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The dual nature of escapism in video gaming: A meta-analytic approach

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ABSTRACT

Researchers have previously argued that escapism via video games can lead to negative and positive outcomes. The purpose of this study was to investigate which outcomes (negative or positive) outweigh the others. Further, the authors examined how the cultural context (Western and Non-Western) affects the association between escapism and its dual outcomes. To achieve the study aims, the authors conducted two meta-analyses using the PRISMA approach. The authors included 27 studies having a sample size of $N = 28{,}893$ in the two meta-analyses. The results show that escapism has a significant relationship with both negative (Q (40) = 2411.001, $p < .001$) and positive outcomes (Q (67) = 6384.554, $p < .001$). However, negative outcomes ($Z_{RE} = 0.46$) outweigh the positive outcomes ($Z_{RE} = 0.34$). Further, the results highlight that cultural context (Western and Non-Western) significantly moderates the relationship between escapism and its dual outcomes. The authors discuss the theoretical implications and limitations of the study.

1. Introduction

Why do individuals consume video games? Numerous scholars have addressed this question (Achternbosch et al., 2014; Yee, 2006), pointing to several key motives, including socialization, competition, challenge, escapism, knowledge, application, aesthetic sense, time wastage, skill advancement, and friends' pressure (Bányai, Griffiths, Király, & Demetrovics, 2019; Yee, 2006). Critical among these is the escapism motive to play video games (Calleja, 2010; Hagström & Kaldo, 2014; Kardefelt-Winther, 2014a). Scholars have defined escapism motive as an individual's immersion in the video gaming phenomenon (Calleja, 2010; Yee, 2006). This immersion can be a mental diversion from real-life issues or a means to socialize with others, which leads to psychological and behavioral outcomes (Stenseng & Phelps, 2016).

Despite escapism's salience as a motive to consume video games, it can result in positive and negative outcomes (Calleja, 2010; Dauriat et al., 2011; Király et al., 2017). For instance, numerous researchers have claimed that escapism has a relationship with negative outcomes, such as depression, time wastage, negative mood, social anxiety, loneliness, and self-discrepancy (Bányai, Griffiths, Demetrovics, & Király, 2019; Blasi et al., 2019; Deleuze et al., 2019; Kwon et al., 2011; Liu & Chang, 2016; Snodgrass et al., 2014). On the other hand, many researchers have contended that escaping in video games can lead to positive outcomes, like enjoyment, fun, and wishful thinking (Hwang & Lyu, 2015; Merhi, 2016; Reer & Krämer, 2019). Moreover, there is a plethora of empirical support for both positive and negative outcomes, having a significant relationship with escapism (Kwon et al., 2011; Liu & Chang, 2016; Merhi, 2016; Reer & Krämer, 2019; Snodgrass et al., 2014). However, there remains a gap in the literature regarding which type of outcome (negative or positive) outweighs the other. Additionally, the question remains as to whether the escapism motive is associated with different outcomes in various cultures (e.g., Western and Non-Western).

This study's primary purpose was to explore which type of outcomes (negative or positive) outweighs the other. Therefore, we highlight differences in overall effect size magnitude between escapism and its dual outcomes. Further, we examine how the cultural context (Western and Non-Western) affects the association between escapism and its dual outcomes (negative and positive). To achieve the study purpose, we performed two meta-analyses. First, we conducted a meta-analysis between escapism and associated negative psychological outcomes. Second, we conducted a second meta-analysis between escapism and associated positive psychological outcomes. We took the context (Western vs. Non-Western) and sampling method (random vs. non-random) as unique categorical moderators for both the meta-analysis. Third, we compared the two meta-analyses' results to contribute to the existing scholarship. Lastly, we discussed our study results' generalizability and rigor based upon publication bias test results and sampling method (moderator) analysis. We have grounded the relationship of escapism

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with the positive and negative outcomes in the 'dual model of escapism' framework (Stenseng et al., 2011, 2012). This framework was initially presented for understanding leisure activities engagement, such as watching television or participating in sporting activities (Stenseng et al., 2011, 2012).

