

Research Project B

Assessment Type 3: Evaluation

Commented [1]: A+

"The words shaded in yellow on the student work provide evidence to support the assessment decision with reference to the Performance Standards. The comments and words shaded in pink are the commentary provided at implementation workshops to illustrate the elements of an Evaluation."

Is empathy a function of the brain which can be manipulated?

Summary of the research question and outcome

My research project question was inspired by a trip to India last year. From this experience I questioned how unwilling society was to eradicate social calamities, particularly poverty, and why some people were more inclined to act on issues of injustice than others. As I researched I discovered that empathy is a neurobiological function of the brain, particularly the left inferior frontal gyrus. I was able to correlate that neurobiological function was connected to the mirror neuron system, and is enhanced when life experiences stimulate an emotional response. I proved this through the application of two surveys which measured empathy levels. My outcome is in the form of a report explaining the results of my research. The key finding of my research is that empathy is not a static measurement but is dependent on age, gender and education, and is able to be manipulated and enhanced over time. (148 words)

Evaluation

In order to begin refining what was a broad topic I conducted extensive reading of online journals and articles to gain a greater understanding. The research process of **literature review** helped me refine my topic, think more deeply about the concepts and challenge my initial assumptions. For example, Zaki in his article published in *Scientific American* titled **'What me care? Young are less empathetic'** blamed the effects of technology on society or our lack of a tribal community for our lack of empathy. In contrast an article by Wein on the *National Institutes of Health* website titled **'Rats show empathy too'** presented a completely **new angle**. My initial idea that empathy was a quality restricted only to humans was challenged. This raised important questions within my research as to whether empathy was simply an emotion, or in fact a function of the brain.

Commented [2]: Makes a judgement, gives a reason and evidence.

Many of the articles I had built my understanding of empathy on **conflicted with other sources** so it became important for me to cross reference my research. It was through doing this that my investigation could be further refined, finding that empathy could be enhanced by ones mirror neuron system. It was from researching this that my inquiries led me to the *Oxford Brain Journal* which **discussed how the mirror neuron system functioned and hence validated earlier sources**. Not only was the content of this study **pivotal** for augmenting my understanding of how age, gender and education dictated one's ability to empathise, but it acted as the catalyst to the development of the qualitative research.

Commented [3]: Research process of **cross referencing**.

In order to vary the types of research I used for this project I decided to conduct some **qualitative tests** for empathy on some of my **peers to determine whether the results supported the claims of the academic articles or not**. I was able to access a large number of psychological tests on the internet including The Balanced Emotional Empathy Scale (BEES), Basic Empathy Scale (BES), the Toronto Empathy Questionnaire (TEQ) and the Yawning Test. My research indicated that many of these tests have weaknesses and can be

Commented [4]: Judgement supported by two examples: finding out about age, gender etc., and catalyst for future development of research.

misinterpreted. For example the Yawning Test is based on the premise that in a group of people, if one person yawns, the first person to catch the yawn would be the most empathic. I think there needs to be greater research to determine whether this test provides valid or credible results and consequently I dismissed it as a valid test for my purposes. However, one consistent aspect of the results of all of the tests is that empathy is higher in females than males and this is something I would like to test.

Commented [5]: Judgement: dismissed processes as invalid, with reasons.

Having reviewed the descriptions of these various tests I decided to conduct two of the tests myself. The two tests which became the pivotal part of my qualitative research were the 'Interpersonal Reactivity Index' test (IRI) and the 'Reading the Mind in the Eyes' test (RME) both sourced through the *Oxford Brain Journal*. The two tests enabled me to try to independently validate my findings. As some of my sources stated that empathy could in fact be manipulated it was important for me to substantiate whether empathy was actually a static measurement. Initially, the 'Interpersonal Reactivity' test is a test designed to measure empathy through four different sub scales including testing perspective taking, empathetic concern, personal distress and fantasy scales. I chose to use this test because it is considered by many of the sources to demonstrate retest reliability and convergent validity. It was also easy and free to get a copy of the test online and the instructions were clear. This test was conducted in the school community and provided indications that empathy was dependent on gender. However, further research indicated that the sub scales which composed the test were uncorrelated and deemed that a higher score in any one sub-scale did not indicate a greater level of empathy. Not only was this detrimental to the substantiation of my findings but it also meant I had used a lot of time conducting and evaluating 150 sets of results. This was a major weakness in my research and highlighted flaws in the approach I took.

Commented [6]: Assesses reliability and validity.

