

DISSERTATION PROPOSAL 2020-21

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Student Name	AN Other
Provisional Dissertation Supervisor	
Date submitted	

Good title = defines topic area, design, and population of interest

Suggested Research Title/Area

The impact of chronic pain on attentional bias to pain related information in undergraduate students: an investigation using the dot-probe paradigm.

Please state the aim and rationale of your study:

The aim of this study is to explore whether experiencing chronic pain influences how people attend to pain related information. Literature suggests that individuals who report experiencing chronic pain may either be attentionally biased towards pain-related words due to the saliency of that information capturing their attention or they will be less likely to have an attentional bias to pain related words due to inhibitory mechanisms enforcing a protective avoidance element (Haggman et al., 2010). I have grouped the provided word list into four different categories, with results only demonstrating the 'sensory' group of words to have any effect upon attentional bias.

Clearly stated brief rationale and aims

Please state the main research question(s):

1. Are individuals who report experiencing Chronic pain attentionally biased towards pain-related stimuli in comparison to control participants who do not report experiencing chronic pain?
2. Does the intensity of chronic pain have an influence on levels of attentional bias?

Clearly stated research questions and hypotheses

Please state the hypothesis/hypotheses (if appropriate):

1. Individuals who report experiencing chronic pain will be attentionally biased to pain related stimuli to a greater extent than controls, due to the saliency of that information capturing their attention.
2. Those who experience high intensity levels of chronic pain will elicit greater attentional bias to pain related stimuli than those reporting low intensity levels of chronic pain.

Well written mini-review- complete sentences, APA refs, coherent!

What theory and empirical research evidence supports your research question?

There has been extensive research with regards to the attentional dispositions of an individual in relation to how they process pain-related information. There are various examples of this research which have been conducted over the years, including those from Asmundson, Kuperos and Norton (1997), Schoth, Nunes and Liossi (2012), and Dehghani, Sharpe and Nicholas (2004) to name but a few. However, to provide further context into the subject at hand, one must understand the meaning of what is referred to as 'attention' itself and how it relates to those with chronic pain.

The meaning of attention, in recent years, has been described as a process of how the importance of stimuli is determined by the inner mechanisms of the individual's mind and is filtered as such (Kahneman, 1973). This notion by Kahneman (1973) is to suggest that various messages are filtered in a given situation, allowing the individual to pick and choose which information to focus on based upon how relevant or significant that information is to the individual and to filter out less relevant information. An example of this was put forward by Cherry (1953) in his theory, known as 'the cocktail party problem'. While this theory focuses on auditory information with regards to selective attention, the theory still focuses upon the concept of an individual discriminating between different pieces of auditory information. The theory suggests that

given a situation in which multiple people are speaking within the same environment, an individual possesses the ability to selectively focus their attention upon a specified voice amongst a plethora of others (Arons, 1992). In essence, this theory suggests attention or selective attention to be that, amongst a plethora of information within a given situation, an individual is able to distinguish between different pieces of information and selectively chose which of those pieces of information to place their attention upon. Further advancements into understanding attention were made throughout the years.

Based upon previous research by Posner & Petersen (1990), it has been suggested the process of how attentional processes works may be observed through exposure to various conditions and situations. Due to the nature of the current research activity, theories of visual attention would also be relevant. An example of one such theory, and one that would be highly relevant to the current research activity, would be the suggestions of Shinn-Cunnigham (2008). Shinn-Cunnigham (2008) suggests that the process of attention entails the interaction between two key components, these being the perceptual objects and selective attention. This is to suggest that the individual differences in selective attention in the individual, such as biases to attention, interact with the individual's ability to perceive various objects or stimuli. As such, Shinn-Cunnigham (2008) is essentially suggesting that the interaction between individual differences in attentional bias and the individual's ability to visually perceive stimuli influences their process of attention.

In order to further understand these processes, participants who experience chronic pain will be targeted to take part in the study. A theoretical link between these variables lies within the writings of Pincus and Morley (2001) in which they suggest a model which provides an explanation as to how attentional bias and chronic pain may be linked as the result of three factors. The theory proposes that attentional biases towards chronic pain occur due to an overlap between three different schemas, these being the self, pain and illness. This overlap involves an instance in which pain is experienced by the individual on a frequent basis, the pain schema will then become integrated within the two other schemas, illness and self. The model then proposes that the attentional bias present is dependent upon the extent to which the pain schema is integrated (Pincus & Morley, 2001). The model operates under the assumption that those who experience pain on a frequent basis i.e. chronic pain, are to possess attentional bias towards pain-related information (Pincus & Morley, 2001). Overall, this demonstrates a model which examines attentional biases in those with chronic pain and serves to provide an explanation as to why these biases occur.

