

REFLECTIVE PAPER

Module: BMOE7004, Research Methods, Assignment 2

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INTRODUCTION

According to Jasper (2005, p.247), “reflective writing has become established as a key component of reflective practice, and central to the notion of learning from experience”. After completing a study investigating the impact of small doses of nature on men’s mood and depression, this paper seeks to reflect on the research process, from literature review to data analysis and subsequent conclusions. Considering the lessons learned during the research process is a critical part of this module and will help me deepen my experiences and understanding in preparation for my dissertation. According to Gibbs Reflective Cycle, reflection is a vital part of the learning journey, “...without reflecting on this experience, it may be quickly forgotten, or its learning potential lost.” (Gibbs, 1988, p.9). In this paper, I will be reflecting on the positioning of the study and research question in the context of the literature review before critically reviewing the research methods and data collation process. Finally, I intend to lay out a clear action plan for future research that addresses the lessons laid out in this paper in a way that will serve as a helpful tool when completing future research. Gibbs’ reflective cycle guides us through six phases of learning experiences: description, feelings, evaluation, analysis, conclusion and action plan (Gibbs, 1988, p.10). This paper will leverage the framework provided by Gibbs to help provide a consistent and thoughtful layout and facilitate future referencing and research preparation. A mixed-methods approach was selected for this study as a result of the research objectives, research strategy and planned data collection methodology (Biggam, 2021,p. 143). After reviewing the

study in the context of the existing literature, I will propose a future approach to similar research, which will involve greater participant interaction and activity logging to better understand the “dose” of nature as well as more thoughtful consideration of the research question.

RESEARCH DESCRIPTION

The literature exploring nature-based interventions and mental health is comprehensive. From the early landmark work of Kaplan (1989) and Wilson (1984) more than three decades ago, the evidence continues to mount. It is now widely accepted that spending time in nature has therapeutic, rejuvenating qualities, and multiple studies present compelling data to support these claims (Allan, 2020; Brymer, 2010; Glover & Polley, 2019; Hanson & Jones, 2015; Ibanez & Bockheim, 2013; Jones, 2020; Loureiro, 2021; Robertson, 2011; Rogerson, 2020; Twohig-Bennett & Jones, 2018). Although there is growing evidence “...that exposure to non-human nature provides considerable benefits to human wellness, it is still unclear how nature supports these benefits”.

With that in mind, considering so many adults are time poor in modern society, for this study, I started to bring into focus a research question which considered the impact of short walking bouts in nature. While extensive peer-reviewed evidence pointed to strong links between walking in nature and mental health (Fraser, 2022; Glover & Polley, 2019; Robertson, 2011; Rogerson, 2020), I found little research targeted explicitly at understanding these trends for specific demographic groups, particularly males. I, therefore, established that the primary study aim would be to “Examine the relationship between stress and nature exposure by

asking participants to complete a validated depression scale before heading out on regular solo walks in nature and completing the questionnaire again at the end of the intervention.”

Accordingly, the study had the following objectives:

- Measure the difference between depression scores before and after the program to identify possible links
- Explore the notion of dose-response to identify the extent to which short-bouts of walking in nature may or may not affect mood and wellbeing over a relatively short period
- Leverage semi-structured interviews to encourage the participants to talk more about their feelings and experiences
- Identify opportunities for future research and establish potential recommendations

Once my overall research strategy was established (Biggam, 2021, p.137) I had to select a validated depression scale. After an extensive review of validated scales, the Beck Depression Inventory (BDI-II) was selected. The BDI scale is used commonly by researchers and clinicians due to its validity and reliability in helping to identify depressive tendencies quickly and efficiently (Butcher, Taylor and Fecken, 1998, p.418)

After selecting the scale, I had to secure ethical approval from the institution for the overall study. A key part of that dialogue centred around removing the question related to suicide in the original Beck Depression Inventory (BDI) scale. Once approved, I quickly defined my target participant profile. Given the stigma many men still place on talking openly about their mental health, the proposal was to find just two to four working fathers to join the study. However,

using my rugby club network, I connected quickly with seven men who all fit the participant criteria (male, working over 40 hours per week and living with at least one child under sixteen). I used Microsoft Forms (Figure 1) to create a secure, online version of the modified BDI-II (with Question 9, relating to suicide, removed per ethics approval). Despite having never used it before, the software was intuitive, and I was able to create a simple, professional and easy to follow form for participants to complete. Given the nature of the software, I was able to ensure that questions were always answered correctly and minimise the risk of user error in completing the form. The study was designed to be self-directed in that all participants were free to choose their own walking route, frequency and overall dose of nature. The only restrictions placed on them were that they must complete at least eight walks of twenty minutes and be completely alone. All participants self-reported completing the required number of walks and then repeated the online questionnaire.

