

'In a dark place we find ourselves, and a little more knowledge comes our way': The impact of depression, anxiety, and agency on identifying with fictional characters

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This experimental research investigated if depression and/or anxiety impacts the strength of identification with a fictional character, and if having greater agency over a character's choices altered identification with it. Past research in these areas is extremely limited. A hypertext fiction story-game were used as an experimental stimulus, slightly modified to offer different amounts of agency for different participant groups. Over 100 participants took part, and ANOVA analysis was carried out. The novel results found good evidence that severe grades of both depression and anxiety reduce the level of the reader's identification with a character and that higher agency increases identification. This has practical application as a potential future mental health diagnostic tool based on an everyday task and has the potential to inform literary creation and computer game design rhetoric.

Keywords: depression; anxiety; agency; PHQ-9; GAD-7; Star Wars; hypertext; identification; identity

Recent research has explored the relationship between gaming to the common mental health challenges of depression and anxiety. Pine, et al. (2020)'s meta-analysis of 13 papers shows that 'computer video games' show promise for treating depression, anxiety and stress. Kowal et al. (2021) discuss the mounting evidence of the positive mental health benefits of gaming. Kandola, et al. (2021) found that boys with low physical activity who game regularly but no other boys or any girls are less likely to show signs of depression three years later, but the casual nature of this finding is unclear.

In many kinds of games as well as other media such as films and written word stories, a narrative is presented with characters for the readers to identify with. This process of identification modifies self-perception so that character attributes are seen by the reader as part of themselves (Klimmt et al., 2009). A strong sense of identification with a character increases enjoyment, cognitive elaboration, dramatic impact and the impact of the fiction of attitudes and beliefs. (Igartua, 2010). Hence, understand the mechanisms of identification is important to guide effective artistic creation. It may also provide insight that generalises to better understand other forms of identification, such as with groups or with authority figures. There is material on certain kinds of identification in early psychology such as Freud (2010, originally published 1923) and Anna Freud (1992, originally published 1936) and in the humanities but these lack testing or conceptualisation (Cohen, 2001) so there is an empirical research gap on the topic of identification with fictional characters.

Considering these two distinct topics of depression and anxiety and identification together in the context of gaming poses the question of the impact of depression and anxiety on the ability to identify with a fictional character. This is the main topic of investigation here.

Research suggests that depression can cause a wide range of cognitive impairments (Kaltenboeck et al., 2018) including attention, memory, and motivation. While not covered by previous research explicitly, we might reasonably expect that depression will negatively impact on identification. Lukasik et al. (2019) discusses that anxiety impairs working memory but increases sensory sensitivity, so it is less clear what impact anxiety might have on identification.

A secondary research topic is the impact of the identification on the amount of agency the participants have over the character. Agency can be seen as the defining feature that separates interactive games from static fiction such as conventional written word stories. Shaw (2011)'s qualitative research found that agency over a character increases identification, but there is a lack of empirical evidence on the relationship between agency and identification. It may be that agency increases identification as Shaw suggests, or it may be that the additional cognitive load of making choices reduces identification.

Exploring both topics together in the same experiment has the benefit of yielding greater insight from the same research effort. Beyond this, exploring both topics together enables investigating not just the effect of depression, anxiety and agency on identification in isolation, but any interaction effects that may exist.

Experimental research by Hook (2019) used a hypertext fiction (HF) story game (Montfort, 2003) as stimulus and discovered that women, but not men, identify more strongly with characters of their own gender. Hook & Morys-Carter (2020) supported this finding and found no significant evidence that atheists or Christians identify more strongly with a character of their own religion. This precedent of using HF as stimulus in experiments is the basis of the experimental design discussed below.

METHODS

Participants

Participants were recruited by posting adverts on social media in *Star wars*, gaming, and role-playing social media areas. It ran online for around two weeks in July 2021. A total of 107 responses were recorded, and all are included in this analysis.

The majority (79%) of the participants identified as male, 12% as female, 3% as 'other/non-binary', and 7% preferred not to say. Most of them identify with Europe (59%) or North America (36%) with small numbers recording Asia (2%) or Africa (3%). Most (82%) were native English speakers. They were almost evenly split between those with no degree (31%), those with a science degree (30%), and those with an arts/humanities degree (31%), with a few having both science and arts/humanities degrees (8%).

