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Need satisfaction, passion, empathy and helping behaviour in videogame play

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ABSTRACT

The primary aim of the current study was to explore the extent to which videogame helping behaviour could be explained by need satisfaction and passion. The study extends previous research by looking specifically at in-game helping behaviour which has relevance for a range of wellbeing outcomes as well as reducing in-game toxicity. Survey data were collected from 389 participants assessing need satisfaction, passion, empathy and in-game helping behaviour during the past four weeks. Path analysis revealed that helping behaviour is associated with empathy which is more likely in the context of harmonious passion and less likely in context of obsessive passion. Competence and Relatedness were also found to increase the likelihood of helping behaviour.

1. Introduction

Alongside the increase in popularity of videogames (Brand et al., 2020), there has been a steady increase in research seeking to understand the player experience (Boyle et al., 2011), motivations for play (Ferguson & Olson, 2013; Sherry et al., 2006) and the determinants of whether videogames have a positive or negative influence on players (Allen & Anderson, 2018; Drummond et al., 2020). Self-Determination Theory has emerged as a widely applied (Tyack & Mekler, 2020, pp. 1–22) means of understanding players' interactions with videogames. Most recently, increasing attention has also been paid to the Dualistic Model of Passion (Vallerand et al., 2003).

1.1. Self-Determination Theory and the Dualistic Model of Passion

Self-Determination Theory (SDT) outlines a process whereby humans are more intrinsically motivated to undertake activities that satisfy three universal needs (competence, autonomy and relatedness; Deci & Ryan, 1985, 2000). Activities that support these needs are generally considered to improve wellbeing and performance while those that thwart or fail to support these needs can be expected to have a detrimental effect on wellbeing (Deci & Ryan, 1985, 2000; R. M.; Ryan & Deci, 2000). Over time, need satisfaction from an activity can be expected to lead to passion for that activity (Vallerand et al., 2003). The Dualistic Model of Passion (DMP) identifies that passion can develop in both a harmonious

and obsessive manner. When people are harmoniously passionate, they describe their passionate activity positively, and engage in it freely without negative consequences, such as conflict with other activities or goals in their lives. However, when obsessively passionate, while people exhibit a similar strong desire to engage in the activity, the desire is characterized as an uncontrollable urge that is in conflict with other activities and goals and which can lead to the neglect of other pursuits (Vallerand et al., 2003, 2007). Lalande et al. (2017) confirmed this pattern, wherein need satisfaction within the activity leads to passion for the activity in a series of studies in the domains of playing a musical instrument, basketball, work and participants' own choice of preferred activity. In each case, need satisfaction from the activity predicted both harmonious and obsessive passion, but need satisfaction from the activity was always more strongly related to harmonious (than obsessive) passion.

The utility of SDT and the DMP has been established in a range of diverse domains including education (Deci et al., 1991), health (Gillison et al., 2018), the workplace (Gagne, 2014) and sport (Teixeira et al., 2012). SDT was first utilised to explain the motivation to play videogames by Ryan, Rigby and Prybylski (Ryan et al., 2006) who conducted a series of four studies showing that experiencing competence, autonomy and relatedness during play independently predicted enjoyment and future game play. Since then, SDT has been successfully used to understand the player experience (Klimmt et al., 2009, pp. 1–12; Tamborini et al., 2010), as a guiding principle for design (McEwan et al.,

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2020; Tyack & Mekler, 2020, pp. 1–22), and to explain and predict both positive (Reinecke, 2009) and negative outcomes associated with videogame play (King & Delfabbro, 2009). More recently, videogame research has expanded to also consider the DMP to understand when positive or negative outcomes are more likely for players. Relatively early work found that passion for play predicted wellbeing after controlling for broader trait-level need satisfaction (Przybylski et al., 2009). More recent research focussing on the game 'Destiny' (Perry et al., 2018) found that obsessive passion was associated with greater time spent playing while harmonious passion was associated with greater social capital. Confirming the social benefits associated with harmonious passion, Toth-Kiraly et al. (2019) found a link with social interaction for players of both online and smartphone games. They further found that harmonious passion predicted self-development while obsessive passion predicted overuse. The pattern has also been confirmed with physical outcomes with research showing harmonious passion was associated with reduced and obsessive passion with increased negative health symptoms including carpal tunnel syndrome, appetite loss and disordered sleep (Schellenberg et al., 2019). Importantly, to the best of our knowledge, research has yet to explore the relationship between specific needs (competence, autonomy or relatedness) and type of passion for videogames (with previous research instead treating need satisfaction as a single, combined construct). The present study examines all three specific needs to examine their potential unique relationships with the two passion types of harmonious and obsessive.