Figure 1 – Screenshot of online MS Forms link sent to all participants

The screenshot shows a Microsoft Forms interface for a questionnaire titled "BDI-II (Modified) Questionnaire". The top navigation bar includes "Forms", "BDI-II (Modified) Questionnaire - Saved", and user initials "JW". Below the bar, there are tabs for "Questions" (active) and "Responses" (showing 15 responses), along with buttons for "Preview", "Theme", and "Collect responses". The main content area contains the following text:

BDI-II (Modified) Questionnaire

Thanks you so much for agreeing to take part in this research which is studying the effects of small doses of time alone in nature on mood and wellbeing on busy, working fathers. The study will run over a period of 4 weeks and you are being asked to complete this questionnaire twice - once now, before you start the walking program and then again after 4 weeks. At the end of the 4 weeks you may also be asked to take part in a short 20 minute video call to talk about your experiences.

I estimate that around 5 participants will take part in this study. Participants must be living with at least one child under the age of 16 and be working at least 40 hours per week. Once you have completed the questionnaire you are then asked to go for a solo walk (without any headphones or company) for 20 minutes twice per week for 4 weeks - for a total of 8 walks. Ideally the walks will take place in a natural, green space like a park, woodland or playing fields. If, for any reason, you can't walk in a green space please just make a note of which walks took place in a more urban environment.

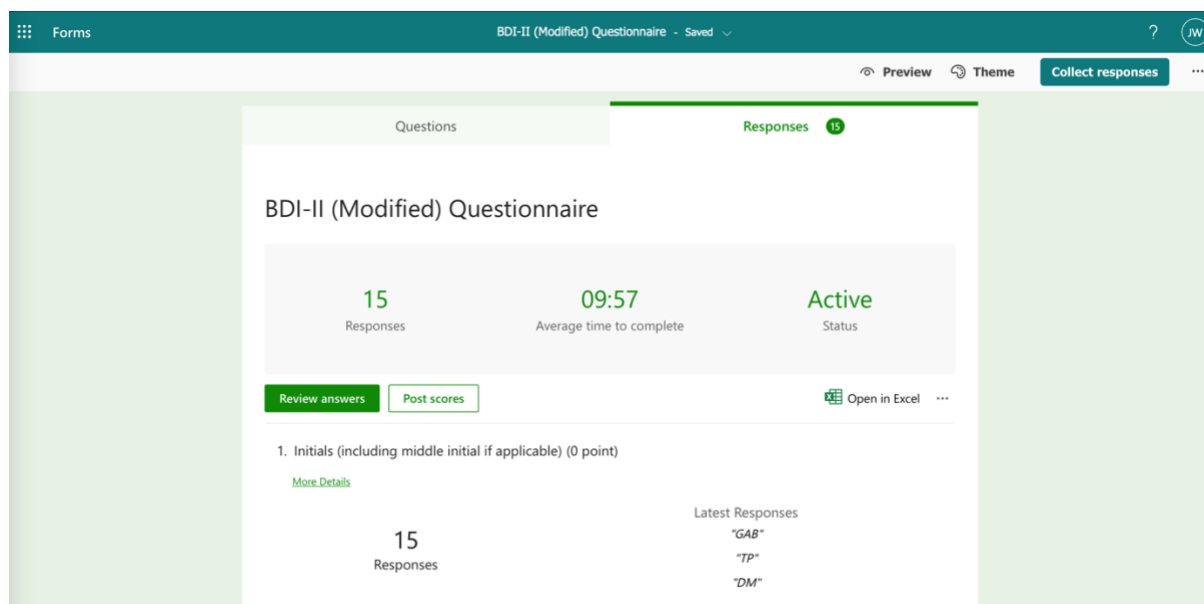
It is extremely important that you are familiar with the environment you are walking in and don't take unnecessary risks. Please be sure to tell someone where you are going and when you expect to be back.

Research suggests that time in nature, even very small doses, can have rejuvenating effects and help with the stresses of work and parenthood. This study is looking at the impact of consistent time in nature over a 4 week period. Your results will be shared with you individually at the end as well as general findings.

If you are interested in learning more about the benefits of time in nature please don't hesitate to ask. At the end of the study you will be provided with a guidance leaflet with links to further information and support in your local area.

On reflection, this self-reporting creates a reasonable degree of uncertainty and is something I will correct in subsequent research to ensure that the type and frequency of walks can be tracked and analysed for correlation. All seven participants completed the follow-up questionnaire with the time between tests ranging from twenty-four to seventy-one ($M=42$, $SD=14.2$). Finally, all participants were offered the chance to participate in a follow up semi-structured interview via Zoom to discuss their reflections on their time in nature during the study. At the time of submitting this paper, none had been completed due to participant availability. At the end of the data capture, the participant data was simple to review in the software and was easily exported from MS Forms to Excel (Figure 2).

