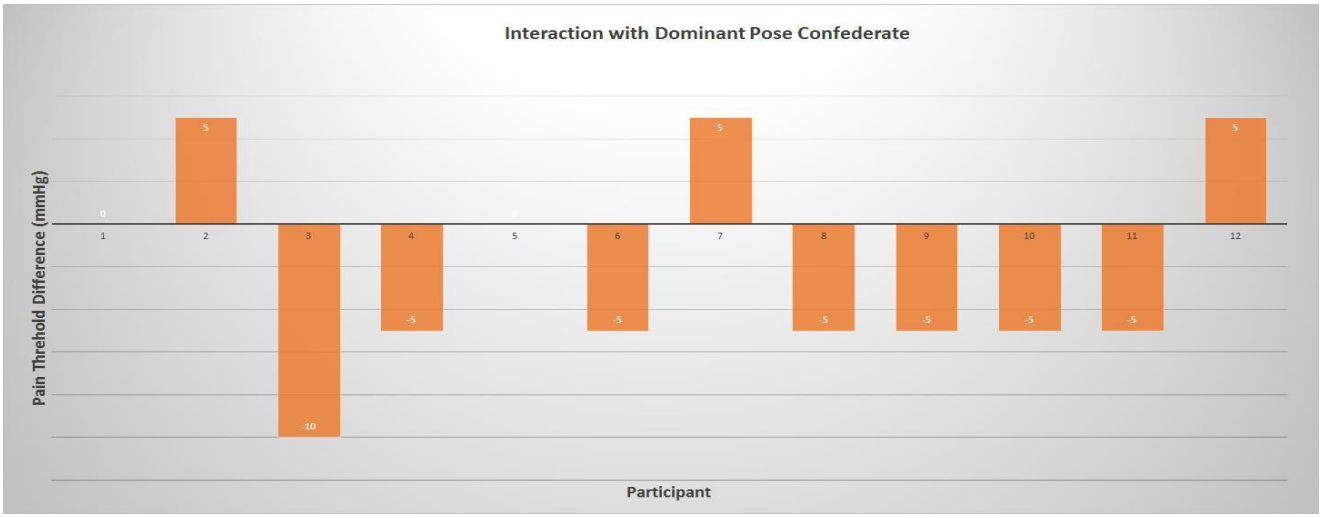


Submissive **Dominant**

Figure: Postures Exhibited by Confederate in Experiment 2.

Results





Discussion and Conclusion

In two experiments, we found that power posing was associated with higher pain thresholds when individuals(1) were instructed to adopt power poses, or (2) adopted power poses spontaneously in response to an interaction partner's behavior. Experiment 1 suggests that

power posing may be a useful tool for pain management. Even individuals who do not perceive themselves as having control over their circumstances may benefit from behaving as if they do by adopting power poses. Experiment 2 suggests that subtle interpersonal interactions with caregivers and doctors may also influence an individual's pain tolerance through the process of dominance complementarity.
The current research suggests that there may also be intrapersonal psychological and physiological consequences of complementary interactions.

A key theoretical contribution comes from the design of Experiment 2, which pitted a prediction based on a power prime – i.e., the participant's pain response will be consistent with the behaviors of the confederate – against a prediction based on interpersonal complementarity and embodied power—i.e., the participant's pain response will be consistent with behaviors complementary to those of the confederate. Results were consistent with the complementarity hypothesis. This finding highlights the dynamic social and interpersonal nature of embodied power. Simply perceiving or thinking about a powerful person should have different psychological and physiological effects than actually interacting with that person.

References

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