As it was initially difficult to draw conclusions from the findings using the 'Interpersonal Reactivity' test I sought out another test to use to help me validate my results. The secondary survey I selected was the 'Reading the Mind in the Eyes' test. This test requires participants to determine mental states from photos of pairs of eyes. It has been used in many studies around the world and is considered by experts to be a test that is not influenced by a participant's cognitive ability or cultural background. However, I did determine that the test required the subject to have a good vocabulary and an understanding of a range of emotions to select from. For example, a participant needed to be able to tell the difference between emotions such as being skeptical, sarcastic, aghast, insisting, impatient, preoccupied or flirtatious based on the photos of eyes. This test was readily accessible on the internet and easy to administer as it could be done online. I ensured that each participant remained anonymous for privacy reasons. In order to draw valid conclusions I made sure that there were equal numbers of male and female participants from a broad spectrum of social groups and a range of different ages. This is what eventually provided the success of my findings through this test. I found that age, gender and education were all factors which influenced empathy, proving that the empathetic brain could in fact be manipulated. It is also rewarding to know that empathy at a young age is still developing and growing throughout adolescence.

Commented [7]: Insightful evaluation of this test – considered validity and reliability.

Although the two tests were conducted in order to validate my findings, the participants did not compose a true cross-section of society, given that it was conducted only within the school and local community.

Commented [8]: More analysis of reliability and validity.

As I expanded my research into the field of empathy, I came to find that there were many convoluted concepts which were difficult to understand; hence it became important for me to contact experts in the field of neurology to ask them for clearer explanations. However, this is a very narrow field and there were few experts in the field in Adelaide so this was a challenge

Commented [9]: Identifies challenges and makes decisions.

that could not be overcome. As I was unable to contact a local expert I could have tried emailing or phoning interstate or overseas experts in the field of psychology but I did not follow up this options. The many complex terms and concepts I discovered were difficult to explain in a simple manner but this has forced me to improve my vocabulary.

Another problem I faced was that the results of tests indicated whether one was empathetic or not but did not help determine why. Much of the literature suggested that challenging circumstances and life experiences could add to one's empathetic ability but I was not able to test this. It might have been useful for me to use the results from the 'Reading the Mind in the Eyes Test' and research further by interviewing a sample of highly empathetic and less empathetic respondents to find out about their life experiences or backgrounds. It would have been relevant to try to determine why people are more empathetic.

Just as there was much strength in my research, there were similarly many weaknesses which limited the effectiveness of my outcome. I failed to manage my time appropriately for my research intention and hence was unable to interrelate various aspects of the empathetic brain. I had discovered that empathy was principally a function of the left inferior frontal gyrus as this was the sector of the brain which distinguished emotional responses. However, I found that there were many other subdivisions of the brain which coordinated responses and hence my research was not fully reflective of empathy. As I delved deeper into what seemed like a containable topic and my understanding grew I realized the enormity of the topic and hope to be able to further explore the topic in the future as part of my chosen career in medicine.

As attested through my outcome, a formal report, empathy is a function of the brain which can be enhanced. Consequently, my findings have become important in justifying the importance of immersion learning in society. For this reason, my outcome can be considered to be valuable for schools who might explore how to provide opportunities for students to improve their empathy over time.

Commented [10]: Identifies strengths and weaknesses in the outcome.

Assessment Comments

This response is an A+ grade.

Synthesis

S3 Clear evaluation uses sophisticated, subject specific language. The writing is logically structured and incorporates elements of E1, E2 and E3 in a fluid, integrated manner.

Evaluation

E1 Insightful evaluation of limitations and benefits of the research processes, for example:

- one of the two tests undertaken as part of the process was identified, with reasons provided, as 'detrimental to the substantiation of... findings' (e.g. time wasting)
- recognition that the sample group comprising the school and local community, did not represent a true cross-section of society
- acknowledgement that, while the test results indicated a person's empathy, they did not contribute to an understanding of why the person was empathetic
- realisation that the results of emotional tests could have been followed up with interviews of 'a sample of highly empathetic and less empathetic respondents' in order to determine reasons why some people are more empathetic
- recognition that exposure to complex terms and concepts in the literature review process contributed to an improvement in the student's vocabulary.

E2 Critical evaluation of progress made, and actions taken in response to challenges and/or opportunities specific to the research processes used, include:

- recognition that conflicting articles led to refining of research
- decision made to reject one test as invalid, and to conduct two tests only in the process followed to support the claims of academic articles
- realisation that the topic was not containable and that time was not managed well
- realisation (paragraph 2) that species other than humans show empathy, and that empathy, as an emotion, is a function of the brain
- 'convoluted concepts' were difficult to understand and assistance from a local expert neurologist was not easily accessible.

E3 Brief but insightful reflection on the quality of the research outcome:

- the initial question is answered in the formal report, indicating a successful outcome
- results of research can be applied to support immersion learning - valuable in schools
- recognition of weaknesses that limited quality of the outcome, for example, depth/breadth of topic greater than expected, problems with time-management.