Reference List:

- Arons, B. (1992). A review of the cocktail party effect. *Journal of the American Voice I/O Society*. 12(7), 35-50.
- Asmundson, G.J., Kuperos, J.L., & Norton, G.R. (1997). Do patients with chronic pain selectively attend to pain-related information?: preliminary evidence for the mediating role of fear. *Pain*. 72(1-2), 27-32.
- Balota, D.A., Marsh, E., & Marsh, E.J. (2004). *Cognitive psychology: Key Readings*. Psychology Press.
- Bar-Haim, Y., Lamy, D., Pergamin, L., Bakermans-Kranenburg, M.J., & Van Ijzendoorn, M.H. (2007). Threat-related attentional bias in anxious and non-anxious individuals: a meta-analytic study. *Psychological Bulletin*. 133(1), 1.
- Beck, A. T. (1976). *Cognitive therapy and the emotional disorders*. New York: International Universities Press.
- Beck, A. T., Emery, G., & Greenberg, R. L. (1985). *Anxiety disorders and phobias: A cognitive perspective*. New York: Basic Books.
- Buckley, T.C., Blanchard, E.B., & Neill, W.T. (2000). Information processing and PTSD: A review of the empirical literature. *Clinical psychology review*. 20(8), 1041-106

Good APA
ref list,
good choice
of articles
(NB extract
only for
example)

Clearly states target population

Justifies target population and groupings

Provides a justification for participant number and sample size, linked to analysis

Please describe the intended participant group (including anticipated number of participants required) and any specific inclusion/exclusion criteria.

The participant sample will include Psychology & Counselling students at UWTSD over the age of 18, who will be able to sign up using the department's Experimental Management System (EMS) in exchange for course credit. To widen the scope of potential participants, staff and students from other courses from the university will also be gathered. All potential participants will also be informed that participation is entirely voluntary.

The study will target two participant groups. These will consist of those who report experiencing chronic pain, this defined as three or more months (Mersky, 1986), of varying degrees and those who report no chronic pain. This will include anyone who experiences chronic pain on a regular basis for more than three months (Turk & Okifuji, 2001). These individuals will then be placed into the 'pain/experimental group. The sample will also include individuals who do not experience any form of chronic pain to be placed into the 'healthy/control' group.

As the study involves a 2x2 mixed experimental design, the power behind each group will need to be taken into account. As such, this will require approximately 100 participants, with 50 participants for each research group. This is contrasted with the study by Yang et al (2013) in which a mere 48 participants were gathered for the entire study. This is also corroborated with another aforementioned study by Kuperos and Norton (1997) in which 41 participants were gathered. This presents low sample sizes and as such, the samples of this study will be larger by comparison as to ensure the power behind the data is robust.

Please provide brief details of the anticipated design (e.g., qualitative/quantitative, between/within/mixed, regression, focus groups, interviews, experimental, questionnaires) and main procedure for your study (it should be clear from this how you are actually planning to carry out your study, and what will be happening to your participants).

The study will involve a 2x2 mixed experimental design. The first independent variable will be two participant groups, with two levels, one being a 'healthy' control group and another being participants who report experiencing chronic pain, labelled as the 'pain' experimental group, this being the between-subjects variable (Admundson et al, 1997; Schoth & Liossi, 2010). The second independent variable will be the word types with two levels, 'pain-related' and 'neutral', being exposed to both participant groups. This will be the within-subjects variable. The dependent variable will be the reaction time (in milliseconds) and accuracy of seeing the dot after exposure to a pair of word stimuli.

Completion of the Graded Chronic Pain Scale (Von Korff, Ormel, Keefe, Dworkin, 1992) (please see below), will place participants in one of the two groups ("pain" or "healthy") as severity of chronic pain is an important factor for assessing chronic pain in individuals and creating sub-groups in this population (Milton, Börsbo, Rovner, Lundgren-Nilsson, Stibrant-Sunnerhagen, & Gerdle, 2013).

Describes design, IVs, DVs, specific design

Explains and justifies the planned experimental design clearly and succinctly

References and explains each measure/material

What materials/measures are you planning to use for data collection? (Be as specific as possible here – what type of data will you be obtaining, what specific topics/measures/scales/instruments will you be using and what will you do with this data?)

The Graded Chronic Pain Scale (Von Korff, Ormel, Keefe, Dworkin, 1992) asks participants to rate the severity of their experience of chronic pain. As the data collected by the questionnaire is continuous, the ability to create categories from this information is possible, these categories being the previously mentioned two participant groups.

The dot-probe paradigm (Halkiopoulos, 1981) require participants to focus upon a fixation cross on the computer screen. After this, two words will appear at the same time, on two separate locations on the screen. One word on the left and one on the right, with one being a pain-related and the other being a neutral word, which should not theoretically evoke any reaction. These words will be displayed for 500ms. After the display of these words, a dot will then appear on the screen in place of one of the words. This will repeat for

40 trials, with 40 pairs of words gathered from Hagmann et al's (2010) study. The words that appear in each trial will be randomised, as such, they will not appear in the same order of appearance they had in the original word list, they will not appear in patterns based on their category or whether they are pain-related or neutral words and their positions on the screen will not correlate at all. Out of the 40 pairs, 20 pain-related words and 20 neutral words will have the dot on their side of the screen, the randomisation of the trials ensures the order of the dot's appearance will not have a pattern.

