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60

CONTENT

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The official language of the eLearning-2021 Conference is English. English will be used for all printed materials, presentations and discussion.

ANCHORING AND ADJUSTING IN STUDENTS' RESPONSES TO A QUESTIONNAIRE ABOUT THE IMPORTANCE OF GIVEN E-FEEDBACK TECHNIQUES

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Abstract: *An answer to an item in a questionnaire may provide a cognitive anchor that limits respondent's adjusting to answer the next questionnaire item. This paper examines the issues of anchoring and adjusting in response to a questionnaire about the importance of listed e-feedback techniques. Two measures of anchoring and adjusting were applied, which revealed not only whether more anchoring and less adjusting were present, but also which respondents might apply more anchoring and less adjusting in their responses. Addressing these questions, especially when responses to two sets of items are similar overall, may be an important step in completing an appropriate discussion of questionnaire-based findings.*

Keywords: *Adjusting, Anchoring, E-Feedback, Questionnaire*

1. INTRODUCTION

In responding to items in a questionnaire, the answer to an item may provide a cognitive anchor that limits respondent's adjusting to answer the next item [1]. For example, by using a 5-value Likert scale from *Fully disagree* to *Neutral* to *Fully agree*, a student may respond to statement "I like to use technology in my studies" with *Agree*, and repeat the same answer to the next statement "I prefer on-line assessments rather than the traditional paper-and-pencil ones", even if answers *Neutral* or *Fully agree* may be more accurate in the assessment context.

When responses to two sets of items are similar overall (e.g., when expressed numerically, their respective means or medians are close to each other), it is important to examine to whether this outcome might be the result of considerable anchoring (or a little adjusting) in responding. Anchoring can be defined as reliance on the answer to the preceding item, while adjusting takes place when this answer is adjusted according to the context of the item at hand. It may also be important to find out which respondents (in terms of background variables, such as gender, education, and employment) might apply more anchoring and less adjusting in their responses. Bearing these two questions in mind, this paper considers the issue of anchoring and adjusting in students' responses to a questionnaire about the importance of the use of certain e-feedback techniques.

2. EQUAL IMPORTANCE OF TWO SETS OF E-FEEDBACK TECHNIQUES

Having in mind that feedback has one of the highest effects on learning (e.g., [2]) and that to benefit from its use, feedback should provide information important to students (e.g., [3]), we continued our empirical research on different feedback techniques in e-assessment endorsed by students [4], focusing on comparing the importance of feedback techniques supporting activities applied in two related approaches to learning and studying (a deep approach *vs* a strategic one). This subsequent research, presented in detail elsewhere [5], used a convenient sample of twenty second-year undergraduate students who completed an online questionnaire which measured the importance they assigned to each feedback technique given as well as the values of some background variables including academic

achievement. It was found that feedback techniques supporting activities of a deep approach were equally important to students as those supporting activities of a strategic approach (the given feedback techniques are listed in the Appendix). In particular, considering raw scores (the importance was expressed on a 0–10 scale for each technique), the median of the average importance assigned to feedback techniques supporting a deep approach was 7.30, whereas the median of this importance for feedback techniques supporting a strategic approach was 7.70, and these medians although different numerically, were not different statistically ($z = –0.984$, $p = 0.325$). Because of the small sample, nonparametric statistics were applied (e.g., [6]); reliability (Cronbach's alpha) of these averages (i.e. underlying variables) was satisfactory (0.73 for both approaches).

Why were these medians not different?

Two sets of feedback techniques might be viewed as beneficial to each other by the participants because, in general, deep and strategic approaches might contribute to each other positively. Undoubtedly, a strategic approach may overlap a deep approach to some extent. Consider, for example, a possible relationship between relating ideas (an activity in the deep approach) and good study management (a feature of the strategic approach) [7]. Good study management may enable (result in) focusing on relating ideas, and for focusing on relating ideas, good study management may be needed. Such a positive relationship was found as there was a high positive correlation between the two variables whose medians are reported above (Spearman's rho was 0.831, $df = 18$, $p = 0.000$). This outcome is in accord with the finding of another study [8], suggesting that the measures of deep and strategic approaches may positively correlate in general.

Another (possibly complementary explanation might be that the equity in question was a result of applying more anchoring and less adjusting in response to items in the questionnaire used. This issue is examined in the following section.