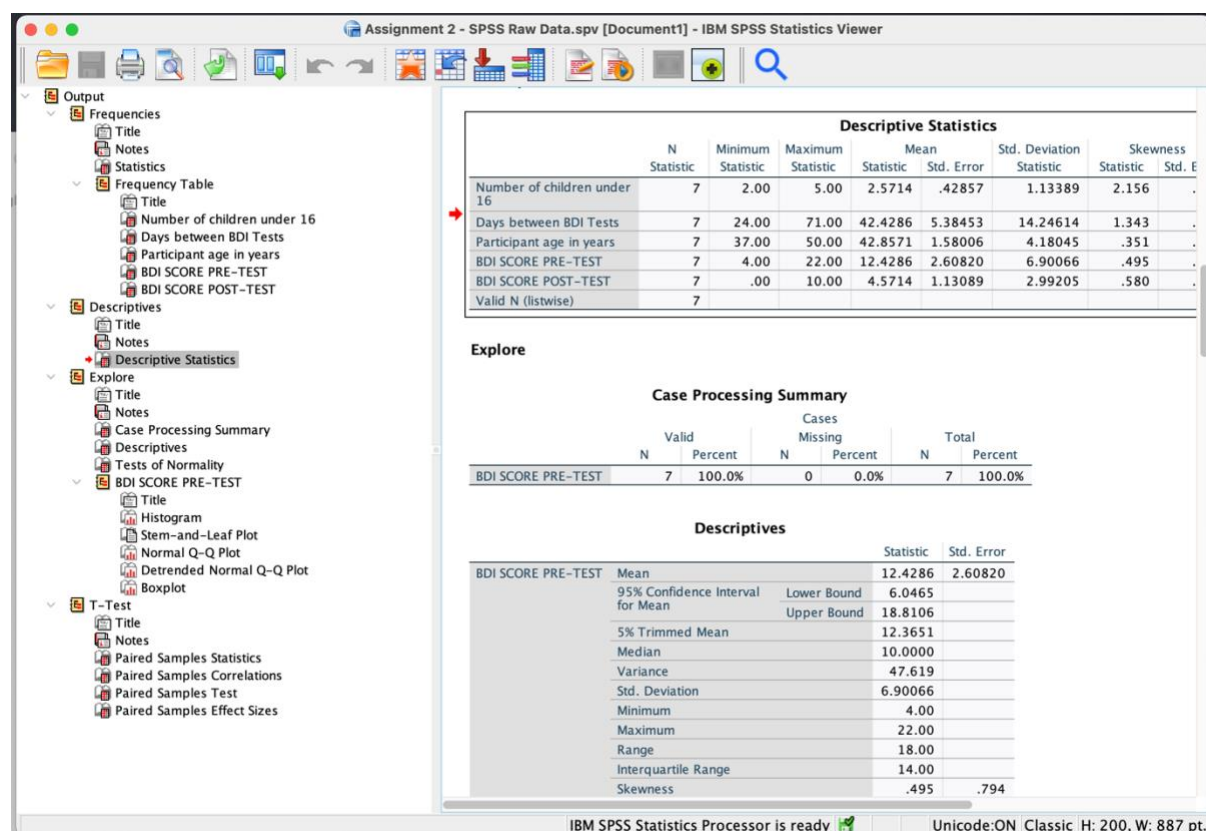
Figure 2 – Screenshot of MS Forms data analysis page



Once organised in Excel, the data was imported into SPSS and analysed (Figure 3). The results indicated a statistically significant difference between pre-test scores ($M=12.43$, $SD=6.9$) and

post-test scores [$M=4.57$, $SD=2.99$, $t(6)=2.834$, $P=0.030$]. Posthoc analysis to assess effect size using Cohen's parameters (1988) suggests an effect size of 0.57 (medium).

Figure 3 – Screenshot of SPSS Statistics Output viewer



FEELINGS

At the end of the residential weekend for this module, I felt somewhat overwhelmed. The prospect of completing research alongside a busy job and family life was, quite frankly, intimidating. Chatting with fellow students, I got the impression that many felt the same, but it quickly became clear from the Moodle reading that there was good reference reading to support the process. The most worrying component was the SPSS analysis since I last did academic data analysis in 2009. However, the UWTSD SPSS Laboratory manual provided had a significant impact, providing clear and easy to follow guidance on how to conduct analyses

using SPSS. In the end, the data analysis component was much easier than I anticipated. Looking back on the weekend, I can see how valuable the sessions were in giving me the context and confidence to tackle this study.

I had established that I wanted this module to function as a test opportunity for my dissertation, so that I might be able to fine-tune the skills needed to take on more substantial research. Reflecting on my learnings, I can see how the module structure helps students build out a blueprint for their dissertation, from refining a research question and seeking ethics approval to collecting and analysing the data using the appropriate methodology.

After completing the SPSS data analysis, I was pleasantly surprised to see a statistically significant result. I felt encouraged that my ultimate plan to study the correlation of dose and frequency on mental health for my dissertation was supported by this test research, and I felt optimistic that further research would be justified based on the results. I was disappointed that I could not conduct any of the semi-structured interviews since I believe this could have yielded some valuable insights, particularly from the two participants who showed the most substantial changes between pre and post-tests.

