

Model Answer for Quantitative Results Write-up One – ANOVA

Results

In total, 260 participants completed the Impact of Event Scale (IES; Horowitz, Wilner & Alvarez, 1979) at all three time-points: Baseline (Time 1), whilst waiting for genetic risk information (Time 2), and one month post-risk information (Time 3). Of these, 129 participants had been randomised into the intervention group at baseline, and 131 participants had been randomised into the control group.

Commented [KW1]: Paragraph 1: Info about the sample total, the main outcome measure, and the grouping.

According to Horowitz (Horowitz, 1982 and personal communication, 1999; 2004), scores on the global IES can be broken down into the following categories: low distress (scores below 8.5), medium distress (scores between 8.5 and 18) and high distress (scores of 19 or more). At baseline (Time1), scores on the Impact of Event Scale from the current data indicated that just over a third of the sample (37.3%) were identified as experiencing high levels of cancer specific distress. While, 43.5% reported low distress and 16.2% of the sample reporting no distress at baseline (a score of zero) and therefore revealing a large floor effect for this scale in this patient group.

Commented [KW2]: Paragraph 2: Some further detail about the scale used and cut-off for the scores in order to put the values/data collected from this research in to perspective/context for the reader.

Prior to the primary analysis comparing changes over time by group, five scores from five participants were classed as extreme outliers and were removed from the dataset, meaning that data from 255 eligible participants are reported in the remaining analyses within this paper. Of the 255 eligible participants, 125 participants were in the intervention group and 130 participants were in the control group. This sample comprised 221 females and 31 males. Three participants did not disclose their gender. Participants ranged in age from 18 to 81 ($M = 50.70$, $SD = 12.03$) with 81% educated to at least secondary school education level. Sixty-eight percent were married or living with a partner.

Commented [KW3]: Paragraph 2: Continue by presenting some information specifically about the range of data collected from the study and explain what this shows.

Commented [KW4]: Paragraph 3: Appropriate analysis of outliers should have been conducted and relevant reporting of numbers and remaining data should be noted, along with numbers within each group.

Table 1 reports the mean scores and standard deviations for the primary outcome measure for the 255 participants that were allocated to the control or the intervention group across all three time points. At baseline, there was no significant difference in levels of distress between participants allocated to the control group ($M = 16.34$, $SD = 15.11$) and

Commented [KW5]: Paragraph 3: Continue with some description of the demographic information on the remaining sample. Up to you how much detail you wanted to include, but at minimum it would be expected that age (range, mean, & SD), gender split, and then the largest percentage from other demographics are included.

those in the intervention group ($M = 17.13$, $SD = 17.53$), $t(253) = 0.39$, $p = 0.699$. An independent samples t-test analysis also showed that there was no significant difference in baseline distress between males ($M = 16.65$, $SD = 15.73$) and females ($M = 16.63$, $SD = 16.37$), $t(250) = 0.01$, $p = 1.00$.

Table 1
Means and standard deviations for distress scores by group and across time.

	Time 1		Time 2		Time 3	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Control N=130	16.34	15.11	17.67	17.20	12.53	13.64
Intervention N=125	17.13	17.53	19.05	18.78	11.39	13.12
Total N=255	16.73	16.31	18.35	17.97	11.97	13.37

In order to explore the impact of the intervention on distress over time, a 2 x 3 mixed design analysis of variance (ANOVA) was conducted, with the within-subjects factor of time having three levels (Time1, Time2, Time 3) and the between-subjects factor of group having two levels (control or intervention). Mauchly's test of sphericity indicated that the assumption of sphericity had been violated ($X^2(2) = 40.73$, $p < 0.001$), therefore degrees of freedom were corrected using Huynh-Feldt estimates of sphericity ($\epsilon = 0.88$). None of the other assumptions of the data were violated.

The analysis revealed that there was no significant interaction between group and time, $F(1.76, 444.84) = 1.00$, $p = 0.36$, partial eta squared = 0.004, meaning that there was no significant difference in levels of distress between the control and intervention group at

Commented [KW6]: Paragraph 4: Information on descriptives (mean & SD) at baseline for distress between the two groups and reporting of relevant t-tests. An examination (using an independent samples t-test) of distress levels between the two groups at baseline was required here to ensure no differences prior to the main analysis being conducted. Any other differences at baseline (e.g., distress levels between males and females) could have also been reported if you wanted.

Commented [KW7]: Needed an informative title about what the table contained. Should have been formatted correctly according to APA guidelines. Up to you if you wanted to put SD under the mean.

Commented [KW8]: Paragraph 5: Provide information on the type of analysis conducted to examine the main research question, ensuring that all factors, levels of factors, and whether they were within or between is documented correctly.

Commented [KW9]: Paragraph 5: Check and report any violations of assumptions for the specific analysis. Ensure to explain where alternative rows will be read from if any data has been violated – e.g., Huynh-Feldt, Greenhouse-Geisser from Epsilon corrections, or Pillai's Trace, Wilks' Lambda, etc. from the multivariate tests given that sphericity was violated in this instance.

any time point. The main effect of group was not statistically significant $F(1, 253) = 0.04$, $p = 0.84$, partial eta squared = 0.000, indicating that there was no difference between overall distress scores of those in the control group and those who received the intervention. However, the analysis did reveal a significant main effect of time, $F(1.76, 444.84) = 25.45$, $p < 0.0001$, with a moderate effect size (partial eta squared = 0.09) indicating a significant difference in distress from intrusive thoughts over time amongst participants regardless of whether they were in the control or intervention group. Post-hoc pairwise comparisons with Bonferroni corrections applied revealed that for both groups, their levels of distress were significantly higher during baseline (Time 1) and the waiting period (Time 2) compared to the one-month follow-up (Time 3) ($p = 0.001$ and $p < 0.0001$, respectively). There was no significant difference between levels of distress at baseline (Time 1) and whilst waiting for genetic risk information (Time 2) ($p = 0.08$).

In summary, the findings from the current data suggest that the intervention, which involved participants making use of a self-help leaflet, has not led to a greater reporting of decreased distress levels in patients waiting to learn whether they are at an increased risk of developing an inherited cancer, compared to the standard method of sending out an information pack employed by the Cancer Genetics Service for Wales. However, findings from the data does suggest that distress significantly decreases in all patients once they received information about their potential risk. In order to further explore why this is the case, the research team may wish to conduct further research to examine whether the information the participants in this particular research study received was positive in nature (i.e., they were at a reduced risk of developing an inherited cancer). If this is not the case then the research team may wish to focus on examining why distress levels would decrease.

Commented [KW10]: Paragraph 6: Report each of the three outcomes from the ANOVA.

- 1.The Interaction
- 2.The main effect of group
- 3.The main effect of time

(Ensuring to report values from appropriate rows, based on what you explained you were going to report from the section above).

For any outcomes that were significant, report whether the effect was small, medium, or large based on the guidelines for this type of analysis.

Explain to the reader what the significant or non-significant outcome means.

Commented [KW11]: Due to the main effect of time being significant, post-hoc pairwise comparisons were required because time had three levels (Time 1, Time 2, and Time 3). The ANOVA tells us that this main effect is significant but it does not tell us specifically where between each of the three different time points there is significance (could be between all three, or could only be between two of them).

Commented [KW12]: End the section with a broad overview of the findings. Critically, discuss whether the research question has been successfully answered or not. Do not just repeat information on the results, instead explain to the reader what the results mean – i.e., what do they tell us.