2. Theoretical framework: the dual model of escapism

Stenseng and Phelps (2016) underscored that the escapism motive to consume leisure activities has a dual nature. For example, Stenseng et al. (2011, 2012) highlighted that sports engagement due to escapism could lead to positive and negative outcomes. Stenseng and Phelps (2016) also argued that there are two types of motivating factors driving individuals to engage in leisure activities: self-expansion and self-suppression (Stenseng & Phelps, 2016). During self-expansion, individuals might expand their positive life experiences by engaging in leisure activities (Stenseng et al., 2012). For instance, individuals might consume video games to celebrate friendship or express social bonding with their family members (Reer & Krämer, 2019). This can lead to positive outcomes like well-being and relaxation.

On the other hand, individuals might engage in leisure activities to momentarily block negative self-evaluations or life issues by suppressing their emotions, thereby expressing a form of self-suppression. This may hinder positive experiences and emotional outcomes (Gross, 2002; Richards & Gross, 2000), leading to negative outcomes. For instance, individuals might consume video games to escape from their life griefs, sufferings, and myopic moods (Kardefelt-Winther, 2017). This escape from life issues via videogames can lead to negative outcomes, such as video-gaming addiction (Liu & Chang, 2016).

Researchers have empirically demonstrated the difference between self-expansion and self-suppression via exploratory and confirmatory factor analyses (Stenseng et al., 2012). The extant scholarship shows that an individual's self-expansion motive has a significant association with positive affective outcomes and has no relationship with negative outcomes, such as depression (Costa & McCrae, 1992; Goldberg, 1990). Self-suppression is associated with negative outcomes, such as addiction (Stenseng & Phelps, 2016), with no significant association with positive outcomes like well-being and relaxation (Stenseng & Phelps, 2016). Therefore, escapism can have a relationship with both negative and positive outcomes; consequently, untangling this dual relationship's nature in the gaming environment is an important endeavor (Kardefelt-Winther, 2014b).

2.1. Escapism and negative outcomes

In the early video gaming scholarship, escapism was taken as a unidimensional construct having a significant relationship with negative outcomes (Kwon et al., 2011; Liu & Chang, 2016; Snodgrass et al., 2014; Stenseng & Phelps, 2016). For instance, Bányai, Griffiths, Demetrovics, et al. (2019) claimed that immersing in video games might lead to gaming disorder. Additionally, Liu and Chang (2016) underscored that escaping through video games leads to addiction. However, Kardefelt-Winther (2014b) argued that gaming addiction should be differentiated from gaming disorders. For instance, individuals can use escapism as a coping strategy against negative moods by being addicted to gaming (Kardefelt-Winther, 2014b, 2017). In the extant scholarship, addiction is defined as a gaming disorder having negative consequences (Kardefelt-Winther, 2017). Kardefelt-Winther (2014a,b) also claimed that escapism could mediate between psychosocial problems and excessive gaming (addiction). Therefore, to synthesize the previous literature, we have taken addiction as a negative outcome. Overall, in light of the previous scholarship, escapism likely has a potential association with harmful/negative outcomes (Bányai, Griffiths, Demetrovics, et al., 2019).

Scholars have previously used theoretical frameworks, such as self-theory (Baumeister, 1990), stress coping theory (Lazarus & Folkman, 1984), compensatory internet theory (Kubey & Csikszentmihalyi, 1990), and emotion dysregulation framework (Gruber et al., 2014, pp. 432–437), to describe the relationship between escapism and negative outcomes. All these theories underline that immersion in the video gaming environment could lead to self-suppression from the realities of life, which leads to adverse outcomes. Hence, there is a suspected significant relationship between escapism and negative/adverse outcomes (See Fig. 1).

Hypothesis 1. The escapism motive to consume video games has a significant positive relationship with adverse/negative outcomes.

