

Against All Odds: Students' Interest in, and Perceived Value of, Research and Nonresearch Psychology Subjects

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Abstract

Although research literacy is necessary for the competent delivery of psychological services, many psychology students hold negative attitudes toward research subjects. The current study explored undergraduate students' perceptions of research subjects relative to nonresearch subjects. A sample of 249 Australian (45.4%) and Singaporean (54.6%) first-year university students ($M_{\text{age}} = 21.27$, $SD_{\text{age}} = 5.14$, females = 75.9%) indicated their interest in, and perceived value of, 32 psychology subjects (based on title and a short description). They also nominated their most/least interested and valued subject and provided a free-text explanation for their selections. Participants perceived research subjects as significantly less interesting and valuable relative to nonresearch subjects (d values were indicative of a large difference for interest and a small-to-medium different for value). Cluster analysis indicated that research subjects are seen as distinct, forming their own cluster. This finding was supported by thematic analysis of participants' open-ended responses. Students considered research subjects to be especially difficult, requiring skills they did not possess or enjoy using (e.g., mathematics), and lacking relevance to their future studies and intended careers. The findings suggest that research methods instructors should aim to emphasize the relevance of research to practice in high interest areas (e.g., psychopathology).

Keywords

Tertiary psychology education, teaching and learning, statistics and research methodology, research education, undergraduate students

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An evidence-based approach is crucial for the competent delivery of psychological assessments and interventions (International Association of Applied Psychology and International Union of Psychological Science, 2016). Employing an evidence-based approach to the provision of psychological services necessitates the ability to identify, comprehend, and critique empirical research. Accrediting bodies in Australia, Canada, the UK, and the US all identify research literacy as a vital competency for psychology graduates (American Psychological Association, 2013; Australian Psychology Accreditation Council [APAC], 2019; Canadian Psychological Association, 2021; Quality Assurance Agency for Higher Education, 2019). The importance of this graduate competency is reflected in university curricula. In the US, practically all undergraduate psychology programs offer research methods subjects¹ and the vast majority offer statistics subjects (Norcross et al., 2016). Similarly, in Australia, all accredited three-year psychology programs include at least one dedicated research methods and statistics subject (Maher et al., 2023), and all accredited fourth-year (preprofessional) programs require students to carry out a substantive research project (APAC, 2019).

Despite the importance of understanding research to psychological practice, students tend to dislike research methods and statistics subjects (Rajecki et al., 2005; Vittengl et al., 2004). This aversion may stem from the inherent difficulty of the topic or anxiety about having to employ statistical analyses. Indeed, students report finding fundamental research methods concepts difficult to comprehend (Stoa et al., 2022) and perceive statistics to be more difficult than other subject areas (Zeidner, 1991). In one study, over half of Finish students reported difficulties learning quantitative methods (Murtonen, 2005). Mathematics and statistics anxiety are common among students (Dowker et al., 2016; Ruggeri et al., 2008) and can lead to study procrastination or even total avoidance (Dowker et al., 2016; Onwuegbuzie, 2004). Many students identify performing statistical analyses as a major challenge to their ability to successfully complete research subjects (Strohmetz et al., 2023). Related to statistics anxiety is research process anxiety, concerning fear of research language and the broader application of research knowledge (Balloo, 2019; Onwuegbuzie, 1997).

Another potential cause of students' aversion to research methods is the perception that the topic lacks relevance (Vittengl et al., 2004). A survey of US research methods instructors found that most believe the primary purpose of research methods subjects is to develop students' capacity to think scientifically (Ciarocco et al., 2017). In contrast to faculty, students are more likely to view the primary purpose of research subjects as learning how to conduct research (Strohmetz et al., 2023). While scientific thinking and research skills/practices are related, many authors do conceptualize these as being distinct (see Diaz et al., 2023; Garcia-Carmona, 2023). For example, in Murtonen and Salmento's (2019) model of scientific thinking, research skills are just one component of scientific thinking alongside critical thinking, epistemic understanding (recognizing the limitations of scientific knowledge), evidence-based reasoning, and contextual understanding (situating knowledge in certain contexts, e.g., within one's discipline).

Students who view the primary purpose of research subjects as learning to conduct research may undervalue such subjects if they believe that they will not engage in research activities in the workforce. Indeed, many students do believe that they will not engage in research in their careers (Murtonen et al., 2008). Further, many students are largely unaware of careers available to psychology graduates beyond counseling, such as market research or data analytics (Collisson & Eck, 2022). Mere exposure to research methods content may not be enough to shift students' perceptions of the value of research. One longitudinal study found that students' perceptions of the utility of

research methods and statistics actually declined after taking a research methods subject (Sizemore & Lewandowski, 2009).

A dramatic demonstration of students' lack of interest in research subjects comes from Uttl et al. (2013). As part of this study, Canadian first-year undergraduates were presented with a list of psychology subjects—three of which focused on statistical analysis methods—and asked to rate their interest in each. Students reported far less interest in quantitative subjects than nonquantitative subjects (in fact, of 43 subjects, the three quantitative subjects were rated lowest in terms of interest). These findings held among both psychology and nonpsychology majors. This lack of interest is problematic as subject area interest promotes deep learning (Harackiewicz & Hulleman, 2010).

It is commonly assumed that perceiving a subject area to have *utility value* (an object's usefulness to one's current or future goals; Harackiewicz & Hulleman, 2010) will promote interest in that area. Indeed, models of interest typically recognize both feeling-related valences (feelings associated with an object) and value-related valences (perceived personal relevance of an object) as fundamental aspects of interest (Eccles & Wigfield, 2002). For example, Hidi and Renninger's (2006) model of academic interest development posits that individual interest in an academic domain develops from positive affective experiences with that domain, increased domain knowledge, and perceiving the domain to have value. The success of utility-value interventions (which manipulate perceptions of the utility value of an academic subject area) further indicates a link between value and interest. Such interventions have proven effective in promoting academic interest and achievement (Hulleman & Harackiewicz, 2021). There is even evidence to indicate that utility-value interventions are effective with undergraduate students studying psychology specifically (Hulleman et al., 2010). Drawing on this literature, we anticipated that students' perceptions of the value of research subjects would be strongly linked to their interest in taking research subjects. Nonetheless, it is also possible that students could perceive research subjects as uninteresting, while also recognizing that they are of value to their future studies, desired careers, or the cultivation of a scientific mindset.