A majority (61%) of the participants knew the wider star wars media, while almost a third (31%) only knew the main films. A majority (61%) had played more than ten interactive fiction games, and a majority (64%)

had had many years of experience with tabletop role-playing games. The participants then might be considered to have a broad fluency with games that involve identifying with a character.

Materials

The experimental stimulus was a short custom-written hypertext fiction (HF) story game, sometimes called 'choose your own adventure' games. In this format, the reader reads a page of text then selects one from a series of hyperlinks to decide what the protagonist chooses to do in the story. An original HF was written for this experiment to ensure the participants did not have any prior exposure to it; the researchers have additional creative writing qualifications.

This story was based on the *Star Wars* setting, which as well as the films and TV series has also been used previously by many computer games, board games, and multiple tabletop role play games (RPGs); the quote in the title of this paper comes from *Star Wars* media. The use of a fictional setting far from everyday life made it unlikely the participants would share any identities with the character, while the use of a famous fictional setting makes it still relatable. Using a popular setting also likely attracts more participants, increasing the sample size. The complete story included six binary choices for participants to make during the story about the protagonist's decisions.

Previous research (Hook, 2019) has found that the gender of the character can have a significant impact on identification. In this story the character was written without having their gender specified, with no references to their gender and a gender ambiguous science-fiction name.

Design

The experimental design was based on the method used by Hook (2019) and Hook & Morys-Carter (2020) and coded using the Twine software for creating HF.

The dependent variable was the participant's identification with the character. Following the same design as Hook (2019) and Hook & Morys-Carter (2020)'s experiments, this was captured by two seven-point Likert-type items: 'How strongly did you identify with [character name]?' and 'How strongly were you able to take on the role of [character name]?'. The responses were averaged to reduce the impact of the precise wording of the question.

The main independent variables were the level of depression and the level of anxiety of the participants. Depression was assessed using the well-established PHQ-9 questionnaire (Kroenke et al., 2001). This asks nine questions with a choice of four ordinal answers for each, which together are used to generate a total score between 0 and 27, which in turn produces an overall ordinal grade (none, mild, moderate, moderately severe, severe). Anxiety was assessed using the GAD-7 questionnaire (Swinson, 2006), which asks seven questions, and scores them in a similar way to produce an ordinal grade (normal, mild, moderate, severe).

Another independent variable was the level of agency the participants had over the story. To test this, the participants were assigned randomly and secretly by the software to one of two groups. For one group, participants were given the full six binary decisions to make when they played through the story. For the other group, they only had three decisions. For the other three decision points the participants were only shown a single hyperlink to continue, removing their agency over the character's choice. Which three of the six decision points were affected was chosen randomly for each participant, and when a decision point was chosen which of the two options was shown and which was hidden was also randomly selected in each case. This was the only difference between the two groups.

Procedure

The story game was a series of webpages presented online with participants using their own devices in their everyday settings. This gave high ecological validity and enabled a diverse international mix of participants.

Data was collected by online form, and participants gave consent by completing the form and clicking the submit button. Potential participants could play through the story game and not take part by not completing or not submitting the form though it is unknown how many may have done this. An email address was given in case participants wished to withdraw later, and no one did this.

As well the two identification questions and the PHQ-9 and GAD-7 questions, participants were asked additional background questions including their gender, broad geographic identity, education level,

distractions while taking part, and Star Wars exposure. Names and other identifying data were not requested, so all data was anonymous. Data was stored with appropriate security, and ethical review and approval was arranged from the author's university.