2.2. Escapism and positive outcomes

Reer and Krämer (2019) argued that escapism could help individuals in social bonding. Similarly, researchers have elucidated that escapism has a relationship with individuals' conceptualization of the meaning of life (Hwang & Lyu, 2015). In the extant scholarship, scholars have used a variety of theories, including flow theory (Csikszentmihalyi, 2000), immersion theory (Michailidis et al., 2018), self-determination theory Deci & Ryan, 2012), and gratification theory (Blumler, 1979), to describe the relationship between the escapism motive and positive outcomes. A common thread among these perspectives is that escapism can result in positive outcomes for the individual's experience and engagement in the activity. Put another way; these theories illustrate that escaping in video games leads to self-expansion. Thus, the escapism motive to consume video games has a suspected significant relationship with positive outcomes (See Fig. 1).

Hypothesis 2. The escapism motive to consume video games has a significant positive relationship with positive outcomes.

The support for or refutation of the aforementioned two hypotheses will help compare the overall effect size magnitude difference between positive and negative outcomes relationship with escapism, thereby allowing for examination of the study's primary purpose.

2.3. Moderators

2.3.1. Cultural context

Scholars have previously observed a significant relationship between individuals' participation in leisure activities and their cultural values (Benson & Filippaios, 2019; Gholipour & Tajaddini, 2014). For example, Benson and Filippaios (2019) explored how cultural characteristics influence individuals' participation in social media network sites, such as Facebook. The authors unveiled that individuals from countries where power distance is high use Facebook less for social interactions. Similarly, Benson and Filippaios (2019) claimed that individuals from cultures that value leisure activities prefer to be involved in online social networks for socialization. Similarly, Muriel and Crawford (2020) touched upon the relationship between various cultures and video gaming. According to the researchers, broader cultural values can influence individuals' motives to consume video games (Muriel & Crawford, 2020).

However, in the video-gaming scholarship, there remains a dearth of research about how escapism's relationship with positive and negative psychological outcomes potentially varies based on the cultural context (Western vs. Non-Western). Nonetheless, based upon the leisure activities and cultural values scholarship, culture likely influences video gaming behaviour (Muriel & Crawford, 2020). In the current study, we have taken context as a unique moderator, influencing the relationship between escapism and its positive and negative outcomes (Fig. 1).

Hypothesis 3. The context (Western, Non-Western, and Worldwide) will significantly moderate between the escapism motive and its relationship with negative outcomes (Hypothesis 3a) and positive outcomes (Hypothesis 3b).

Exploring the influence of context on the relationship between the escapism motive and its binary outcomes will help us decipher in which