Current Study

The present study aimed to extend the work of Uttl et al. (2013) on research subject interest in three ways: 1) by investigating if Australian and Singaporean psychology students similarly show a lack of interest in research subjects relative to nonresearch subjects (as students' perceptions of research can differ between countries; Murtonen, 2005), 2) by additionally measuring students' perceptions of the value of research subjects (so that the relationship between value and interest can be explored in the context of research instruction), and 3) by qualitatively exploring the factors which drive subject interest and perceived value. The study employed a mixed-method approach in which undergraduate student participants were asked to rate a list of subjects in terms of interest and perceived value. Participants were also provided with an opportunity to elaborate on their reasoning for these ratings via open-ended questions. Specifically, we considered the following research questions and hypotheses:

- RQ1: Do subjects cluster in relation to student interest and perceived value?
- H1: Participants will be less interested in research subjects relative to nonresearch subjects.
- H2: Participants will perceive research subjects to be less valuable than nonresearch subjects.
- H3: Participants' perceptions of the value of research subjects will positively correlate with research subject interest.

- RQ2: What factors influence students' perceptions of how interesting and valuable they perceive subjects to be?

Method

Design and Procedure

The present study employed an online survey design with a convenience sample of first-year undergraduate students. This study was approved by the Human Research Ethics Committee of James Cook University (approval ID: H8730).

A student research participation platform (SONA) was used to recruit students undertaking first year psychology subjects at the Australian and Singaporean campuses of James Cook University. First-year students were targeted for recruitment because they would not yet have taken a research subject (due to the sequence of the degree program at the authors' institution); thus, their perceptions were less likely to be influenced by actual experiences of learning research methods. Participants were given course credit in exchange for their participation. A link to the study was also posted to social media groups aimed at Australian psychology students. The study was open from March 2022 to January 2023. It was administered through Qualtrics and took most participants around 20 min to complete.

Participants

Participants living outside of Australia or Singapore, and those who indicated that they were not in their first year of a bachelor or diploma degree program, were excluded from the final dataset. The final sample consisted of 249 student participants residing in Australia ($n = 113$, 45.4%) and Singapore ($n = 136$, 54.6%), aged between 17 and 61 years ($M = 21.27$, $SD = 5.14$). The majority of the sample identified as female ($n = 189$, 75.9%), whereas 53 participants identified as male (21.3%), and five participants identified as gender fluid or nonbinary (2.0%). Most participants ($n = 194$, 77.9%) were doing a psychology degree (e.g., Bachelor of Psychological Science, Bachelor of Psychology, Bachelor of Arts majoring in Psychology, etc), followed by a sports and exercise science ($n = 22$, 8.8%), speech pathology ($n = 15$, 6.0%), or social work degree ($n = 12$, 4.8%). Six (2.4%) participants were undertaking a degree related to some other subject area. Most participants were studying a bachelor's degree ($n = 228$, 91.6%), although some participants were studying at the diploma level ($n = 10$, 4.0%) and 11 participants (4.4%) did not provide this information.

Materials

Subject List. A list of 32 psychology subjects was generated based on the subjects offered at the authors' institution, those listed in the Uttl et al. (2013) study, and the subject catalogue of the University of Melbourne (which is a much larger university than the authors' institution). This was done to ensure that the list covered subjects taught across most Australian psychology degree programs (e.g., *Personality*) but also more niche electives offered at larger institutions (e.g., *Psychology of Death and Dying*). Each entry consisted of a title and a short (one-to-two sentence) description. An example subject title and description is "*Environmental Psychology*: This subject explores the psychological implications of natural and human-made and modified settings." See Table 1 for the list of subjects and Supplementary Materials (Table S1) for subject descriptions in full. Participants were presented with this list twice: once in relation to subject interest and once in relation to perceived value. The order in which the subjects were presented was randomized.

Table 1. Interest in, and Perceived Value of, Each Subject.

	Interest		Value		Frequencies (%)			
	M	SD	M	SD	Most Interest	Least Interest	Most Value	Least Value
Research Subjects								
Intro. Research Methods & Data Analysis	2.78	1.21	3.65	1.27	0 (0.0)	27 (10.9)	2 (0.8)	9 (3.8)
Intermed. Research Methods & Data Analysis	2.68	1.20	3.63	1.26	0 (0.0)	26 (10.5)	1 (0.4)	6 (2.5)
Adv. Research Methods & Data Analysis	2.68	1.23	3.61	1.29	0 (0.0)	45 (18.1)	6 (2.5)	15 (6.3)
Nonresearch Subjects								
Adolescence Development	4.02	1.10	4.33	0.94	14 (5.6)	2 (0.8)	9 (3.8)	0 (0.0)
Cognitive Neuroscience	3.74	1.14	4.13	1.03	9 (3.6)	3 (1.2)	3 (1.3)	0 (0.0)
Communicating Psych.	3.55	1.20	4.06	1.05	3 (1.2)	8 (3.2)	16 (6.8)	6 (2.5)
Community Health Psych.	3.64	1.11	4.12	0.99	2 (0.8)	0 (0.0)	4 (1.7)	0 (0.0)
Counseling	4.02	1.13	4.31	1.06	23 (9.3)	4 (1.6)	39 (16.5)	2 (0.8)
Critical Thinking in Psych.	3.59	1.11	4.08	1.05	4 (1.6)	7 (2.8)	11 (4.6)	7 (3.0)
Environmental Psych.	3.25	1.18	3.54	1.20	3 (1.2)	14 (5.6)	1 (0.4)	5 (2.1)
Evolutionary Psych.	3.41	1.20	3.42	1.21	1 (0.4)	3 (1.2)	1 (0.4)	9 (3.8)
Forensic Psych.	4.23	1.09	3.86	1.29	71 (28.6)	3 (1.2)	13 (5.5)	15 (6.3)
History of Psych.	3.00	1.35	2.96	1.28	2 (0.8)	36 (14.5)	1 (0.4)	37 (15.6)
Individual Health Psych.	3.83	1.11	4.19	0.98	9 (3.6)	1 (0.4)	6 (2.5)	1 (0.4)
Intercultural Psych.	3.49	1.20	4.03	1.01	3 (1.2)	3 (1.2)	6 (2.5)	5 (2.1)
Intro. Psych. 1	3.62	1.06	4.01	1.10	3 (1.2)	4 (1.6)	20 (8.4)	3 (1.3)
Intro. Psych. 2	3.72	1.03	4.07	1.04	2 (0.8)	0 (0.0)	3 (1.3)	1 (0.4)
Intro. to Psych. Neuroscience	3.76	1.17	4.06	1.04	4 (1.6)	3 (1.2)	1 (0.4)	0 (0.0)
Learning & Behavior	3.76	1.20	4.19	0.99	3 (1.2)	1 (0.4)	9 (3.8)	0 (0.0)
Lifespan Development	3.48	1.18	3.93	1.02	6 (2.4)	2 (0.8)	11 (4.6)	3 (1.3)
Memory & Cognition	3.89	1.03	4.21	0.98	2 (0.8)	1 (0.4)	10 (4.2)	0 (0.0)
Music Psych.	3.21	1.36	2.86	1.25	8 (3.2)	30 (12.1)	1 (0.4)	74 (31.2)
Organizational Psych.	3.11	1.22	3.49	1.21	3 (1.2)	11 (4.4)	4 (1.7)	10 (4.2)
Personality	4.27	0.98	4.26	0.93	6 (2.4)	0 (0.0)	5 (2.1)	1 (0.4)
Psychological Assessment	3.69	1.19	4.05	1.16	7 (2.8)	0 (0.0)	16 (6.8)	1 (0.4)
Psych. of Ageing	3.52	1.09	3.78	1.07	2 (0.8)	3 (1.2)	2 (0.8)	4 (1.7)
Psych. of Death & Dying	3.98	1.24	3.68	1.24	11 (4.4)	4 (1.6)	2 (0.8)	14 (5.9)
Psych. of Sexuality	3.84	1.15	3.69	1.24	7 (2.8)	4 (1.6)	2 (0.8)	6 (2.5)
Psychopharmacology	3.96	1.10	4.09	1.10	5 (2.0)	1 (0.4)	5 (2.1)	2 (0.8)
Psychopathology	4.33	0.94	4.31	1.00	26 (10.5)	0 (0.0)	15 (6.3)	0 (0.0)
Sensation & Perception	3.59	1.12	3.92	1.04	0 (0.0)	2 (0.8)	2 (0.8)	1 (0.4)
Social Psych.	4.07	1.02	4.25	0.96	9 (3.6)	0 (0.0)	10 (4.2)	0 (0.0)