1.2. Helping behaviour

To date, research has not explored the relationship between SDT, DMP and helping behaviour in the context of videogame play. However, helping behaviour is significant when considering the ways in which videogames might influence wellbeing. Helping behaviours are often conceptualized as either prosocial or altruistic (Eisenberg & Miller, 1987; Swap, 1991; Toumbourou, 2016). While both share the property of helping another person, prosocial behaviour can also benefit the person extending the help. In contrast, altruistic behaviour occurs when another person is helped without any benefit to the person helping. In the current study, the distinction is less important than the notion that helping behaviour encompasses both. Outside the domain of videogames, a large amount of research has analysed prosocial behaviour, with studies suggesting it to be a protective factor against depression (He et al., 2018) and decreased negative emotional responses to stress (Raposa et al., 2016). Alden and Trew (2013) found that socially anxious participants who undertook kind acts had higher levels of positive affect, with these effects being present over the full duration of the 4-week study. The positive effects of prosocial behaviour have also been found across cultures, with Chinese (Guo et al., 2018) and Indian (Kumar, 2014) samples also reporting increased levels of wellbeing and happiness. Furthermore, both the elderly and young children were reported to have positive outcomes from prosocial behaviour (Harrington & O'Connell, 2016; Kahana et al., 2013). In Harrington and O'Connell's (2016) study, school students reported a positive relationship between playing of prosocial video games and favourable outcomes such as friendly relationships. In Kahana et al.'s (2013) study among retirement community elders, helping behaviours had positive effects on wellbeing including for life satisfaction. Overall, the research on prosocial behaviour points to the positive outcomes associated with engagement in acts of helping across many domains (D. A Schroeder & Graziano, 2015) including evidence in the context of gaming (see below), suggesting efforts to understand and facilitate prosocial acts within gameplay may lead to more positive player and favourable outcomes.

The majority of work considering helping behaviour in the context of videogames has focussed on prosocial behaviour. It has been shown that playing prosocial videogames (i.e., games that encouraged or promoted prosocial behaviour) lowered hostile expectation bias, as well as accessibility of aggressive thoughts (Greitemeyer & Osswald, 2009);

heightened empathy and reduced schadenfreude (Greitemeyer et al., 2010); improved accessibility of prosocial thoughts (Greitemeyer & Osswald, 2010); lowered levels of aggression (Greitemeyer et al., 2012); and also increased helping behaviours outside of gameplay (Iten et al., 2018). The benefits of prosocial games have been shown to apply across age groups with prosocial games increasing helpful behaviours in children (Saleem et al., 2012) and increased positive state affect in college students (Saleem et al., 2012).

It is important to note that much of the research on gaming-related prosocial behaviour employed experimental designs which required participants to play a videogame under lab conditions and then engage in a separate activity by which prosocial behaviour could then be measured. While several studies have examined prosocial behaviour after gameplay (or outside the game), there is currently a paucity of research examining prosocial behaviours undertaken during gameplay (or within the game). De Simone (2013) assessed videogame genres and in-game behaviours of videogame players to examine how players behaved within different gaming environments. Actions that were thought to be related to prosocial in-game behaviours were helping and guiding other videogame players, and organising and managing game groups or guilds. The genres that were related to these helping and organisational behaviours were simulation, role-playing games, rhythm, and first-person shooter games. Worth and Book (2014) analysed the relationship between personality and behaviour in those who played the massively multiplayer online role-playing game (MMORPG) World of Warcraft (WoW). For prosocial behaviour specifically, the construct "helping" was examined which related to providing aid to other players. It was found that helping behaviours were uniquely predicted by extraversion, agreeableness, openness to experience, and emotionality. From these results, it was then suggested that players who engage in helping behaviours during WoW gameplay may have a tendency to be sentimental, patient, and able to communicate with others and seek help when required.