Please describe the study procedure (what will your participant have to do from start to finish? It should be clear from this how you are actually planning to carry out your study, and what will happen to participants):

Participants will complete the study in an individualised sound and climate controlled booth in the Psychology Labs at UWTSU. Following the provision of the consent form and written informed consent, the participant will be seated in front of a PC and firstly asked to complete the Chronic Pain Scale questionnaire in hard copy format. Both groups will then be required to complete a computer task, this being the dot-probe paradigm (Halkiopoulos, 1981). This will then require the participant to focus upon a fixation cross on the computer screen. After this, two words will appear at the same time, on two separate locations on the screen. One word on the left and one on the right, with one being a pain-related and the other being a neutral word, which should not theoretically evoke any reaction. These words will be displayed for 500ms. After the display of these words, a dot will then appear on the screen in place of one of the words. The participant will then be required to press any of the designated buttons when they see the dot. The button that should be pressed will correlate to the side of the screen the dot appears on e.g. The 'A' key is pressed if the dot is on the left side of the screen and the 'L' key for the right side of the screen. Once these trials have completed, the study will then conclude and the participant will be provided with a debrief form and informed of their right to withdraw their data if they wished to do so.

Clearly explains what happens to each participant and in what order

Please describe the data you will obtain and how it will be analysed (e.g., test or questionnaire scores calculated as a mean and analysed quantitatively, recorded verbal reports analysed qualitatively, etc.):

The data being collected will include the participant's response times and accuracy to seeing the dot displayed on the screen after exposure to 40 word pairs, a method in line with Halkiopoulos' (1981) dot-probe paradigm.

If relevant, what statistical test will you use and how will your data be analysed through this test (e.g., two-way ANOVA, Multiple Regression, Chi Square, etc.):

To analyse the data, four 2x2 mixed ANOVAs will be conducted.

The first two ANOVAs will be based on the first research question (one on response time data and one on accuracy data) to establish a main effect of responses between the two participant groups (chronic pain vs. control), and a main effect of responses to the word type variable (pain vs. neutral). An interaction effect will also be established to determine the extent to which the group variable will affect the word type variable responses.

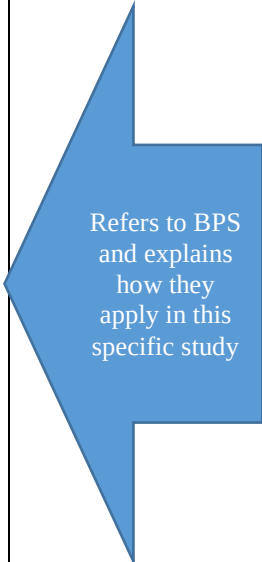
The second two ANOVAs (one on response time data and one on accuracy data) will be conducted to analyse the second research question to establish a main effect of responses between the two chronic pain participant groups (high vs. low intensity chronic pain), and a main effect of responses to the words (pain vs. neutral). An interaction effect will also be established to determine the extent to which the group variable will affect the word type variable responses.

Clearly describes what data and how it will be used for analysis

What are the main ethical issues that you will need to address in this study? (Please note all students will need to complete the full ethics form prior to final approval for data collection being given).

In accordance with the BPS code of human research ethics (2018) the following ethical considerations will be implemented: A consent form will be provided to participants to ensure they are able to provide informed written consent, and they fully understand what the study will require. Participants will be informed of their right to withdraw from the study at any time during the study if they so wished to do so. Participants will also be provided with a debrief form to inform them of the full purpose of the study, with contact details for both the researcher and the supervisor at the end of the study. The participant will also be informed of their opportunity to ask questions relating to the study. In addition to this, participants will be informed of their right to withdraw their data as they will not be able to do so once they have left the labs as the data will not be able to be traced back to them afterwards. The participant will also be informed that this opportunity will be their only one as once they leave the study, they will be unable to withdraw the data. The participant will be deceived to a certain extent during the task as they will not be aware of being categorised into different groups, this detail of categorisation will be revealed fully during the debrief. This disclosure of categorisation will be provided along with information about the concept of the study as well as offering the opportunity to ask questions at the end of the study or at a later time.

Ethical issues that may arise may include the possibility that a questionnaire requiring participants to state their type of chronic pain may be intrusive and may cause distress. As such, participants will be ensured that their data will be held strictly confidential and anonymously and will be informed of their ability to withdraw from the study at any time during the study, to mitigate this potential issue of discomfort. There may also be the possibility that their chronic pain becomes uncomfortable during the study. Because of this, it will prove highly important to ensure a balanced is struck between a comfortable amount of time for the participant to complete the study and ensuring enough data is collected to conduct a robust analysis.



Refers to BPS
and explains
how they
apply in this
specific study