Note. Adv. = Advanced; Intermed. = Intermediate; Intro. = Introduction; Psych. = Psychology. Total number of responses: Most interest = 248; Least interest = 248; Most value = 237; Least value = 237.

Subject Interest and Value. Subject interest was measured on a 5-point scale where 1 = *not at all interested* and 5 = *very interested*. Participants were also asked to rate how valuable they believe each subject to be to their future career on a 5-point scale where 1 = *not at all valuable* and 5 =

very valuable. Participants were instructed to respond based on “the information provided about the subject’s content/focus, rather than who you might have as a teacher and/or at what point in your degree you may be at when taking the subject.”

Of the 32 subjects listed, three subjects related directly to research methods and statistical analysis: *Introduction to Research Methods and Data Analysis*, *Intermediate Research Methods and Data Analysis* and *Advanced Research Methods and Data Analysis*. Following Uttl et al. (2013), interest scores were averaged across these three subjects to produce an index of *research subject interest*. We followed the same method to get *research subject value* scores. The other 29 subjects were categorized as “non-research”² with responses being averaged across these subjects to produce *nonresearch subject interest* and *nonresearch subject value* scores. In all cases, high scores (range: 1–5) indicate greater interest or perceived value.

Participants were also asked to select (from drop-down lists) the subject they are most interested in taking, least interested in taking, believe will be most valuable to their future, and believe will be least valuable to their future. Four open-ended questions were also included to probe participants’ reasoning for these choices: “Thinking about the subject description you ranked highest [on interest]/ranked lowest [on interest]/ranked most valuable/ranked least valuable, what is the reasoning behind this ranking?”

Demographics. Participants were asked their age, gender, country of residence, degree of study (open-ended question), and their year level of study within this degree.

Data Analysis

Missing data were minimal across the 32 subject interest items (with no more than two missing datapoints for any one item). Across the 32 subject value items, all items were missing between 11 and 13 datapoints. For the purposes of creating scores representing research subject interest, research subject value, nonresearch subject interest, and nonresearch subject value, it was determined that if a participant had responded to at least 80% of relevant items (e.g., gave a value rating for at least 23 of the 29 nonresearch subjects) that a score would be calculated by averaging their available responses.

Participants’ perceptions of subject offerings were explored using descriptive statistics (means, standard deviations, frequency counts). RQ1 was investigated using *k*-means cluster analysis. *k*-Means clustering is a method for assigning datapoints to subgroups (clusters) based on their similarity on specified quantitative variables. It requires the researcher to indicate the number of clusters (*k*) in advance. Specifically, we performed cluster analysis using mean interest and value scores, treating each subject as a unit of analysis (see Perkovic et al., 2022, for a similar analytic approach). The analysis was performed in R using the *factoextra* package (v.1.0.7; Kassambara & Mundt, 2020). The *NbClust* package (v.3.0.1; Charrad et al., 2014), which produces 30 cluster number indices, was used to determine the optimal number of clusters in the dataset. We then applied the “majority rule” by determining the cluster solution with the greatest number of indices supporting it. Data were scaled prior to performing *k*-means clustering.

H1 and H2 were assessed via paired-sample *t* tests, with Cohen’s *d* values being generated as effect size measures. H3 was assessed via Pearson’s correlation coefficients. An auxiliary analysis in relation to H3 was conducted using the *cocor* R package (v.1.1-4; Diedenhofen & Musch, 2015). Specifically, the package was used to formally compare the magnitude of two dependent, nonoverlapping correlations. Following Silver et al.’s (2004) recommendations, Dunn and Clark’s *z* test was

employed for this purpose. Confidence intervals reported for this analysis were calculated according to the method recommended by Zou (2007). For all inferential tests, an α level of .05 was applied.

Reflexive thematic analysis (Braun & Clarke, 2019) was applied to the open-ended responses (RQ2). Braun and Clarke’s (2013) six-step procedure was followed, such that the first author, third author and research assistant first familiarized themselves with the data, then generated codes. Clustering codes led to tentative themes. We adopted a reflexive, recursive approach, which was not focused on a specific theoretical underpinning. Rather, semantically similar responses guided the formation of themes and implicit concepts were also explored. Once themes were identified, the second author participated as a critical friend (Sparkes & Smith, 2014) working with the other two authors to refine, finalize, and label the themes. Because participants were asked to nominate a specific subject and, thus, were explaining their reasoning in relation to different subjects for each free-text response, four separate thematic analyses were performed. The final theme structures are supported by indicative participant quotes.