Conversely, promising results have been found for reducing negative behaviours in games. Toxicity is a current concern for game developers and players, and is a form of cyberbullying that refers to intentional and persistent behaviour to harm others online (Smith et al., 2008). Toxicity during gameplay has been associated with feelings of frustration and anger in those who have been impacted by toxic behaviour (Chesney et al., 2009) and was also associated with affected players avoiding gameplay altogether due to the negative impact on their wellbeing (Assunção, 2016). Online toxic behaviour has also been linked to low self-esteem and empathy within perpetrators (Brewer & Kerslake, 2015). Research has shown that techniques such as priming players with messages promoting positive behaviours can reduce toxicity in the form of negative attitudes, verbal abuse and offensive language (Maher, 2016). The promotion of prosocial helping behaviour can be expected to further combat in-game toxicity.

1.3. Empathy

One factor that has been consistently linked to helping behaviour is empathy (Davis, 2019). Empathy refers to an individual's ability to communicate their emotions, comprehend and appropriately react to another person's emotions, and encourage prosocial behaviour (Spreng et al., 2009). Empathy has often been conceptualized into two separate constructs: affective empathy and cognitive empathy. Affective empathy refers to whether an individual can share an emotion vicariously with another, whereas cognitive empathy refers to whether an individual can understand another's emotions (Vachon et al., 2014).

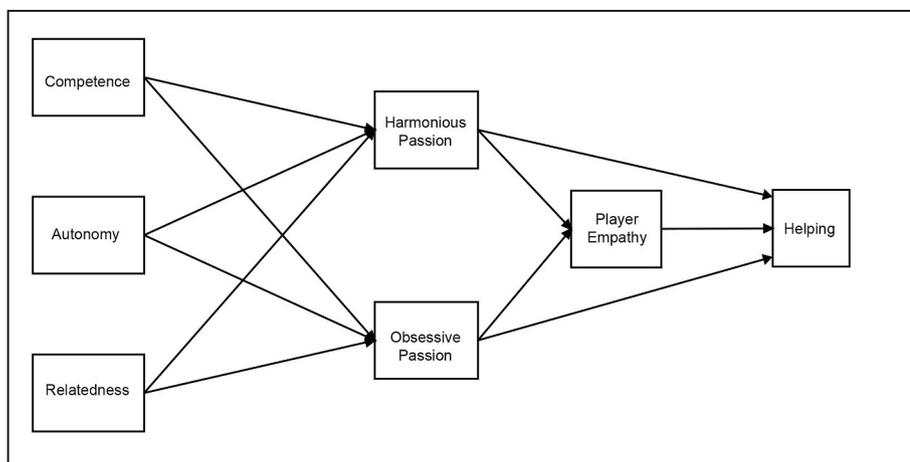
The well-established empathy-altruism hypothesis proposes that feelings of concern for the welfare of another/others (empathy) serves as a precursor to altruistic motivations (Batson et al., 1981). Reviews of research testing the hypothesis show strong support for the proposition (Batson et al., 2015) with less evidence for alternative hypotheses suggesting egoistic concerns precede altruistic acts. In a recent example of

support for the hypothesis, Farrelly and Bennett (2018) found evidence for the relationship between empathic feelings and charitable acts in an online ‘real-world’ scenario of volunteering time resulting in donations of rice as part of a non-profit website of the United Nations World Food Programme following an induced empathy task. Participants induced with empathic feelings (via an emotional content video) spent more time donating rice grains to the charity than participants in the neutral (emotional content) video condition. Similarly, Carlo et al. (2012) found that trait empathy also predicted prosocial behaviour. In addition to prosocial behaviour, altruism has also been linked to empathy. Persson and Kajonius (2016) examined emotional and cognitive empathy across 10 universal altruistic values. A strong positive relationship was found between empathy and altruistic values. Recent research has confirmed that the relationship between empathy and helping behaviour extends to prosocial acts in the real world (Bethlehem et al., 2017).