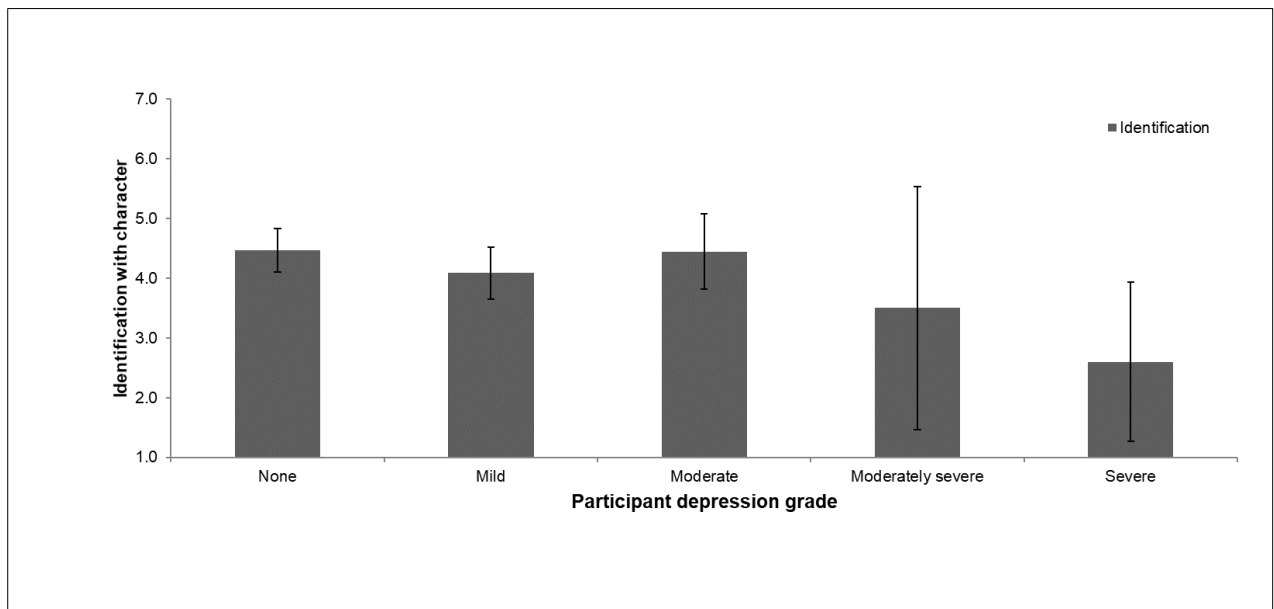
RESULTS

The primary analysis conducted was an independent ANOVA, with depression, anxiety and group as the independent variables and the average of the two identification questions as the dependent variable. All 107 participants were included, with none excluded.

The main effect of participant depression on identification was significant, $F(1, 102) = 2.73, p = 0.033$. Post hoc tests using Tukey found significant differences between the 'severe' and 'None' groups ($p = 0.033$) and approaching significant differences between the 'severe' group and the 'moderate' group ($p = 0.060$). Means are shown in Figure 1.

Figure 1

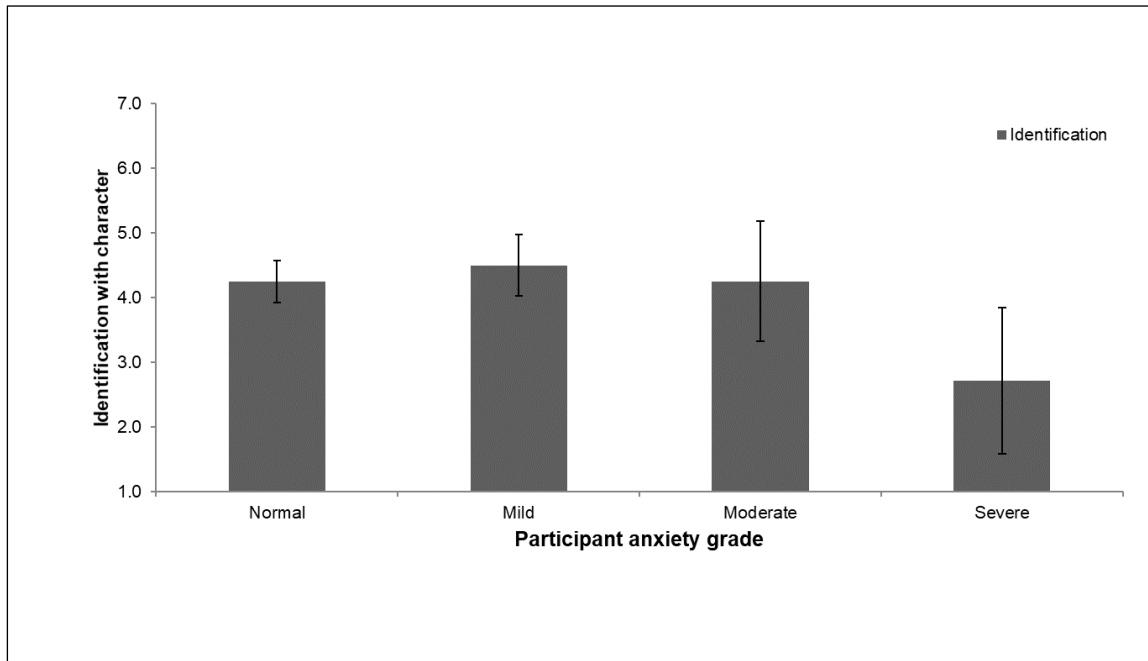
The Interaction of depression grade on identification with character



The main effect of participant anxiety on identification was significant, $F(1, 103) = 3.26, p = 0.025$. Post hoc tests using Tukey found significant differences between the 'severe' group and both 'mild' group ($p = 0.014$) and 'normal' group ($p = 0.026$). Means are shown in Figure 2.