3. ANCHORING *VS* ADJUSTING

The Appendix contains ten items: five items with feedback techniques supporting activities found in a deep approach (D1 – D5) and five items with feedback techniques regarding features of a strategic approach. These items are listed in the questionnaire in the following order: D0, S1, D1, S2, D2, S3, D3, S4, D4, S5, D5, S0 (D0 and S0 denote discarded items). Intermixing these items was applied because there may be certain advantage of this approach when related constructs are measured within a particular context (e.g., [1]). If the participants applied more anchoring and less adjusting in response to these items, correlations between relevant pairs (S1 and D1, S2 and D2, …, S5 and D5) would be high and statistically significant. Such an outcome was not found because these correlations (Spearman's rho was calculated) were: 0.308 (S1–D1, $p = 0.187$), 0.540 (S2–D2, $p = 0.014$), 0.444 (S3–D3, $p = 0.050$), 0.001 (S4–D5, $p = 0.997$), and 0.396 (S5–D5, $p = 0.084$). This means that overall the participants did not apply more anchoring and less adjusting in response to these items. This outcome increases the validity of our explanation that the equity in question might be the result of two sets of feedback techniques being viewed by the participants as beneficial to each other. This position was supported by the empirical data because the absolute value of the difference of the means of two importance variables was not greater than 0.8 for 15 (75%) participants (recall that a 0 – 10 scale was used). We can thus confidently claim that two sets of feedback techniques might be viewed beneficial to each other by most participants.

Although the results of the correlative analysis presented in the previous paragraph provide evidence that the equity in question was not caused by anchoring, they do not reveal which respondents might apply more anchoring and less adjusting in their responses. To address this question, the mean of absolute differences between the responses to these item-pairs was calculated for each participant (e.g., [1]). (The sum of absolute differences is usually called Manhattan distance or the taxi cab metric; e.g., https://en.wikipedia.org/wiki/Taxicab_geometry.) This mean ($M = 1.86$, $SD = 1.37$) was greater then 1.00 for 12 participants (60%), which confirms the outcome of the correlative analysis undertaken. Furthermore, the mean positively correlated with course achievement (Spearman's rho was 0.574, $df = 18$, $p = 0.008$), which means that participants with lower course achievement (in particular those whose final mark was 6, 7 or 8 out of 10) responded to adjacent item-pairs in a more similar way (i.e., with more anchoring and less adjusting) than did participants with higher course achievement (those whose final mark was 9 or 10).

4. CLOSING REMARKS

This study was concerned with anchoring and adjusting when responding to a questionnaire. It examined these issues concerning a questionnaire about the importance of e-feedback techniques given, especially because equal importance of two sets of such techniques was found. Correlative analysis showed that overall participants did not apply more anchoring and less adjusting when responding to these items. Additional correlative analysis, which made use of Manhattan distance, revealed that participants with lower course achievement responded to adjacent item-pairs in a more similar way (i.e., with more anchoring and less adjusting). Addressing the issues of anchoring and adjusting in responding to a questionnaire, especially when responses to two sets of items are similar overall, may be an important step in completing an appropriate discussion of questionnaire-based findings.

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Appendix – Questionnaire items used to assess the importance of feedback techniques

Deep approach

D1 – Information is obtained about areas that I have successfully mastered in the current knowledge test versus areas that require additional learning.

D2 – A link is given to a file whose content shows how certain questions from the test are related to the content which needed to be learned.

D3 – A link is given to a file whose content indicates which test contents are related to other contents that are studied in the course.

D4 – A link is provided to a file whose content indicates how knowledge and skills that are the subject of the test can be implemented from different point of view.

D5 – Information is obtained about which areas in the current knowledge test I could receive special learning assistance for from the professor.

Strategic approach

S1 – A link is provided to a reminder with the most important facts about the knowledge and skills assessed by the test.

S2 – Information is obtained about how successful I was in solving the tasks in relation to the success of other students who had already solved the test.

S3 – Information is given about my individual results and the average result on completion of the knowledge tests.

S4 – A link is given to a file that, according to the order of presentation, locates the part of the course (lesson) that is the subject of the test in relation to other parts that appeared or will appear in other tests.

S5 – Information is obtained about the order in which individual knowledge and skills will be assessed at tests that should be completed during the semester.

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