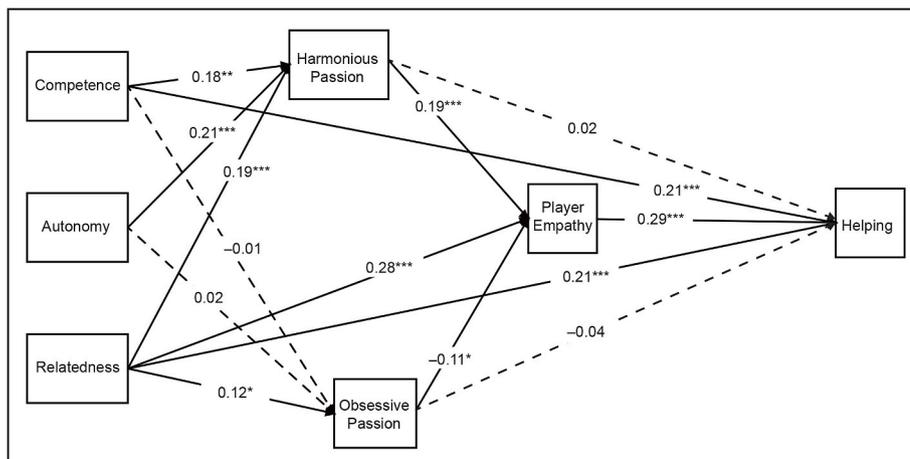
For videogames, it has been shown that, when playing a prosocial videogame, participants’ interpersonal empathy increased, while their feelings of schadenfreude (i.e., witnessing the misfortune of another and subsequently feeling pleasure) decreased (Greitemeyer et al., 2010). Similarly, in Harrington and O’Connell’s (2016) study, engagement in prosocial videogames was positively associated with empathy in school aged children. Based on these findings (in both non-videogame and videogame settings) and the empathy-altruism hypothesis, we expected empathy to predict in-game helping behaviour.

1.4. Current study

Given the established benefits of helping behaviour and the relative paucity of research focussed on in-game helping, the current study sought to use SDT and DMP as well as the empathy-altruism hypothesis as a means of understanding when helping behaviour was more likely. This study combines knowledge about the motives of playing games (via constructs from SDT and DMP) with established links between empathy and altruistic decisions. The findings have potential implications for both positive behaviour in games, outside of games and general well-being benefits. As shown in Fig. 1a, this study proposed that, in accordance with the empathy-altruism hypothesis, one’s in-game helping behaviours (i.e., prosocial and altruistic behaviours such as supporting a teammate) are predicted by their online empathy. While research has not yet directly explored the relationship between passion and helping nor passion and empathy, based on existing research showing various positive outcomes associated with harmonious passion and negative outcomes with obsessive passion, we assessed whether passion predicted videogame empathy and/or helping behaviour directly. Given research showing that harmonious passion is associated with increased positive affect (Wang et al., 2008) and that positive affect enhances empathy (Li et al., 2017), it was expected that harmonious passion would lead to increased empathy. Apart from direct effects, we also sought to test the mediational effect of empathy on the relationship between passion and helping. On the basis of previous research, we also expected both types of passion to be broadly predicted by in-game need satisfaction and assessed the relationship between specific needs and



(a) Hypothesized model



(b) Final modified model

Fig. 1. Hypothesized model (a) and final modified model (b). Note. Hypothesized model (a) was first tested using path analysis, resulting in poor fit statistics ($\chi^2 = 74.94$, $df = 6$, $p < 0.001$; RMSEA = 0.17; CFI/TLI = 0.78/0.33; SRMR = 0.09). By adding the three paths (relatedness-player empathy, competence-helping, relatedness-helping), the final modified model yielded a good fit ($\chi^2 = 4.15$, $df = 3$, $p = 0.246$; RMSEA = 0.03; CFI/TLI = 1.00/0.98; SRMR = 0.01). In the final modified model (b), solid and dashed lines mean significant (i.e., $p < 0.05$) and nonsignificant (i.e., $p \geq 0.05$) links, respectively. Standardized coefficients are shown on paths. To avoid congestion, covarying relationships and residuals are not illustrated. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

each type of passion.