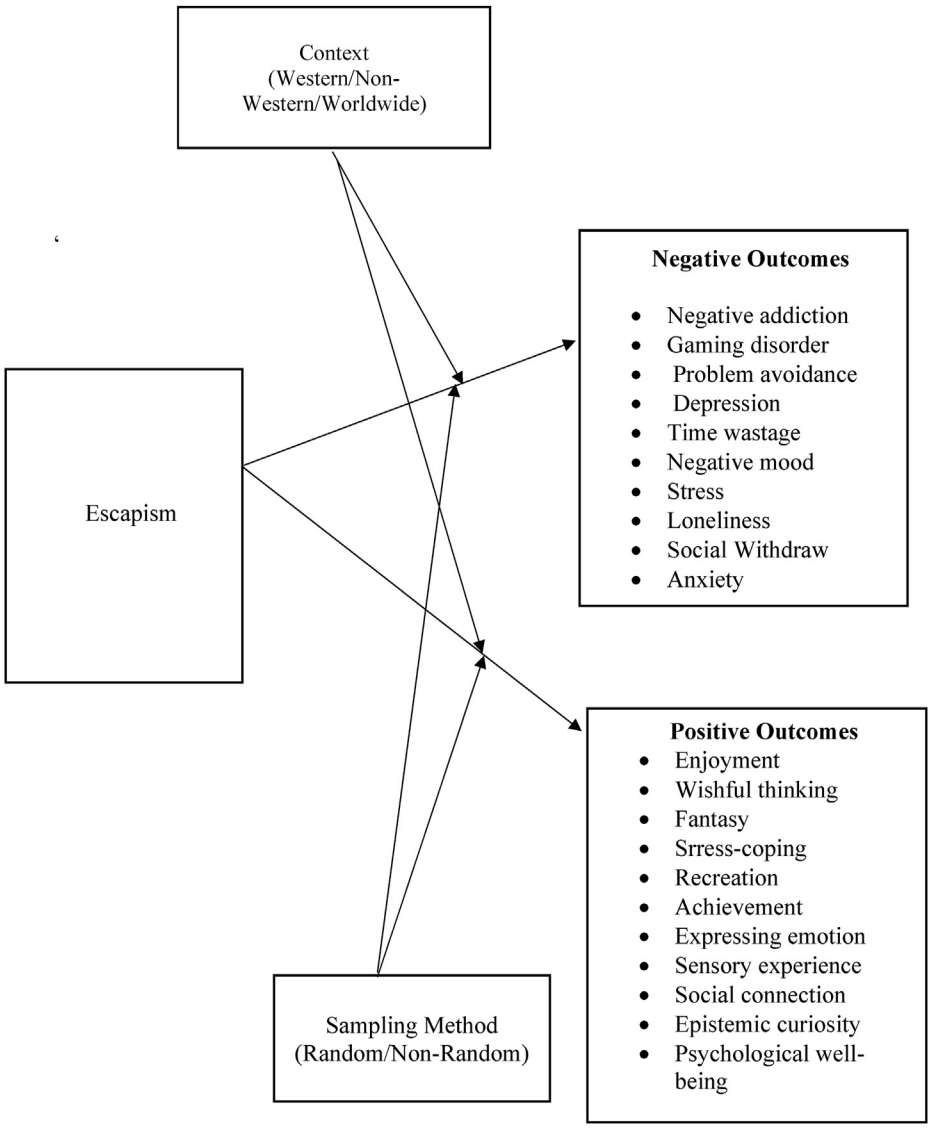

Fig. 1. Dual model of escapism.

cultural context there are more chances of escapism motive leading to positive and negative outcomes.

2.4. Sampling method

Researchers have previously argued that the sampling method (random vs. non-random) should be accounted for in the meta-analysis. This benefits the researchers to make comments about the generalizability of the research (Russel et al., 2020). Notably, in the meta-analysis, the sampling method as a moderator can help the authors to make comments about the findings' rigor (Russel et al., 2020). In this study, we have taken the sampling method as a unique moderator (see Fig. 1).

Hypothesis 4. The sampling method (Random vs. Non-Random) will moderate between the escapism motive and its relationship with negative outcomes (Hypothesis 4a) and positive outcomes (Hypothesis 4b).

3. Method

3.1. Literature search

We used preferred reporting items for systematic reviews and meta-analyses (PRISMA) approach to gather the data (Moher et al., 2009). The PRISMA diagram is given in Fig. 2. There was no time period attached to the literature search. We searched the key terms in three databases-Eric EBSCO, APA PsycInfo, and JSTOR. In addition, we also did reference checking of each article selected in the initial phase to explore from where literature is cited, helping us find additional articles related to escapism. Thus, we used both electronic and manual searches for studies to expand the number of research articles that can be incorporated in our meta-analysis (Jeyaraj & Dwivedi, 2020). Further, we also did a general Google Scholar search. Following were the key terms: games and escape*, video games and escape*, digital games and escape*, games and escapism*, video games and escapism*, digital games and escapism*, eSport and escapism*, immersion and video games*, immersion and digital games*, and, *immersion and eSport. Unpublished and non-peer-reviewed research were not included because of potential methodological quality issues (Egger et al., 2003). After accounting for duplicates ($n = 94$) across the three databases, the search yielded 927 unique peer-reviewed articles.