Results

Exploratory Quantitative Findings

Table 1 presents mean interest and value scores for each subject offering (a scatterplot detailing this information is depicted in Figure 1). Table 1 also reports the frequency with which participants nominated each subject offering as the subject they are most and least interested in taking and believe will be the most and least valuable to them. The greatest number of participants ($n = 71$, 28.6%) nominated *Forensic Psychology* as the subject they are most interested in taking, followed by *Psychopathology* ($n = 26$, 10.5%) and *Counseling* ($n = 23$, 9.3%). No participant was most interested in taking any of the three research subjects. Participants most frequently nominated *Advanced Research Methods & Data Analysis* as the subject they are least interested in taking ($n = 45$, 18.1%),

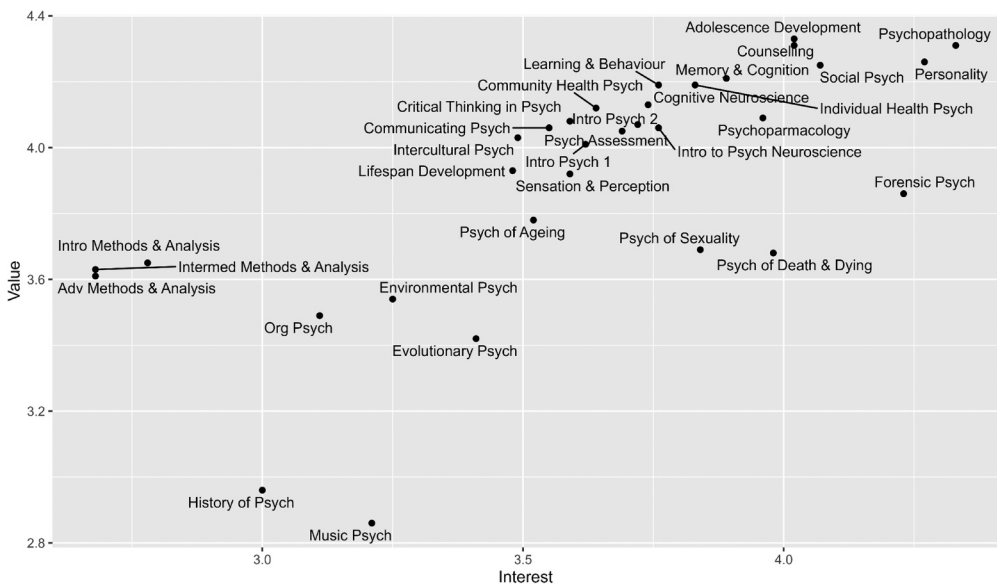


Figure 1. Scatterplot showing mean interest and perceived value for each subject.

followed by *History of Psychology* ($n = 36$, 14.5%) and *Music Psychology* ($n = 30$, 12.1%). In terms of most valuable subject, participants most frequently nominated *Counseling* ($n = 39$, 16.5%), *Introductory Psychology 1* ($n = 20$, 8.4%), with *Communicating Psychology* and *Psychological Assessment* tying for third place ($n = 16$, 6.8%). For least valuable subject, the modal response was *Music Psychology* ($n = 74$, 31.2%) followed by *History of Psychology* ($n = 37$, 15.6%). *Forensic Psychology* and *Advanced Research Methods & Data Analysis* tied for third place ($n = 15$, 6.3%).

Cluster Analysis

k -Means cluster analysis was applied to further explore the way subject offerings are perceived by first-year students (RQ1). Using the NbClust package (Charrad et al., 2014), 30 cluster tests were applied to the dataset. The majority rule indicated that 2 was the optimal number of clusters in the dataset (with 10 indices suggesting 2 as the optimal number of clusters—see Supplementary Materials, Table S2). However, five indices indicated that the dataset contained six clusters. Accordingly, it was reasoned that 6 might also be an informative number of clusters to extract and two cluster analyses were performed: $k = 2$ and $k = 6$.

The $k = 2$ analysis (see Supplementary Materials, Figure S1) produced a “high interest and high value” cluster exemplified by clinically oriented subjects such as *Psychopathology* and *Counseling*. A second “low interest and low value” cluster was observed consisting of subjects such as *History of Psychology* and *Environmental Psychology*. All three research subjects sat within this low interest and low value cluster.

In brief, in the $k = 6$ analysis, the two clusters from the $k = 2$ analysis separated into three clusters each (see Figure 2, and for a summary, see Table 2). Following the cluster numbering in Figure 2, Cluster 2 was composed of high interest and high value subjects, many of which have broad applicability to practice as a psychologist (e.g., *Psychopathology*, *Personality*, *Social Psychology*,

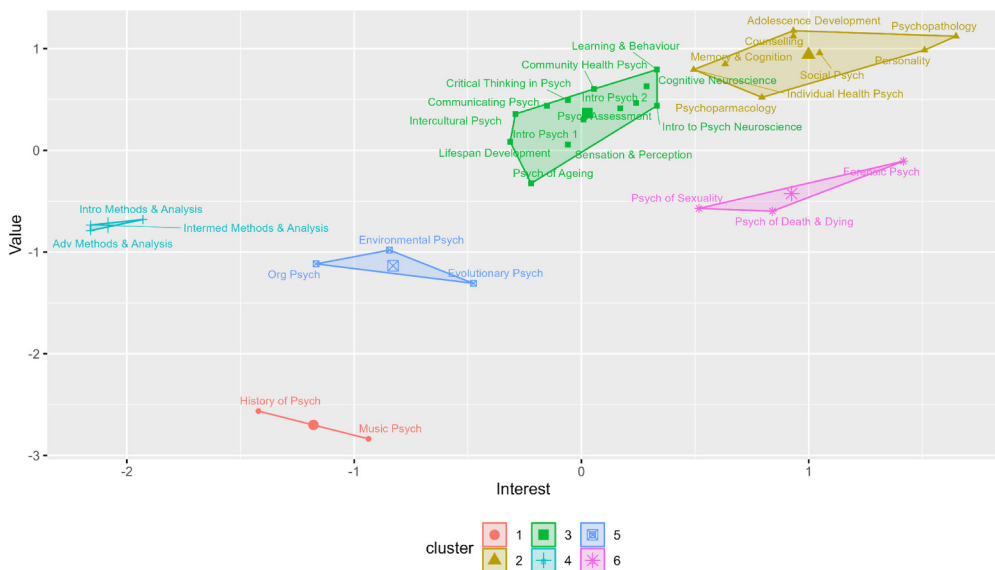


Figure 2. Visualization of k -means cluster analysis when $k = 6$.

Table 2. Summary of Clusters Produced as Part of the $k = 6$ Cluster Analysis.