2. Methods

2.1. Procedure

Data were collected via an online survey. The survey collected data related to need satisfaction, passion, empathy and whether or not participants recalled undertaking in-game helping behaviour in the previous 4 weeks. The survey was part of a larger multi-timepoint study, however only time 1 data are considered in the current paper as the sample size at follow up was inadequate for the required analysis. All data were collected anonymously. Before data collection began, ethical clearance to undertake the online survey was granted (ethics approval number 1800000536) by Queensland University of Technology UHREC.

2.2. Participants

Inclusion criteria required participants to be 15 years of age or older and to have played any multiplayer video game in the past month, either on a mobile phone, computer, or gaming console (such as a PlayStation or Xbox). Those who exclusively played single player video games were asked to not participate in the current study as such games do not allow for interactions with other players during gameplay. Participants were recruited through paid online Facebook advertisements, University learning management sites, and the Queensland University of Technology Research Management System. Through the Research Management System, first year psychology students were able to gain university course credit by participating in research studies. From the overall participant pool, those who were not eligible or did not want course credit were able to enter a prize draw to win one of two \$50 (AUD) Amazon gift cards. Those who did not complete at least approximately 80% of the survey were removed from the analysis, leaving 389 participants. Participants were aged between 15 and 54 years old ($M = 22.37$, $SD = 7.26$), 66.3% were male, 32.1% were female, and 1.5% identified as other.

2.3. Measures

As shown in Table 1, seven scales used in the study showed good scale properties. While two scales (i.e., harmonious passion, autonomy) showed near-acceptable Cronbach's α values (Nunnally, 1978), composite reliability criteria (i.e., Dillon-Goldstein's criterion) were all above 0.80 suggesting good reliabilities (Chin, 1998). Judging from the average variance extracted (AVE), all constructs had an acceptable convergent validity (≥ 0.50 ; Hair et al., 2017). Specific scales and items are introduced below.

Helping was assessed using four items. The concepts of prosocial and altruistic gameplay were briefly defined and an example of each type of

behaviour was provided. Participants were then asked questions relating to the frequency and extent of their own prosocial and altruistic (i.e., helping) behaviour (e.g., "In the last four weeks, how often did you play prosocially while playing multiplayer videogames?") on a 7-point Likert scale. Higher scores indicate more helping behaviours conducted in the past four weeks.

Player Empathy was measured with two questions (e.g., "When I see another player [who is not a teammate or someone I play with regularly] who needs help during gameplay, I feel for them") on a 5-point Likert scale, with higher scores meaning more perceived in-game empathy.

Passion. Based on a 14-item scale (Vallerand et al., 2003), harmonious passion (e.g., "Playing videogames allows me to live memorable experiences") and obsessive passion (e.g., "The urge is so strong, I can't help myself from playing videogames") were assessed with a 7-point Likert scale. Higher scores show stronger passion.

Need satisfaction during play. Competence, autonomy, and relatedness were measured using the Player Experience of Need Satisfaction (PENS; Ryan et al., 2006) on a 7-point Likert scale. The full PENS contains 21 items (Ryan et al., 2006); however only the 9 items related to need satisfaction (three for each need) were employed in the current study. An example item from the competence subscale is "I felt very capable and effective when playing." The higher scores indicate higher levels of need satisfaction.

Additionally, participants were asked for their age and gender.