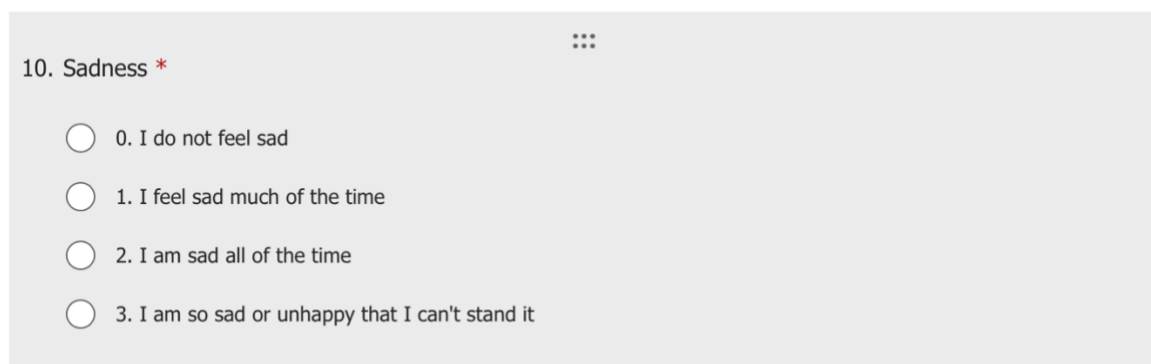
EVALUATION

Overall, the experience has been extremely positive and a critical step in preparing for my dissertation research. Given the solid body of evidence, locating my proposed study in the literature was not difficult. I did struggle to find cohort-specific studies, particularly those looking at males. Much of the research I did find looking at male mental health and nature-based interventions (NBIs) was specifically related to PTSD (Poulsen et al., 2018, p.64). Whilst

that limited my ability to locate the planned study in the context of existing research or find examples of research methods, it further validated the need for this research. With a Mind Charity report commissioned in 2019 confirming that men aged 45-49 in the UK still have the highest rates of suicide versus any other cohort, it is clear this is an issue which stretches far beyond people living with PTSD (mind.org.uk, 2019).

Overall, the questionnaire completion went very well. I reviewed and proofread it before sharing it with another student and asking them to check that the instructions were intuitive. Somewhat fortuitously, I coded the answers with the points assigned to each response in the BDI scoring protocol (see Figure 4). Although I can't recall consciously thinking that would be helpful for analysis, it turned out that decision was hugely influential in accelerating the data cleansing process before SPSS analysis. With a much larger cohort of participants, I could have faced a lot of clean-up and re-coding work before analysis had I not made that decision.

Figure 4 – Example of question “scoring” included in description to aid analysis



10. Sadness *

0. I do not feel sad

1. I feel sad much of the time

2. I am sad all of the time

3. I am so sad or unhappy that I can't stand it

On reflection, participant communication could have been handled better. I would be well advised to create a communication plan and strategy in the future. My initial communication with participants was disparate and spread across several platforms (email, WhatsApp and

SMS), meaning it was additional work searching for their responses. This would quickly have become untenable with a larger cohort in future research.

The mixed-methods approach laid out in the original research proposal ended up a purely quantitative analysis using only the scored responses to the questionnaire. However, reflecting on the objectives for this study and timeframe for the research, it was ambitious to try and pursue a mixed-methods approach.

Overall, despite the lack of interview data, the study addressed the research question and objectives and suggests, all be it with a very small sample size, that men can realise improvements in depression scores simply by walking alone in nature. As with most research, there were several limitations to the study, which will be discussed later in this paper but, ultimately, there is a clear path forward for future research to build on these findings.

Finally, from an ethical perspective, the study was well executed. Participants were well briefed, given multiple opportunities to leave the study and signposted at the end to professional resources for mental health support. With that said, there are always areas to improve. For example, in subsequent research, I would consider more frequent check-ins with participants to ensure they were walking frequently and understand if they needed support and signpost accordingly.

ANALYSIS

Selecting participants from my network was both helpful and problematic. On the one hand it facilitated quick sign up and buy-in from participants where I know other students struggled

to find volunteers. On the other hand, it may well have been why participants did not make themselves available for semi-structured interviews, given the potentially sensitive nature of the discussions. Future research should consider how to recruit participants effectively where no pre-existing relationships exist to ensure the best possible uptake for semi-structured interviews and impartiality. Additionally, when considering the follow-up interviews, I would plan to have audio-only Teams calls to further support the confidential and anonymous nature of the study.

I made some minor tactical errors related to the questionnaire, none of which limited the study given the small cohort but could have been highly problematic with a much larger cohort. The most compelling example of this is related to Participant ID. In the interests of anonymity and confidentiality, I asked participants to use their initials on the MS Form. Some of the participants used different initials pre and post-test (For example, DJM and DM). In retrospect using initials was a risk, given the likelihood that participants might change the initials used or share the same initials. In future studies, I would plan to use a fixed format for all participants, asking them, for example, to code their submission using a formula such as *[first initial + second initial + d.o.b DD/MM/YY]* and then confirming that coding via email back to the participant ahead of the post-test to minimise data coupling risks ahead of analysis.