Performance Standards for Stage 2 Research Project B

	<i>Planning</i>	<i>Development</i>	<i>Synthesis</i>	<i>Evaluation</i>
	Assessment Type 1: Folio		Assessment Type 2: Research Outcome	
			Assessment Type 3: Evaluation	
A	<p>P1 Thorough consideration and refinement of a research question.</p> <p>P2 Thorough planning of research processes that are highly appropriate to the research question.</p>	<p>D1 Thorough and highly resourceful development of the research.</p> <p>D2 In-depth analysis of information and exploration of ideas to develop the research.</p> <p>D3 Highly effective development of knowledge and skills specific to the research question.</p> <p>D4 Thorough and informed understanding and development of one or more capabilities.</p>	<p>S1 Insightful synthesis of knowledge, skills, and ideas to produce a resolution to the research question.</p> <p>S2 Insightful and thorough substantiation of key findings relevant to the research outcome.</p> <p>S3 Clear and coherent expression of ideas.</p>	<p>E1 Insightful evaluation of the research processes used, specific to the research question.</p> <p>E2 Critical evaluation of decisions made in response to challenges and/or opportunities specific to the research processes used.</p> <p>E3 Insightful evaluation of the quality of the research outcome</p>
B	<p>P1 Consideration and some refinement of a research question.</p> <p>P2 Considered planning of research processes that are appropriate to the research question.</p>	<p>D1 Considered and mostly resourceful development of the research.</p> <p>D2 Some complexity in analysis of information and exploration of ideas to develop the research.</p> <p>D3 Effective development of knowledge and skills specific to the research question.</p> <p>D4 Informed understanding and development of one or more capabilities.</p>	<p>S1 Considered synthesis of knowledge, skills, and ideas to produce a resolution to the research question.</p> <p>S2 Substantiation of most key findings relevant to the research outcome.</p> <p>S3 Mostly clear and coherent expression of ideas.</p>	<p>E1 Considered evaluation of the research processes used, specific to the research question.</p> <p>E2 Some complexity in evaluation of decisions made in response to challenges and/or opportunities specific to the research processes used.</p> <p>E3 Considered evaluation of the quality of the research outcome</p>
C	<p>P1 Some consideration of a research question, but little evidence of refinement.</p> <p>P2 Satisfactory planning of research processes that are appropriate to the research question.</p>	<p>D1 Satisfactory development of the research.</p> <p>D2 Satisfactory analysis of information and exploration of ideas to develop the research.</p> <p>D3 Satisfactory development of knowledge and skills specific to the research question.</p> <p>D4 Satisfactory understanding and development of one or more capabilities.</p>	<p>S1 Satisfactory synthesis of knowledge, skills, and ideas to produce a resolution to the research question.</p> <p>S2 Substantiation of some key findings relevant to the research outcome.</p> <p>S3 Generally clear expression of ideas.</p>	<p>E1 Recount with some evaluation of the research processes used.</p> <p>E2 Some evaluation, with mostly description of decisions made in response to challenges and/or opportunities specific to the research processes used.</p> <p>E3 Satisfactory evaluation of the quality of the research outcome</p>
D	<p>P1 Basic consideration and identification of a broad research question.</p> <p>P2 Partial planning of research processes that may be appropriate to the research question.</p>	<p>D1 Development of some aspects of the research.</p> <p>D2 Collection rather than analysis of information, with some superficial description of an idea to develop the research.</p> <p>D3 Superficial development of some knowledge and skills specific to the research question.</p> <p>D4 Basic understanding and development of one or more capabilities</p>	<p>S1 Basic use of information and ideas to produce a resolution to the research question.</p> <p>S2 Basic explanation of ideas related to the research outcome.</p> <p>S3 Basic expression of ideas.</p>	<p>E1 Superficial description of the research processes used.</p> <p>E2 Basic description of decisions made in response to challenges and/or opportunities specific to the research processes used.</p> <p>E3 Superficial evaluation of the quality of the research outcome</p>
E	<p>P1 Attempted consideration and identification of an area for research.</p> <p>P2 Attempted planning of an aspect of the research process.</p>	<p>D1 Attempted development of an aspect of the research.</p> <p>D2 Attempted collection of basic information, with some partial description of an idea.</p> <p>D3 Attempted development of one or more skills that may be related to the research question.</p> <p>D4 Attempted understanding and development of one or more capabilities.</p>	<p>S1 Attempted use of an idea to produce a resolution to the research question.</p> <p>S2 Limited explanation of an idea or an aspect of the research outcome.</p> <p>S3 Attempted expression of ideas.</p>	<p>E1 Attempted description of the research process used.</p> <p>E2 Attempted description of decisions made in response to a challenge and/or opportunity specific to the research processes used.</p> <p>E3 Attempted evaluation of the quality of the research outcome</p>