2.4. Analytical plan

Path analysis was used to evaluate the utility of the hypothesized model. Given our a-prior assumption of a small effect size (0.10 ; $\alpha = 5\%$, power = 80%), power analysis indicated we would have need a sample of 94 for a path analysis and 1808 for a full structural equation model (SEM) with latent variables (Soper, 2020). Given our sample size of 389, we chose to proceed with a path analysis. Instead of factor analysis in a full SEM, a set of psychometric tests were performed to assess the scalability of constructs. Measurement properties and data distribution were first examined before the model specification. For measurement, Cronbach's α index was considered with indices over 0.70 indicating acceptable scales (Nunnally, 1978). Considering emerging criticisms on Cronbach's α , the Dillon-Goldstein's composite reliability criterion (DG) were further used as this statistic is deemed superior than Cronbach's α (Chin, 1998). Furthermore, convergent validity of constructs was examined using the average variance extracted (Fornell & Larcker, 1981). Data distribution was mainly evaluated with skewness and kurtosis; the absolute values of all constructs are smaller than 1.00, suggesting the normality of all study variables and the utilization of maximum likelihood (ML) estimator is appropriate (Muthén & Kaplan, 1985). The model fit was evaluated with several statistics: the root mean square error of approximation (RMSEA), the comparative fit index (CFI), the Tucker-Lewis index (TLI), and the standardized root mean square

Table 1
Scale properties, descriptive outcomes, and correlations among study variables ($N = 389$).

	1	2	3	4	5	6	7
1. Helping	–						
2. Player Empathy ^a	0.38***	–					
3. Harmonious Passion	0.19***	0.23***	–				
4. Obsessive Passion	0.00	0.01	0.44***	–			
5. Competence	0.29***	0.09	0.31***	0.02	–		
6. Autonomy	0.19***	0.21***	0.34***	0.05	0.42***	–	
7. Relatedness	0.35***	0.32***	0.29***	0.12*	0.23***	0.31***	–
Cronbach's α	0.80	0.81	0.67	0.88	0.84	0.67	0.83
DG	0.87	0.91	0.80	0.91	0.90	0.82	0.90
AVE	0.63	0.84	0.50	0.58	0.75	0.61	0.74
Mean	5.12	3.65	4.52	2.82	5.42	5.36	4.06
Variance	1.18	0.81	0.94	1.78	1.38	1.25	2.49

Note. ^aThe scale property of the 2-item construct, player empathy, was also examined using Spearman's ρ ($\rho = 0.68$, $p < 0.001$). DG = Dillon-Goldstein's composite reliability criterion. AVE = average variance extracted. * $p < 0.05$. *** $p < 0.001$.

residual (SRMR). Models with RMSEA ≤ 0.05 , CFI/TLI ≥ 0.95 , and SRMR < 0.06 are considered good fit (Hu & Bentler, 1999). Model re-specifications considered both modification indices (MI) and theoretical meanings of suggested paths. As per our research hypotheses, the indirect effects between passion and helping via empathy were also tested. Data were managed using IBM SPSS 25 and Stata 15. Path analysis was undertaken with Mplus 8.2 with missing data being treated with the full information maximum likelihood (FIML) estimation.

3. Results

3.1. Descriptive findings

Bivariate correlations were first evaluated (Table 1). In contrast to our hypothesized model, helping was associated with most variables except for autonomy ($r < 0.01$, $p = 0.965$). Similarly, player empathy was unrelated to obsessive passion ($r = 0.01$, $p = 0.869$), but related to both autonomy ($r = 0.21$, $p < 0.001$) and relatedness ($r = 0.32$, $p < 0.001$). Against our hypothesis, obsessive passion had little associations with both competence ($r = 0.02$, $p = 0.663$) and autonomy ($r = 0.05$, $p = 0.300$).

3.2. Path model

The hypothesized model was tested and yielded a poor fit: $\chi^2 = 74.94$, $df = 6$, $p < 0.001$; RMSEA = 0.17; CFI/TLI = 0.78/0.33; SRMR = 0.09. Three paths that could add substantial model fit were suggested: relatedness-player empathy (MI = 28.15), competence-helping (MI = 22.59) and relatedness-helping (MI = 21.26).

By incorporating these three links, the modified model (Fig. 1b) showed a good fit: $\chi^2 = 4.15$, $df = 3$, $p = 0.246$; RMSEA = 0.03; CFI/TLI = 1.00/0.98; SRMR = 0.01. Except for competence-obsessive passion, autonomy-obsessive passion, harmonious passion-helping, obsessive passion-helping links, all other paths were significant. The entire model explained 24.9% variance in helping and 13.1% variance in player empathy.