CONCLUSION

On balance, I view the study as a successful first step; a formative learning experience that will guide future research. Ultimately if the study were to be repeated, I would plan to make the following headline changes to the research structure and communication plan:

- Clarify participant coding protocol
- Where possible, employ activity tracking technology (accelerometer) to track intervention frequency and dose
- Pre-book interviews with participants
- Check-in once per week with participants not submitting activity data
- Recruit participants without any connection to the researcher
- Consider adding quantitative analysis, which looks for correlations between frequency and/or dose with pre-post test score changes
- Include current “exposure to nature” within the questionnaire to understand the baseline
- If the study were to be repeated on a larger scale – for a dissertation, for example
 - it would be worth considering the use of a control group to understand what baseline changes in mood and depression scores might look like for similar cohorts

As with all research, there is undoubtedly scope for improvements. Ultimately, the study felt reasonably well positioned in the context of the existing literature and points to an interesting area worthy of further exploration at Master’s dissertation level and beyond.

ACTION PLAN

As outlined earlier, I plan to use this study as a platform to develop my dissertation research question and strategy. In addition, using the lessons learned from this reflective process, I plan to revisit the way I approach developing a research question to ensure that I have the opportunity to generate more meaningful results and discourse.

I have laid out below an action plan, centred around the key steps in the research process before final analysis, which will act as a reminder to me in the future on areas where the research process can be improved:

1. Literature Review

- Given the lack of research looking explicitly at men's mental health and the outdoors, I will consider reviewing adjacent research outside of the social sciences and outdoor education space for examples of research and knowledge which might be transferable.

2. Research question

- I will dedicate more time to building a strong research question. Lipowski (2008, p.1667) believes a "good research question challenges researchers to see matters from a new perspective and learn something new". I will endeavour to consider if the question can help further existing understanding or fill gaps in the literature and knowledge base. It will be essential to avoid conducting "me too" research which simply reinforces existing results unless I can demonstrate more robust process and reliability of data. Ultimately, the research question is the most critical part of the process and, therefore, worth additional time and attention (Lipowski, 2008, p.1670).

3. Ethics approval

- Dealing with mental health and depression needs to be done sensitively. A more comprehensive study looking at similar areas of interest may require a more direct link to professional counselling support for participants. Wasserman (2013,p.5) shares concerns over the ethical considerations after

data collection and outlines a framework for researchers to guide ethical practice post-data collection and during data analysis. For subsequent research, it would be good practice to more deeply consider ethical factors post-data capture, which go beyond data security, transfer and confidentiality.

4. Participant Recruitment & Briefing

- I will draw up a clear participant communication plan and develop an operating rhythm that lays out more consistent communication with participants to ensure they are supported and adhering to the program.

5. Data Capture & Analysis

- As previously discussed, I will be sure to clarify participant ID coding to ensure that post-data analysis is efficient and minimises the risk of incorrectly coding or assigning data.

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Appendix 1 – SPSS Output Data

Notes

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Syntax		FREQUENCIES VARIABLES=KIDS DAYS AGE BDIPRE BDIPOST /STATISTICS=MINIMUM MAXIMUM /ORDER=ANALYSIS.
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	Elapsed Time	00:00:00.00

Statistics

		Number of children under 16	Days between BDI Tests	Participant age in years	BDI SCORE PRE-TEST	BDI SCORE POST-TEST
N	Valid	7	7	7	7	7
	Missing	0	0	0	0	0
Minimum		2.00	24.00	37.00	4.00	.00
Maximum		5.00	71.00	50.00	22.00	10.00

Frequency Table

Number of children under 16

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	5	71.4	71.4	71.4
	3.00	1	14.3	14.3	85.7
	5.00	1	14.3	14.3	100.0

Total	7	100.0	100.0	
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Days between BDI Tests

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	24.00	1	14.3	14.3	14.3
	35.00	1	14.3	14.3	28.6
	40.00	1	14.3	14.3	42.9
	42.00	2	28.6	28.6	71.4
	43.00	1	14.3	14.3	85.7
	71.00	1	14.3	14.3	100.0
	Total	7	100.0	100.0	

Participant age in years

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	37.00	1	14.3	14.3	14.3
	39.00	1	14.3	14.3	28.6
	42.00	1	14.3	14.3	42.9
	44.00	3	42.9	42.9	85.7
	50.00	1	14.3	14.3	100.0
	Total	7	100.0	100.0	

BDI SCORE PRE-TEST

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4.00	1	14.3	14.3	14.3
	7.00	1	14.3	14.3	28.6
	9.00	1	14.3	14.3	42.9
	10.00	1	14.3	14.3	57.1
	14.00	1	14.3	14.3	71.4
	21.00	1	14.3	14.3	85.7
	22.00	1	14.3	14.3	100.0
	Total	7	100.0	100.0	

BDI SCORE POST-TEST

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	1	14.3	14.3	14.3
	4.00	4	57.1	57.1	71.4
	6.00	1	14.3	14.3	85.7
	10.00	1	14.3	14.3	100.0
	Total	7	100.0	100.0	

Descriptives

Notes

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	Cases Used	All non-missing data are used.
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Descriptive Statistics