Figure 2

The Interaction of anxiety grade on identification with character



In relation to the second research topic of looking at the effect of agency on identification, there was a significant difference $F(1, 105) = 4.80, p = 0.031$ with higher agency producing higher levels of identification. Means are shown in Table 1.

Table 1
 The Interaction of agency on identification with character

	Low Agency	High Agency
Mean identification (SD)	\bar{x} 3.85 (1.51)	\bar{x} 4.44 (1.27)
N	42	65

Exploratory analysis

ANOVA tests were rerun looking at the two participant groups separately.

For the high agency group, depression approached significance ($p = 0.087$) and was strongly significant for anxiety ($p = 0.007$). The minor shift in significance might be attributed merely to the reduced sample size. Means are presented in Table 2,

Table 2
 The Interaction of depression and agency on identification with character

	Low Agency	High Agency
None	\bar{x} 3.97 (1.51)	\bar{x} 4.75 (0.96)
Mild	\bar{x} 3.63 (1.35)	\bar{x} 4.33 (1.25)
Moderate	\bar{x} 4.44 (1.49)	\bar{x} 4.44 (1.31)
Moderately severe	\bar{x} 3.17 (2.02)	\bar{x} 4.00 (3.54)
Severe	\bar{x} 2.50 (2.12)	\bar{x} 2.67 (1.53)

For the low agency group, depression was not significant ($p = 0.425$), and anxiety was also not significant ($p = 0.708$). Means are presented in Table 3.

Table 3
 The Interaction of anxiety and agency on identification with character

	Low Agency	High Agency
None	\bar{x} 3.72 (1.53)	\bar{x} 4.55 (1.12)
Mild	\bar{x} 4.19 (1.07)	\bar{x} 4.66 (1.25)
Moderate	\bar{x} 4.13 (1.85)	\bar{x} 4.50 (1.35)
Severe	\bar{x} 3.17 (1.89)	\bar{x} 2.38 (1.38)

Further ANOVA tests were carried out using the secondary questions. Only a single significant result was found, in relation to the gender question $F(3, 103) = 2.73, p = 0.048$. However, Tukey analysis revealed this was due to significant differences between males and the 'prefer not to say' group ($p = 0.028$). It is interesting that this group appears to be a distinct from the other gender groups, and while the number of participants are small the difference is very stark. There were no significant differences between males and females identifying with the gender undefined character. Means are shown in Table 4.

Table 4
 The Interaction of participant gender on identification with character

	Male	Female	Other / non-binary	Prefer not to say
Mean identification (SD)	\bar{x} 4.30 (1.20)	\bar{x} 4.35 (1.36)	\bar{x} 4.33 (1.04)	\bar{x} 2.79 (1.65)
N	84	13	3	7

DISCUSSION

This study has found good evidence with multiple highly significant results that the more severe forms of depression and anxiety lessen the capacity to identify with fictional characters, which by extension reduces the amount of enjoyment drawn from engaging with such artistic works. This might be seen as part of the 'vicious cycle' in therapy terms where it is the nature of such conditions that they become a self-supporting cycle. It is consistent with previous notions that ceasing to derive pleasure from previously enjoyed pursuits is a possible symptom of depression. Nonetheless this specific finding represents the first discovery with statistical evidence of this specific symptom, associated with both severe depression and severe anxiety.

The study has also found good evidence with significant results that higher levels of agency over a character increase the sense of identification with it. This would imply that interactive media such as games are a creative form inherently stronger in this particular regard than static media.