As hypothesized, helping was significantly predicted by player empathy ($B = 0.29$, $p < 0.001$; 95% CI: 0.21–0.37). Moreover, two trait-level needs also showed positive associations with helping: competence-helping ($B = 0.21$, $p < 0.001$; 95% CI: 0.13–0.28) and relatedness-helping ($B = 0.21$, $p < 0.001$; 95% CI: 0.13–0.29). In contrast to our hypothesis, both harmonious ($B = 0.02$, $p = 0.777$; 95% CI: 0.08 – 0.11) and obsessive passion ($B = -0.04$, $p = 0.411$; 95% CI: 0.12 – 0.04) had little relation with helping in the model. Both harmonious passion ($B = 0.19$, $p < 0.001$; 95% CI: 0.10–0.28) and obsessive passion ($B = -0.11$, $p = 0.042$; 95% CI: 0.20 – 0.36) were associated with player empathy, albeit with opposite directions. While these trait-level factors were adjusted, player empathy still remained the strongest predictor for helping in the model. Two types of passion had distinct relationships with trait-level needs. While all three needs significantly link to harmonious passion, only relatedness ($B = 0.12$, $p = 0.034$; 95% CI: 0.03–0.20) was associated with obsessive passion.

While passion was found to be unrelated to helping (i.e., nonsignificant direct effects), further analyses revealed the indirect effect of empathy between both harmonious pass and helping ($B = 0.06$, $SE = 0.02$, $p = 0.002$; 95% CI: 0.03–0.09) and obsessive passion and helping ($B = -0.03$, $SE = 0.02$, $p = 0.053$; 95% CI: -0.06 to -0.01). Due to the nonsignificant direct effects, the total effects from passion to helping were nonsignificant.

4. Discussion

Given the lack of research exploring in-game helping behaviour alongside the established benefits of helping we sought to explore the extent to which need satisfaction and passion was associated with empathy and helping behaviour. Separately, in contrast to previous

research which has treated need satisfaction holistically, we aimed to assess the relationship between individual needs and both obsessive and harmonious passion.

4.1. Needs and passion

Regarding the relationship between the individual components of need satisfaction and passion, our results are consistent with previous research (Lalande et al., 2017; Tóth-Király et al., 2019) in showing that both types of passion are associated with need satisfaction. However, harmonious passion was associated with all three needs (competence, autonomy and relatedness) while obsessive passion was associated (negatively) only by relatedness. Our results are in line with previous research (Lalande et al., 2017) in that the relationship between need satisfaction and passion was stronger for harmonious passion than obsessive passion.

Of note is the differing patterns between specific elements of need satisfaction and passion. Unsurprisingly, the satisfaction of any need is associated with greater harmonious passion, highlighting that feelings of competence, autonomy and relatedness are associated with a healthy passion for play. The finding that only relatedness was associated with obsessive passion is, however, unexpected. In the current study, obsessive passion is linked only to decreased empathy and, in turn, lower levels of helping. However, given broader research showing a range of negative outcomes associated with obsessive passion, this finding suggests the value of exploring the role of strong connections among players in the context of problematic play or other negative outcomes. To be clear, our findings do not suggest that relatedness per se is an issue as it is associated with both types of passion. In light of research showing that negative outcomes are most likely when videogames are the only or primary source of need satisfaction (that is, when need satisfaction is low in other domains; Lalande et al., 2017), it may be particularly useful to explore the impact of videogames when it is a player's predominant means of connection to others.

4.2. Empathy

Aligning with previous research showing a range of positive outcomes associated with harmonious passion and negative outcomes associated with obsessive passion, our model shows that harmonious passion is associated with greater player empathy and obsessive passion with less player empathy. This finding is further evidence for the relative benefit of harmonious passion for play and the greater risks associated with obsessive passion (Perry et al., 2018; Przybylski et al., 2009; Schellenberg et al., 2019; Tóth-Király et al., 2019).

Unsurprisingly, it also emerged that relatedness is associated with empathy such that those with a greater sense of relatedness to other players are more likely to experience empathy for those players. For those in the industry seeking to decrease toxic behaviour, this finding emphasises the potential utility of building feelings of relatedness in the community wherever possible.