Cluster No.	Description	Interest	Value	Example subjects	Cluster means	
					Interest	Value
1	Niche topics with lower perceived relevance (relative to Cluster 5)	Low	Very low	<ul style="list-style-type: none"> • History of Psychology • Music Psychology 	-1.18	-2.70
2	Subjects with broad clinical utility	High	High	<ul style="list-style-type: none"> • Counseling • Psychopathology • Personality 	1.00	0.94
3	Academic skill development and subjects with utility for specific areas of clinical practice	Mid	Mid	<ul style="list-style-type: none"> • Communicating Psychology • Intercultural Psychology • Psychology of Ageing 	0.03	0.37
4	Research subjects	Very low	Low	<ul style="list-style-type: none"> • Intro. Research Methods & Data Analysis • Intermed. Research Methods & Data Analysis • Adv. Research Methods & Data Analysis 	-2.08	-0.73
5	Niche topics with higher perceived relevance (relative to Cluster 1)	Low	Low	<ul style="list-style-type: none"> • Environmental Psych • Org Psych • Evolutionary Psych 	-0.93	-1.13
6	Subjects of interest irrespective of perceived utility	High	Mid to low	<ul style="list-style-type: none"> • Forensic Psych • Psych of Sexuality • Psych of Death and Dying 	0.92	-0.43

Note. Adv. = Advanced; Intermed. = Intermediate; Intro. = Introduction. Interest and value scores scaled prior to clustering; thus, a positive cluster mean indicates that interest/value was above average and a negative cluster mean indicates that interest/value was below average.

Counseling, and *Adolescent Development*). Situated next to this (Cluster 3) was a cluster of middle interest and middle value subjects, many of which relate to academic skill development (e.g., *Communicating Psychology* and *Critical Thinking in Psychology*), or have utility for specific areas of clinical practice (e.g., *Cognitive Neuroscience* and *Sensation & Perception*) or work with specific populations (e.g., *Intercultural Psychology* and *Psychology of Ageing*). Cluster 6 consisted of subjects which are of high interest but mid-to-low perceived value (*Psychology of Sexuality*, *Psychology of Death & Dying*, and *Forensic Psychology*). Cluster 5 represented a low interest and low value cluster composed of *Environmental Psychology*, *Organizational Psychology*, and *Evolutionary Psychology*. Cluster 1 represented a low interest and very low value cluster composed of *History of Psychology* and *Music Psychology*. Finally, the three research subjects formed their own very low interest and low value cluster (Cluster 4).

Comparing Interest and Value for Research and Nonresearch Subjects

Paired-sample t tests were used to formally compare participants' interest in, and perceived value of, research subjects against nonresearch subjects (H1 and H2). Prior to this, difference scores were examined and found to be acceptably normally distributed (based on the visual inspection of histograms and the absolute values of skewness and kurtosis being far below $|2.00|$ and $|9.00|$, respectively; Gignac, 2019). Participants were significantly more interested in nonresearch subjects ($M = 3.71$, $SD = 0.70$) relative to research subjects ($M = 2.71$, $SD = 1.11$), $t(251) = 16.87$, $p < .001$, mean difference = 0.99 , 95% CI $[0.88, 1.11]$. The associated Cohen's d value was 1.07 , indicative of a large effect (Cohen, 1992). Participants perceived nonresearch subjects ($M = 3.93$, $SD = 0.75$) as being more valuable than research subjects ($M = 3.61$, $SD = 1.20$), $t(240) = 5.38$, $p < .001$, mean difference = 0.30 , 95% CI $[0.19, 0.41]$. The observed d was 0.35 , indicative of a small-to-medium effect.

Consistent with H3, research subject interest had a large positive correlation with research subject value, $r(236) = .46$, 95% CI $[.35, .55]$, $p < .001$. With regard to nonresearch subjects, interest and value scores also positively correlated, $r(237) = .75$, 95% CI $[.69, .80]$, $p < .001$. A formal comparison indicated that the correlation between subject interest and value was significantly larger for nonresearch subjects compared to research subjects, $z = 6.50$, $p < .001$, r difference = $.29$, 95% CI $[.20, .40]$.

Qualitative Findings

Participants' reasoning for their most interested subject selection were characterized by two top-level themes: *subject content* and *applicability* (Table 3); while participants' explanation for their least interested subject were characterized by five top-level themes: *a lack of interest, not relevant, level of difficulty, repetition, issues with the content or subject structure*, and *finding the subject boring* (Table 4). Regarding both the most/least interesting subject, the majority of responses simply pointed to the subject (or content covered with the subject) as interesting ($n = 180$) or uninteresting ($n = 107$). When considering subjects' perceived value, explanations for the subject with the most value were characterized by five themes: *becoming competent, community-minded, personal interest, core for psychology degree*, and *future endeavors* (Table 5); and explanations concerning the least valued subject were characterized by four themes: *irrelevance, of lesser importance, no personal interest*, and *no useful application* (Table 6). The majority of responses regarding the perceived value of subjects were focused on considering the applicability of the subject's content to building their skills for future endeavors, especially people's intended careers ($n = 151$), or perceived irrelevance or absence of an application for the subject content ($n = 162$).

Interestingly, the presence of some themes (i.e., the *applicability* theme [$n = 60$] and *not relevant* theme [$n = 31$] for explaining one's interest level and the *personal interest* [$n = 17$] and *no personal interest* theme [$n = 35$] for perceived value) implies that interest and perceived value are not completely distinct. Rather, for some individuals, these concepts are intertwined concerning subject preferences. In other words, part of what makes a subject interesting is how it is deemed to be relevant or useful for the future and vice versa. This finding is consistent with the correlational analysis reported above.

In looking particularly at the pattern of responses for the research subjects (Table 7), it appears that beyond a lack of interest in research subject content, these subjects are considered to be too difficult, disliked because they involve mathematics, and are subjects students believe they are not good at. These reasons were allocated to research subjects far more than to nonresearch subjects. Moreover, it appears that very few students consider research subjects as applicable to their future endeavors.

Table 3. Themes Underpinning the Reason for the Most Interesting Subject Selected ($N = 249$).

Theme (Description)	Subtheme	Exemplar quotations
Subject content (<i>Responses highlighting that the subject, or content contained therein, has piqued their interest</i>)	The content is labeled as interesting	“interesting topic to consider”; “It would be interesting to understand the different dysfunctions and how we can help.”; “Most interesting to me, very curious to the content.”
	The content is labeled as exciting	“I find the concept such an exciting idea...”; “It sounds least boring”; “...in this day and age [the subject matter] has become more complex and exciting. It would be interesting to see the psychology behind this.”
	A desire to learn	“I am most interested in learning the skill sets to be able to help others understand themselves better and to overcome challenges in their lives.”; “I find that learning about how our brain gets to control how we think is fascinating”; “I prefer to learn about human behavior”
	Personal history	“Since high school, I was always interested in how we made our choices or what led to us making choices whether good or bad...”; “I grew up watching true crime documentaries and I have always been interested in how criminal minds work”
Applicability (<i>Responses highlighting that the subject, or content contained therein, is particularly applicable to them in some way</i>)	Relevant to chosen career path	“I want to be a Child Psychologist.”; “I aim to specialize in working with children in the future.”; “I plan to further my study in this field”
	Relevant to obtaining their degree	“It applies to my health degree”; “The most relevant to what I want to do with my psych degree”; “For my course”
	General statement referencing the utility of the subject matter	“Because it will help in many different professions as well as general life”; “I think it is interesting and also very important to have good knowledge on.”; “Highest versatility. This study would serve as an excellent utility as to helping assess problematic behavior.”; “It is about relevant stuff”
No reason given		No answer provided or, e.g., “There is no reason” or “I don’t know”

Table 4. Themes Underpinning the Reason for the Least Interesting Subject Selected (N = 249).