It is also interesting to note on the topic of agency that due to the need to keep the stimulus consistent across participants the true level of agency in the story-game stimulus was extremely limited. At either three or six points depending on the assigned group participants had a choice of two options which each produced a different next screen of text, but both of these options then led back to the same next page of narrative. That is, the story-game offered the illusion of agency rather than impactful agency that produces meaningful changes in the narrative. This is still ecologically valid, as many commercial computer games (for example those produced by *Telltale*) also offer only the illusion of agency. The point here is that even the limited illusion of agency can produce this striking impact in identification.

The lack of significant findings when looking only at the low agency group is interesting. We speculate from this that only those not suffering from severe depression or anxiety and able to capitalise on the higher agency to identify more strongly; the cognitive impairments caused by depression and anxiety impair the benefits of agency. However, we also note the means at face value remain suggestive, so this lack of significance may also simply reflect the smaller sample sizes when splitting the data in this way.

The secondary finding relating to gender is surprising. We note that the participants who identified as 'other/non-binary' identified broadly as much as male and female participants, so do not believe the finding is due to such participant recording 'prefer not to say.' One possible explanation is that those reluctant to reveal their gender were adopting a less committed and engaged stance to the experiment.

Reflection on the method

This experiment has continued to develop the experimental method first published in Hook (2019), using a novel story-game as an experimental stimulus to apply the experimental method to the study of identity. It also applies the experimental method to the game studies discipline where less scientific methods have historically been dominant. For more information, Järvelä et al. (2014) has a wider discussion of digital games as stimulus, while Hook (2012) has a discussion of classic psychology experiments as if they were games.

While still a good sample size with over a hundred participants, this experiment recruited less participants than other similar experiments. We speculate one reason for this is the longer questionnaire with more probing questions may have put off some potential participants. We also note that despite the software assigning participants randomly to the two groups with equal chance, 65 responses were received for the high agency group and 42 for the low agency group. It may be that potential participants tended to drop out more often when playing the low agency version, finding it less engaging.

Practical applications of the findings

This finding has direct application to the design of interactive media, by informing us that the reader's sense of identification with a character can be increased by adding more agency, or at least the illusion of more agency. While this research has compared two different amounts of agency, it could be argued that this finding implies that interactive media has an additional advantage in producing stronger identification than static media. Further research is needed to explore this implication.

Considering the findings about both mental health and agency together, this might suggest a reason why those suffering from depression or anxiety often choose to spend time playing interactive games. The lower identification caused by their mental health is offset by the higher identification caused by their sense of agency. To put it another way, interactive media such as games retains a potency for them that static media such as conventional fiction does not.

These findings might also generalise to other forms of identification which are difficult to study experimentally. For example, it would imply that building identification with a celebrity or politician might be better achieved by giving people an illusion of agency over them.

Implications for future research

If further research continues to produce evidence that identification is weaker for those with more severe levels of depression and anxiety, then it may be possible in theory for this to become a mental health diagnostic tool, one that unlike existing tools is based on a more everyday task of reading a short work of fiction rather than having to answer personally probing questions. While this is unlikely to be a sufficient tool in itself, this would expand the toolbox of existing diagnostic tools.

That this research has not explored is whether a person with depression or anxiety would identify more strongly with a character that had the same mental health condition as themselves. While such research raises greater ethical challenges, an understanding of this would offer valuable insight. Related to this would be research into whether a story about a depressed character successfully overcoming depression would have therapeutic power to support a reader overcoming depression.

This research has revealed the importance of the impact of mental health on identification with characters, which suggests that future research using this methodology may benefit from gathering data from participants on this topic to statistically control for it. Gathering such data also has the benefit that the conclusions here can be tested for alongside the **main hypothesis that future research is primarily testing.**

CONCLUSION

This research has applied a relatively new experimental design variant to explore the impact of a person's mental health on the capacity to identify with fictional characters. This is a previously under-researched topic and the findings potentially represent the discovery of a new symptom of both depression and anxiety.

Being run online, this experiment has produced a relatively large and international pool of participants, if sadly not as large as some previous experiments in this format.

The ANOVA analysis found significant and novel results that both severe depression and severe anxiety weaken identification with a character, and a separate result that higher agency increases identification. Aside from the academic pursuit of knowledge, these findings have direct practical application for artistic creation of games, films, and written text which seek to build identification with fictional characters, and perhaps other activities that seek to build identification with another.

This research also informs future experimental design in this tradition, in stressing the benefit of assessing the mental health of participants. It further demonstrates this experimental approach to study this topic that previously belonged to the humanities.

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