4.3. Predicting helping

Of note, neither type of passion showed a direct relationship with helping in the current study. However, as expected based on the empathy-altruism hypothesis (Batson et al., 2015) empathy was positively associated with helping such that those with greater empathy were more likely to help. Additionally, our further analysis identified an indirect effect of empathy such that harmonious passion is associated with greater empathy which is, in turn, associated with greater helping, while obsessive passion is associated with less empathy and, in turn, less helping. This result suggests that, while passion is associated with a range of outcomes, helping is not one of them. It is only when passion is associated with greater empathy that helping is more likely. Where researchers or developers are particularly interested in increasing helping

behaviour, it would appear that empathy is key, and building harmonious passion is one way of increasing empathy. Given the cross-sectional nature of this study, further experimental designs are needed to validate this intervening or mediational role of empathy.

Additionally, we found that competence was associated with helping such that those with higher levels of competence were more likely to help. This result makes intuitive sense in that those who are better at a game are more likely to be in a position where helping is possible. We also found that relatedness was associated with helping such that those with higher levels of relatedness to other players were likely to help. As with empathy, it is unsurprising that helping is more likely when players feel a sense of connection to others.

4.4. Limitations and future research

The primary limitation of the current research is that data collection was via a single timepoint survey. While a survey allowed us to explore these relationships with a large group as they occur naturally it would be informative to a) supplement the patterns found in the current research with insight gained through more in-depth qualitative data (for example exploring the means by which relatedness can lead to obsessive passion), b) isolate some of the potential relationships in a more controlled environment such as an experiment (for example, assessing under which conditions empathy is more likely to translate into helping behaviour), and c) explore the relationships identified using in-game analytics rather than self-reported behaviour (for example assessing actual instances of helping behaviour during play). These approaches would potentially also generate insight regarding the mechanisms through which passion influences empathy (e.g., improved affect may play a key role; Li et al., 2017; Wang et al., 2008). Additionally, through multi-time point data collection, it will be possible to confirm whether the various associations shown in the current research are causal. Finally, a larger sample size and full SEM (as opposed to path analysis) would enable a more comprehensive analysis of the constructs of interest.

Though not a limitation of the current study per se, a secondary consideration for future research is that variables that were not considered in the current study may be key to understanding when helping behaviour is more or less likely in videogames. For example, while passion is associated with empathy among players, empathy may also be related to players' personality traits, the mode of play being undertaken or the degree of immersion being experienced. Equally, factors other than empathy may predict helping behaviour.

5. Conclusions

Overall our findings identified a range of associations suggesting that helping behaviour is more likely when players experience empathy and empathy is, in turn, more likely in the context of harmonious passion which is associated with need satisfaction through play. At the same time, empathy is less likely in the context of obsessive passion which is associated with the experience of relatedness during play. These findings are particularly noteworthy given the broad range of benefits of helping behaviour. Within videogame research, there is evidence that in-game helping is associated with lowered hostile expectation bias (Greitemeyer & Osswald, 2009) and increased helping behaviour outside of the game (Iten et al., 2018). In other domains, helping has been shown to be protective against depression (He et al., 2018) and to reduce negative emotional responses (Raposa et al., 2016). Regardless of these broader benefits of helping, increasing helping behaviours in games is a worthy goal from the point of view of improving player experience, building more positive gaming communities and reducing toxicity. Finally, the results of this study further argue for the value of trying to find ways to help players build harmonious passion and reduce obsessive passion as a means of accessing these possible benefits and reducing the likelihood of negative outcomes from play.

Declaration of competing interest

The authors have no competing interests to declare.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.chb.2021.106817>.

Credit author statement

Daniel Johnson: Conceptualisation, Methodology, Writing – original draft, Writing – review & editing. Xiang Zhao: Formal analysis, Writing – original draft, Writing – review & editing. Katherine White: Conceptualisation, Methodology, Writing – original draft, Writing – review & editing. Varuni Wickramasinghe: Conceptualisation, Methodology, Investigation, Writing – original draft.

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