Theme (Description)	Subtheme	Exemplar quotations
Lack of interest (<i>Responses highlighting that the student is not interested in the subject or its content</i>)	No interest in the topic(s) covered by the subject	"Not too interested in workplace psychology."; "Does not interest me much"; "i have no interest in this field"; "I do not fancy statistics"; "Just doesn't appeal to me"
	Student didn't know the subject existed	"I didn't even know it existed."; "I haven't heard about it and I don't have an interest in music in general"
	Personal history makes them shy away from the subject	"I struggled a lot during high school with these specific concepts and still do...I know it'll drag me down to that place where I was in High School."; "Bad experience with a forensic psychiatrist..."
	Student is not interested, but knows the subject is necessary	"Do not enjoy studying regarding research methods, more interested in the topics researched. Understand it's necessity however."; "i know it is an important factor but i just don't know enough about environmental psychology to be interested."
	Subject is rated lower due to a comparison against the other subjects	"I feel that all the other subjects are more relevant to present day and are worth studying over history."; "I am not a particular fan of this topic and find other subjects way more interesting."; "Not very interested in that aspect of psychology as compared to the rest"
Not relevant (<i>Responses highlighting that the subject is not relevant to the student</i>)	Subject is not relevant to their degree	"Does not relate to my field of study"; "...I feel that it may not have a huge impact on my studies."; "Mainly because I don't think i really needs to be studied"
	Subject is not relevant to their future	"I believe this does not benefit me in what I want to pursue."; "...It is not a side of psychology that i would enjoy pursuing."; "Least relevant to what i would like to pursue as a career."
	Subject is not relevant in general	"Lowest Versatility, very niche application"; "As I'm a student, workplaces don't seem of interest to me right now."; "This subject does not feel applicable in daily life."
	Subject is outdated	"I am not very interested in the history of psychology as I feel that the

(continued)

Table 4. Continued.

Theme (Description)	Subtheme	Exemplar quotations
Issues with the content or subject structure (<i>Responses highlighting that they have an issue with how they perceive the subject to operate</i>)	Broad structural conflicts	knowledge could possibly be outdated..."; "Old unethical tests that were completed"; "Learning about potentially outdated information doesn't seem very interesting to me." "I know that I wouldn't enjoy this part of psychology as I prefer to be more hands on."; "I do not like writing"; "My religious beliefs conflicts with the topic."
	The subject involves mathematics	"I dislike statistics, numbers and data"; "This subject emphasized a mathematical approach regarding statistics and analysis which I am less interested in."
Boring (<i>Responses highlighting that the subject will be dull or boring</i>)		"seems boring"; "It seems boring and unengaging"; "The subject can be a bit dry to understand and learn."; "I don't think learning how to research is very interesting and I think I would get bored."
Repetition (<i>Responses highlighting the perception that the subject matter has already been learned or covered in other subjects</i>)		"I did Psychology in school and I know the basics"; "I feel as though it is covered already in other subjects and is fairly repetitive."; "...I have good critical thinking skills already"
Level of difficulty (<i>Responses highlighting that the subject is too easy or too difficult</i>)	Subject content is considered to be too basic	"...Because I just feel like it is a topic that can be learned by anyone."; "Knowing how to effectively communicate can be learnt anywhere else"; "It's way too basic"
	Subject content is considered to be too difficult	"it seems a little too much for me to handle. I do not think I will excel in learning this area..."; "Research Methods are hard to grasp"; "...It sounds hard for me"
	The student believes they're not good at it	"I'm not very good at researching and analyzing"; "It is a lot of math which i am not good at"; "It's just not my forte"
No reason given		No answer provided or, e.g., "There is no reason" or "Unsure"

Table 5. Themes Underpinning the Reason for the Most Valuable Subject Selected ($N = 237$).

Theme (Description)	Subtheme	Exemplar quotations
Becoming competent (<i>Responses concerning gaining skills and experience</i>)	To learn and develop applicable skills	"I will need to understand how to conduct research and analysis"; "I think you'd use some knowledge from the subject in real life"; "Counseling is valuable since it equips an individual with the skillsets necessary to become an empathetic listener."
	To conduct assessments/ make diagnoses	"I believe being able to accurately assess the psychological state of my patients will be a handy tool"; "It will help me make diagnoses and understand what is really going on for my patients"; "I think critical thinking is important in every subject but particularly in psychology because practitioners will have to know how to create their own ideas and not believe everything a client will tell them"
	To enable effective communication	"If I understand the psychology behind communicating, I might become an effective communicator, which is an important soft skill."; "With the stress in the society now, I believe that we will need more individuals with this knowledge to help others learn to communicate effectively before it leads to worse consequences."; "I think being able to effectively communicate with people is such an important thing, especially with psychologists"
Community minded (<i>Responses detailing how the subject matter is of value to the broader community</i>)		"I chose counseling as it plays a vital part in modern society, it has helped many people recover and I with more research and discovery, it would continue to help even more people"; "It's important for the economy"; "I felt that with better social psychology applied, the world can be a much better world to live in."
Personal interest (<i>Responses highlighting a personal interest in the subject matter</i>)		"interesting topic"; "very interesting and a topic most people would be curious about"; "An area of interest for me"; "Something I would be interested in more than the others."
Core for psychology degree (<i>Responses indicating that the</i>		"This subject would be valuable in completing my degree."; "This is the

(continued)

Table 5. Continued.