	N	Minimum	Maximum	Mean		Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Std. Error	Statistic	Std. Error
Number of children under 16	7	2.00	5.00	2.5714	.42857	1.13389	2.156	.794	4.580	1.587
Days between BDI Tests	7	24.00	71.00	42.4286	5.38453	14.24614	1.343	.794	3.492	1.587
Participant age in years	7	37.00	50.00	42.8571	1.58006	4.18045	.351	.794	.723	1.587
BDI SCORE PRE-TEST	7	4.00	22.00	12.4286	2.60820	6.90066	.495	.794	-1.308	1.587
BDI SCORE POST-TEST	7	.00	10.00	4.5714	1.13089	2.99205	.580	.794	2.226	1.587
Valid N (listwise)	7									

Explore

Notes

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	Cases Used	Statistics are based on cases with no missing values for the dependent variable or factor(s) being analysed.
Syntax		EXAMINE VARIABLES=BDIPRE /PLOT BOXPLOT STEMLEAF HISTOGRAM NPLOT /COMPARE GROUPS /STATISTICS DESCRIPTIVES /CINTERVAL 95 /MISSING PAIRWISE /NOTOTAL.
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Case Processing Summary

	Valid		Cases Missing		Total	
	N	Percent	N	Percent	N	Percent
BDI SCORE PRE-TEST	7	100.0%	0	0.0%	7	100.0%

Descriptives

			Statistic	Std. Error
BDI SCORE PRE-TEST	Mean		12.4286	2.60820
	95% Confidence Interval for Mean	Lower Bound	6.0465	
		Upper Bound	18.8106	
	5% Trimmed Mean		12.3651	
	Median		10.0000	
	Variance		47.619	
	Std. Deviation		6.90066	

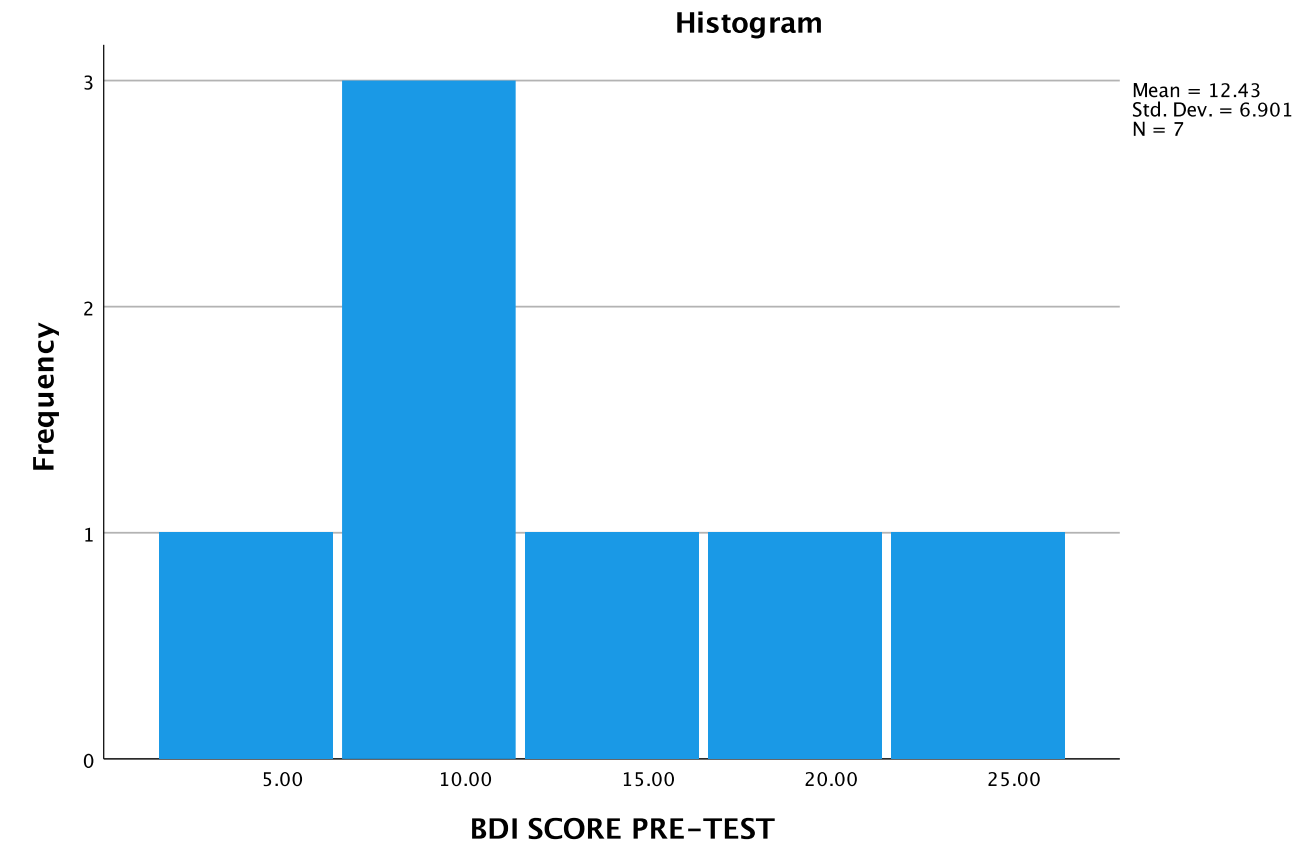
	Minimum	4.00	
	Maximum	22.00	
	Range	18.00	
	Interquartile Range	14.00	
	Skewness	.495	.794
	Kurtosis	-1.308	1.587