3.2. Data collection

We imported the 927 articles into Rayyan (Ouzzani et al., 2016). This was done to investigate whether the studies meet our inclusion or exclusion

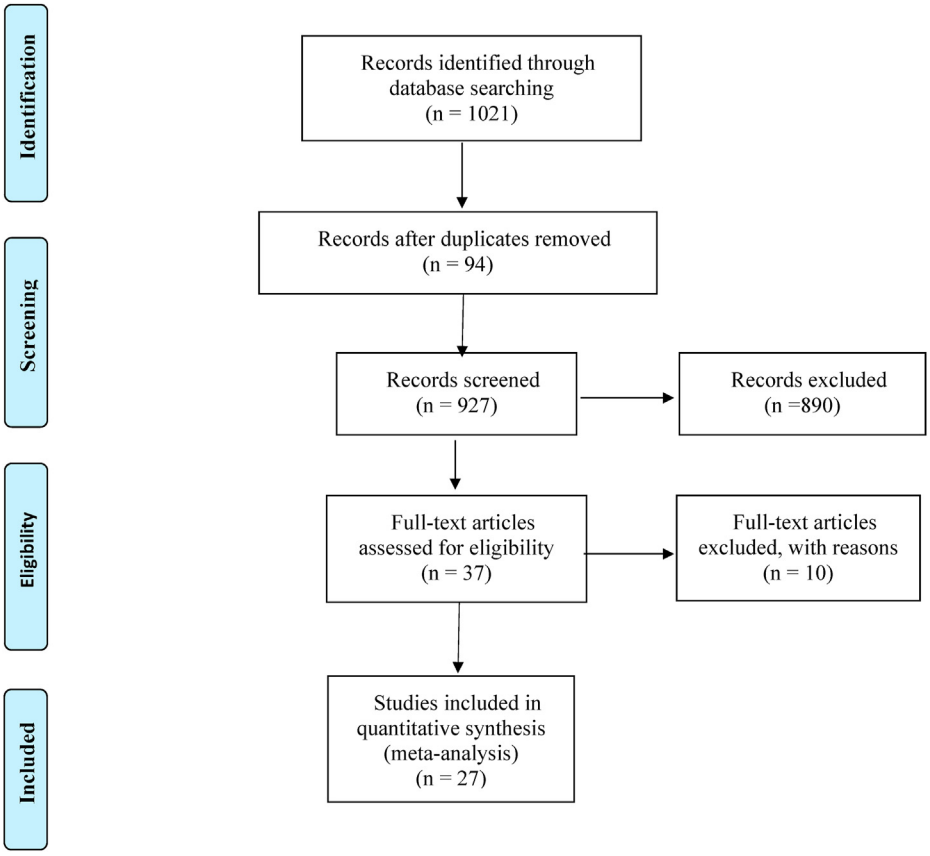

Fig. 2. PRISMA diagram.

criteria. The criteria for studies to be included in the meta-analysis were: (a) in the study, it should be explicitly stated that escapism has a relationship with a construct having positive or negative properties; (b) the articles should be in English; (c) sample characteristics, such as sample size, sampling method, and context is specified, and (d) Correlation (*r*) values are specified. We transformed studies having *d* value to *r* (Borenstein et al., 2009). After that, we corrected the *r* values for artifact corrections (Hunter & Schmidt 1990, 2004). Next, we transformed *r* values to Fisher's *z* (i.e., variance-stabilized bivariate correlation transformation).

The articles that met our inclusion criteria were uploaded to RefWorks (https://refworks.proquest.com) for further investigation. We found seven studies with only negative outcomes (See Table 1), nine studies with only positive outcomes (See Table 2), and 11 studies having an escapism relationship with both positive and negative outcomes (mixed) in a given independent study (See Tables 1 and 2). Thus, we had 27 studies included in our meta-analysis. The total number of participants in those studies was $N = 28{,}893$ ($n = 7850$ negative outcomes + $n = 10{,}493$ positive outcomes + $n = 10{,}550$ mixed; see Table 2).