Theme (Description)	Subtheme	Exemplar quotations
<i>subject is a foundational element of the degree)</i>		basis of every subject in psychology.”; “The basics of psychology are important”; “You need that introduction of understanding so that you can be competent in achieving all the knowledge-based goals in all the other subjects...”
Future endeavors (<i>Responses relating to the participant’s future aims</i>)	Statements pertaining to career intentions	“I am intending to be a licensed/ accredited psychologist or counsellor”; “I intend on becoming a youth counsellor and I think having a knowledge on adolescence development would really help.”; “Because I am pursuing a career in criminology/criminal profiling. Forensic Psychology goes hand in hand with said career”
	Subject matter is relevant to health professions	“Because memory and cognition are important to language development”; “application to any workplace”; “Sexuality is a rising topic and it is important to understand the psychology behind it”
	Subject relevance to future education-research pursuits	“As this is what I want to further study”; “It would be great to focus on this to provide more insightful research and results”; “It is most related to the field of research that i’m intending to be a part of.”
No reason given		No answer provided or, e.g., “Unsure”

Discussion

The present study presented first-year university students with a list of subject titles and their descriptions in order to explore students’ perceptions of research and nonresearch psychology subjects. Like their Canadian counterparts (Uttl et al., 2013), the Australian and Singaporean students sampled in the current study were far less interested in research subjects compared to nonresearch subjects (H1). They also perceived less value in research subjects (H2). As expected, a positive relationship was observed between subject interest and value for both research subjects (H3) and nonresearch subjects. However, the interest-value relationship was significantly stronger for nonresearch subjects compared to research subjects.

As outlined in the Introduction, models of academic interest typically assume that perceived value of a subject area is a strong driver of interest in that area (Eccles & Wigfield, 2002; Hidi & Renninger, 2006). The findings of the current study are important as they demonstrate that the interest-value relationship may differ by subject domain. Specifically, the relationship between

Table 6. Themes Underpinning the Reason for the Least Valuable Subject ($N = 238$).

Theme	Subtheme	Exemplar quotations
Irrelevance (<i>Responses indicating that the subject is perceived to be irrelevant</i>)	No relevance to intended career	"I plan to focus on small-group or one-on-one treatments in my career and so it would not be useful for me to learn about the psychology behind communicating to the masses."; "I don't think I would need music psychology in my future career."; "Not intending to practice psychology within the criminal justice system"; "I do not think Researchers or Psychologists will refer to anything related to music psychology whilst on their job"; "I most likely will never need to analyze any data in my job."
	No relevance to the future	"I don't think data analysis at any level apart from basic would be applicable for the future"; "I do not see myself reading up or associating myself with the history of psychology in the future"; "does not affect my future"; "I do not really see how it can be helpful for my future for now."
	No relevance to research	"I don't think that music psychology can provide anything valuable in research"; "seems like it is largely history based which i don't think is very applicable in future research"
Of lesser importance (<i>Responses making a comparison to other subjects</i>)		"Compared to all of the other study areas, this is the least important"; "Music isnt important"; "Very specific topic at hand, with relatively lower use case in a society"; "It is interesting, but contains the most amount of irrelevant content"
No personal interest (<i>Responses highlighting a lack of interest in the subject matter</i>)		"I just have a lack of interest in it."; "little interest in the connection of the 2"; "Despite understanding the necessity of this, there is low interest"; "Not interested in data analysis"
No useful application (<i>Responses suggesting there is no use or application for the subject matter</i>)		"It doesn't really apply to most clinical or academic applications"; "Don't really understand how it is very useful."; "theories change as the years go by"; "I do not feel evolutionary practices play a very important role in explaining our behavioral patterns."; History of psychology though I find it interesting I see it being the least valuable in a real world setting"
No reason given		No answer provided or, e.g., "None" or "N/A"

Table 7. The Frequency with Which Themes Were Observed in Relation to Research Subjects (Introductory, Intermediate, and Advanced Research Methods & Data Analysis).

Subject	Theme/Subtheme	Frequency			Combined % of Cases	Exemplar quotation
		Intro.	Intermediate	Advanced		
Most interested		0	0	0	—	—
Least interested	No interest in the topic	10	11	8	35.0	"I do not have much interest in research and analyzing of data."; "because I don't have an interest in what it entails."
	Student is not interested, but knows the subject is necessary	0	0	1	25.0	"Do not enjoy studying regarding research methods, more interested in the topics researched. Understand it's necessity however."
	Subject is rated lower due to a comparison against other subjects	0	1	2	23.1	"I do not enjoy the research aspects of Psychology as much as the practical."; "I have less interest in research"
	Subject is not relevant to their future	0	0	1	14.3	"Least relevant to what I would like to pursue as a career."
	Subject is not relevant in general	0	0	1	7.7	"Research seems like a lot more paperwork than research. I do my best when I can do physical work, or not in a lab or office environment."
	Broad structural conflicts	2	0	3	41.7	"very practical and just data based rather than interactive"; "The subject is purely technical and does not inspire me."
	The subject involves mathematics	1	3	9	100.0	"I don't like numbers"; "Too much math, I hate math"
	Boring	6	4	7	43.6	"sounds like a lot of statistics and really boring."; "Sounds too mathematical and boring"; "Numbers bore me"
	Repetition	0	2	1	37.5	"I am not interested in how research works as I have done a similar subject and it was quite boring"
	Subject content is considered to be too difficult	4	4	5	81.3	"because it's one of the hardest subjects"; "It involves numbers which is my weakness."; "the advanced

(continued)

Table 7. Continued.

Subject	Theme/Subtheme	Frequency			Combined % of Cases	Exemplar quotation
		Intro.	Intermediate	Advanced		
Most valuable	Not good at it	1	1	5	87.5	research methods and data analysis seems to be overwhelming for me.” “It’s just not my forte”; “I not very good with statistics.”; “I am not very good with numbers and data analysis.”
	Personal history	1	0	0	33.3	“I struggled a lot during high school with these specific concepts and still do.”
	No reason given	1	0	2	20.0	“There is no reason”
	Education/Research	1	0	0	12.5	“It would be very helpful in my future study”
	Career intentions (1 statement)	1	0	0	1.9	“There are a lot of research and data collection in psychology, thus I think it is important to be able to learn the skills when studying psychology and being able to apply them in the future at work.”
	Personal Interest	0	1	0	5.9	“It sounds very fancy”
	Assessment/Diagnosis	0	0	1	4.2	“I think it is important for scientists to be able to conduct research and to know exactly which research methods to use for their research. After collecting the data, it is also important to analyze the data accurately to get the most reliable and valid outcome.”
	Communication	0	0	1	4.2	“Statistic is important for understanding and communicating studies and their findings”
	Core for psychology degree	0	0	1	3.5	“Statistics forms the core of understanding psychological research... It is imperative that Research and Stats is taught as a fundamental.”
	Skills	0	0	3	13.0	“I will need to understand how to conduct research and analysis”
Least valuable	Career	2	2	5	14.1	“Research methods and data analysis is the least valuable to my profession. It is not something that occurs within my field of work.”; “I just don’t see

(continued)

Table 7. Continued.