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
BDI SCORE PRE-TEST	.209	7	.200*	.914	7	.428

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

BDI SCORE PRE-TEST



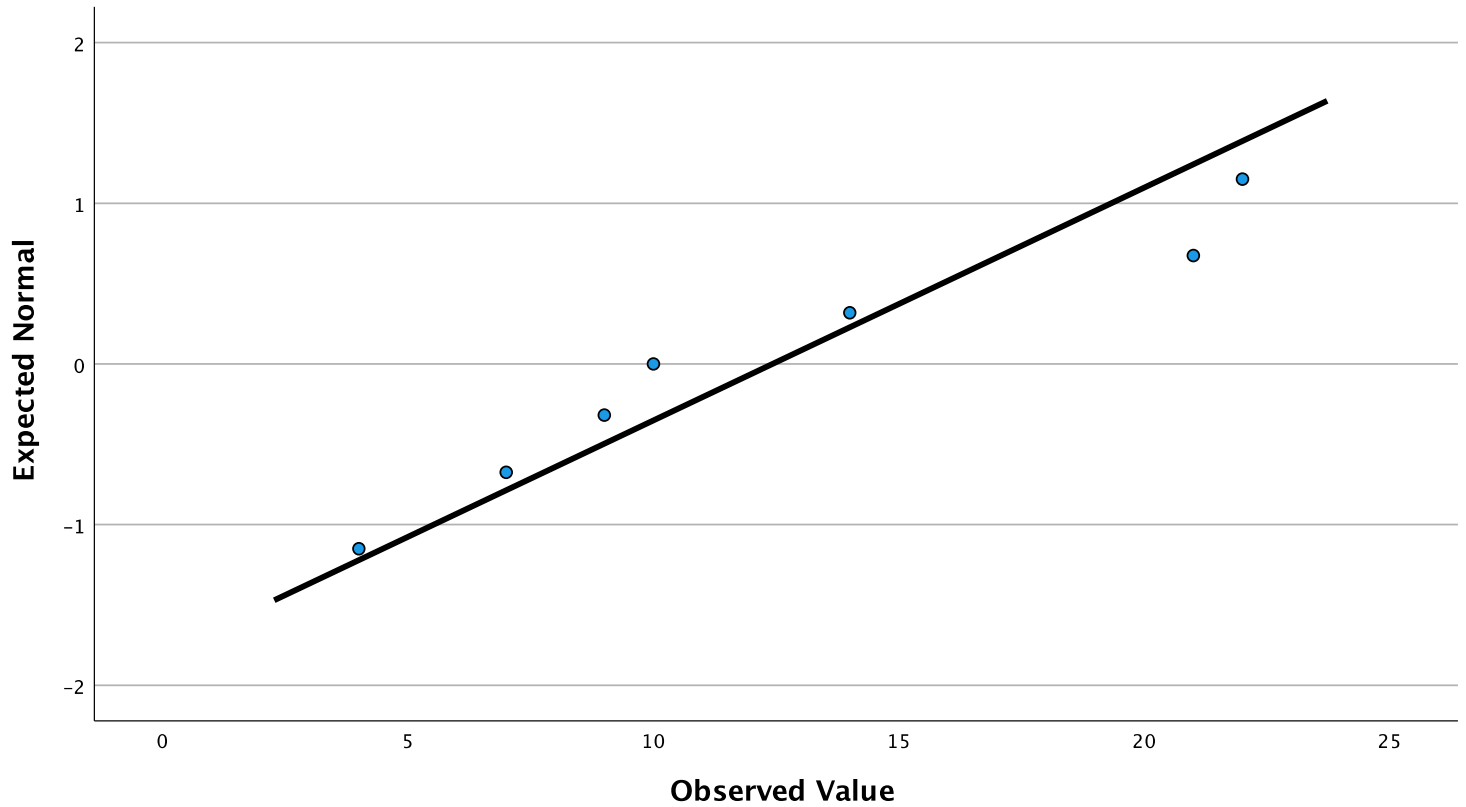
BDI SCORE PRE-TEST Stem-and-Leaf Plot

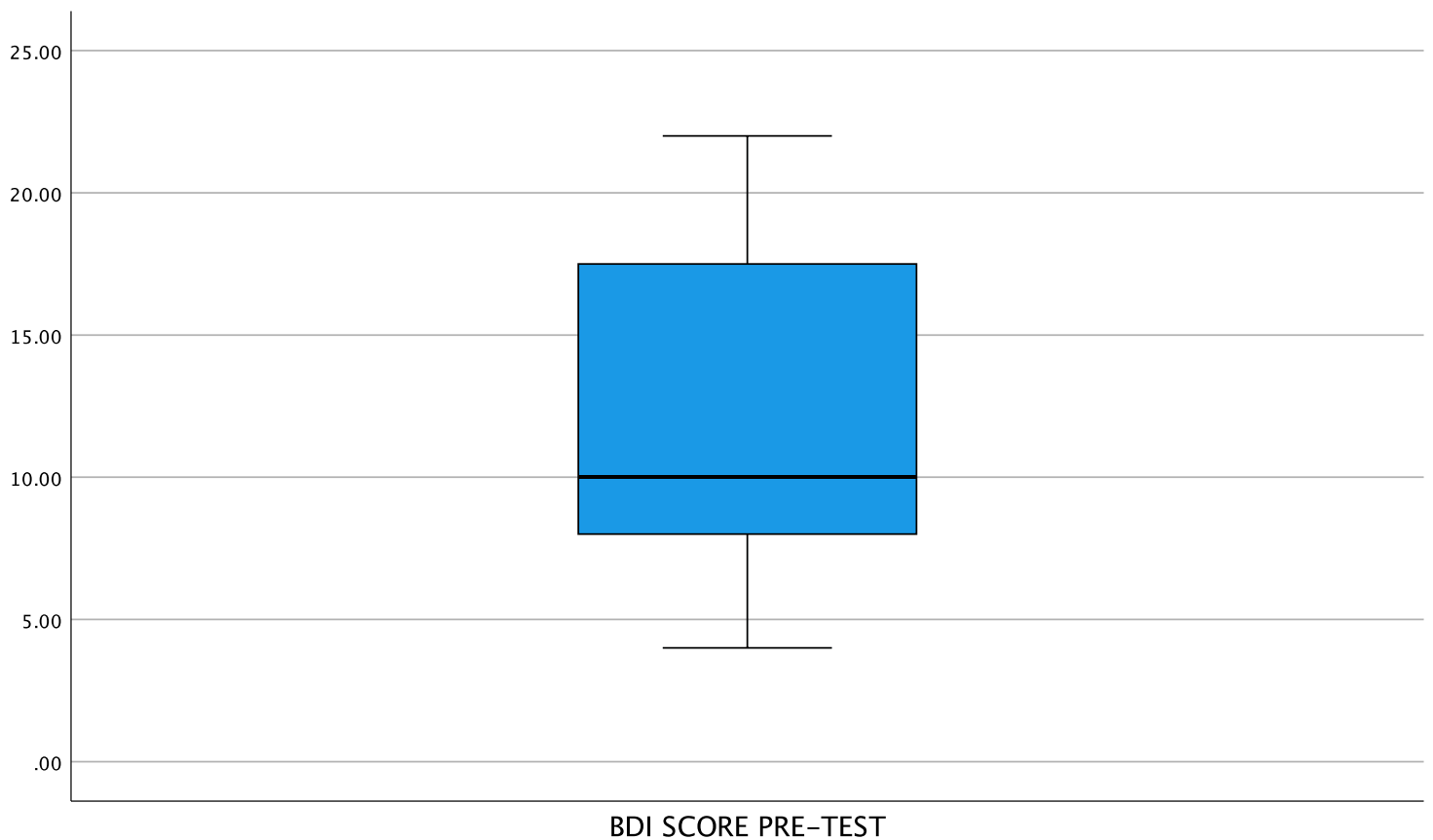
Frequency Stem & Leaf

3.00	0	.	479
2.00	1	.	04
2.00	2	.	12

Stem width: 10.00
Each leaf: 1 case(s)

Normal Q-Q Plot of BDI SCORE PRE-TEST





T-Test

Notes

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	Cases Used	Statistics for each analysis are based on the cases with no missing or out-of-range

		data for any variable in the analysis.
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Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.00

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	BDI SCORE PRE-TEST	12.4286	7	6.90066	2.60820
	BDI SCORE POST-TEST	4.5714	7	2.99205	1.13089

Paired Samples Correlations

		N	Correlation	Significance	
				One-Sided p	Two-Sided p
Pair 1	BDI SCORE PRE-TEST & BDI SCORE POST-TEST	7	.067	.443	.887

Paired Samples Test

		Paired Differences							Significance	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	One-Sided p	Two-Sided p
					Lower	Upper				
Pair 1	BDI SCORE PRE-TEST - BDI SCORE POST-TEST	7.85714	7.33550	2.77256	1.07294	14.64135	2.834	6	.015	.030

Paired Samples Effect Sizes

					95% Confidence Interval		
				Standardizer ^a	Point Estimate	Lower	Upper
Pair 1	BDI SCORE PRE-TEST -	Cohen's d	7.33550	1.071	.097	1.994	
	BDI SCORE POST-TEST	Hedges' correction	8.44494	.930	.085	1.732	

a. The denominator used in estimating the effect sizes.

Cohen's d uses the sample standard deviation of the mean difference.

Hedges' correction uses the sample standard deviation of the mean difference, plus a correction factor.