Subject	Theme/Subtheme	Frequency			Combined % of Cases	Exemplar quotation
		Intro.	Intermediate	Advanced		
No future use		1	1	4	20.7	how it would be that necessary for my future career path"
Less importance (comparison)		1	0	1	7.7	"I don't think data analysis at any level apart from basic would be applicable for the future"; "might not use stats"; "Don't need to do research" "Hopefully by the time I reach the end of my degree I have reached the advanced level of methods and data analysis, rendering the introductory subject least valuable."
No applied use		1	1	2	6.1	"Currently I don't see any personal value in said subject."; "have no need"; "Personally I think that majority of the time a Clinical Psychologist would be assessing and treating patients rather than investing their time in research and data analysis"
Not interested		2	2	3	20.0	"Not interested in data analysis."; "Dislike for data analysis"; "Despite understanding the necessity of this, there is low interest"
No reason		2	0	0	13.3	

Note. Percentages reported in the *Combined % of Cases* column indicate the percentage of cases in which this particular theme was observed in relation to a research subject. For example, in 34.9% of cases, the "no interest in the topic" theme was expressed in relation to one of the three research subjects. In 65.1% of cases, this theme was expressed in relation to a nonresearch subject.

interest and value appears to be less prominent for research subjects. This finding calls into question the potential efficacy of utility-value interventions (Hulleman & Harackiewicz, 2021) to increase interest in research subjects among psychology students. Interventions to increase research subject interest may do better to focus on modifying feeling-related valences (e.g., involvement, stimulation, and flow), rather than value-related valences.

The findings also highlight the degree to which students perceive research subjects as distinct from other subjects. Quantitatively, this is most apparent from looking at the $k=6$ cluster analysis (Figure 2), where the three research subjects clustered together (RQ1) at lower levels of interest and value, showcasing the contrast in students' perceptions of these subjects relative to nonresearch subjects. This "distinctness" is further demonstrated in the reasoning provided by the students who were least interested, or perceived the least value, in a research subject (Table 7). The explanations provided hinged on students finding research subjects too difficult, involving mathematics, and including topics they believe they are not good at (RQ2).

A small number of students appeared to perceive that research has some utility value, despite also perceiving research subjects to be uninteresting. Such students may view learning research as a "necessary evil" to be tolerated in order to achieve one's academic or career goals or enhance one's ability to "think like a scientist." However, the takeaway of the qualitative data is that most students do not see the relevance or applicability of research subjects to their degree or intended careers. This finding resonates with prior work suggesting that because quantitative subjects are depicted as research and theory-focused, students consider these to have minimal practical application (Uttl et al., 2013; Vittengl et al., 2004; Wathen & Rhew, 2019). Further, this finding highlights disconnect between educators' (and accrediting bodies') opinions and those of students. It seems that the importance of research literacy as a graduate competency (e.g., APAC, 2019) is not effectively communicated to, or shared between, psychology students and instructors (Dempster & McCorry, 2017; Landa-Blanco & Cortés-Ramos, 2021; Uttl et al., 2013). As Strohmetz et al. (2023) found, students tend to perceive these subjects to be about learning how to conduct research, an activity that many students believe they will not do after graduation (Murtonen et al., 2008). The quantitative and qualitative findings of the current study reinforce Uttl et al.'s (2013) argument that undergraduate students would benefit from developing a greater understanding of what competencies are necessary for a career in psychology (although, as discussed above, this may not be enough to drive interest).

Lastly, students perceiving research subjects as distinct from other subjects, such that they are not considered applicable nor interesting, have implications for tertiary psychology educators. As Uttl et al. (2013) argue, the lack of interest in quantitative subjects is so large that it should be accounted for when evaluating faculty based on student ratings of teaching. Solely relying on student ratings of teaching to assess faculty performance may disproportionately disadvantage educators who teach research subjects. Alternative methods of teaching evaluation should be considered for these instructors, or, at the very least, these student evaluations of teaching should be viewed in the context of the "uphill battle" faced by research methods instructors.

Limitations and Future Directions

Collectively, the findings raise questions as to how to help students gain a greater interest in, and appreciation for, research subjects. With participants comprising of first-year students only, the present study does not acknowledge that students' perceptions of research subjects may change as they progress in their studies and gain more experience conducting (and consuming) research. Most of the students participating in the present study would not have taken a research subject (research subjects start in the second year of study at the authors' institution); therefore, their

lack of exposure to this content may have influenced their ratings. Future research is well-placed to undertake longitudinal testing across years of tertiary study to help identify if exposure and experience can change students' perceptions of research subjects and whether this is impacted by the learning approach used (e.g., active learning approaches which make use of "real-life" data, Allen & Baughman, 2016; Landa-Blanco & Cortés-Ramos, 2021).

Another limitation of the current study is that the subject descriptions presented to participants did not explicitly state whether the listed research subjects covered qualitative methods, quantitative methods, or both. Research indicates that some students prefer qualitative over quantitative approaches, and vice versa (Murtonen, 2005). Future research could present students with subject descriptions which more explicitly indicate whether subjects cover qualitative and/or quantitative methods (or even subject syllabi comprehensively listing the topics covered in each subject), to explore differences in students' perceptions of qualitative and quantitative research. If students do show a clear preference for qualitative over quantitative approaches, this would suggest that students' opposition to research subjects is more about an aversion to statistics than to the process of research. Alternatively, if students also perceive qualitative subjects to be uninteresting and lacking in value, this could indicate that greater consideration should be given to research process anxiety (Onwuegbuzie, 1997), as opposed to just statistics anxiety.

The relatively small number of participants enrolled in degree programs outside of psychology in the sample meant that it was not possible to compare the perceptions of students across different degree programs. Future research may purposely sample students enrolled in degrees outside of psychology so that these kinds of comparisons can be made. Assessing the impact of career intentions on perceptions would also be informative.

Finally, future research could extend the present findings by examining whether utility-value manipulations of research subject descriptions (e.g., to emphasize career applicability of the content or perhaps the applicability of research content to high interest and value subject areas, such as psychopathology and counseling) can shift students' perceptions. This could have implications for not only how instructors "package" research methods subjects but also contribute to our understanding of how to bridge the gap between faculty and student perceptions of the relevance of research subjects.

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Authors' Contribution

AK, DM, and BLL collaboratively developed the study and BLL conducted data collection. BLL conducted the data analysis, with input from AK and DM. BLL drafted an initial version of the manuscript, with AK and DM offering input and revisions. All authors collaborated to approve the final version of the manuscript.

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Supplemental Material

Supplemental material for this article is available online.

Notes

1. By “subject,” we mean the equivalent to the US term “course,” that is, a unit of teaching on a particular topic area that lasts one academic term (e.g., *Social Psychology*).
2. This is not to say these subjects do not draw on research or cover research-related issues. However, research design and analysis is not the primary focus of these subjects.

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