3.3. Coding procedures

Relevant variables, including citation information, year, escapism measures, negative outcomes measures, theories, positive outcomes measures, confidence interval, reliabilities, standard error values, potential moderator variables (e.g., sampling method and context), and the correlation (*r*) between escapism and outcomes (negative or positive) were coded separately using Microsoft Excel sheets by the first and second authors. Next, we calculated variances of *r*, effect size (*Z*), and variance of Z effect sizes (*Z.var*). The agreement rate between the two coders was 92.5% for the *r* values, sample size, and moderator values. We discussed all the discrepancies, then re-calculated all values until the agreement was reached.

3.4. Constructs

3.4.1. Escapism

In the extant scholarship, escapism is considered high-order immersion in the video gaming phenomenon with dimensions, such as relaxation and well-being (self-expansion) (Dauriat et al., 2011; Yee, 2006). Hagström and Kaldo (2014) highlighted that avoidance behavior is another dimension of escapism (self-suppression). Thus, as a construct, escapism has a dual nature (Stenseng & Phelps, 2016: Fig. 1).

3.4.2. Negative outcome variables

A plethora of scholarship shows that escapism has a psychological relationship with the following negative outcomes: negative addiction, social withdraw, gaming disorder, problem avoidance, depression, time wastage, negative mood, social anxiety, loneliness, and stress (See Table 1: Bányai, Griffiths, Demetrovics, et al., 2019; Blasi et al., 2019; Deleuze et al., 2019; Kwon et al., 2011; Liu & Chang, 2016; Snodgrass et al., 2014).

3.4.3. Positive outcome variables

Researchers have unveiled that escapism could have a psychological connection with the following positive outcomes: enjoyment, wishful thinking, fantasy, stress-coping, recreation, achievement, emotion, expressing emotion, sensory experience, social connection, and psychological well-being (See Table 2: Abbasi et al., 2019; Bowditch et al., 2018, Kardefelt-Winther, 2014a; Merhi, 2016).

3.5. Moderators

3.5.1. Context

We coded the studies as Western, Non-Western, and Worldwide. The Western countries included were: European and North American

Table 1
Negative outcomes.

Authors	N	Escapism Outcome	Sample Type	Context	Z-Value
Bányai, Griffiths, Demetrovics, et al. (2019) (two studies in one paper)	205	Gaming Disorder	Random	Western	0.561
	4079	Gaming Disorder	Random	Western	0.703
	205	Psychotic Distress	Random	Western	0.671
	4079	Psychotic Distress	Random	Western	0.649
**Liu and Chang (2016)	215	Negative Addiction	Random	Worldwide	0.537
Snodgrass et al. (2014)	137	Problematic Play	Non-random	Western	0.613
(Note: In the paper, two sample sizes are given 133 and 137)	137	Perceived Stress on Problematic Play	Non-random	Western	0.365
**Deleuzea et al. (2019)	273	Addiction	Random	Western	0.489
Chen and Chang (2019)	508	Negative Outcomes	Random	Worldwide	0.144
	508	Loneliness	Random	Worldwide	−0.845
	508	Stress	Random	Worldwide	0.246
**Blasi et al. (2019)	390	Addiction	Random	World-Wide	0.698
	390	Difficulties in Emotion Regulation	Random	Worldwide	0.639
Oggins and Sammis (2010)	438	Addiction	Random	Western	0.080
	438	Admit Addiction	Random	Western	0.100
Kwon et al. (2011)	1136	Negative Mood	Random	Non-Western	0.595
	1136	Internet Game Addiction	Random	Non-Western	0.520
	1136	Self-Discrepancy	Random	Non-Western	0.117
	1136	Parent-Child Hostility	Random	Non-Western	0.530
**Bowditch et al. (2018)	217	Negative Gaming Outcomes	Random	Worldwide	0.540
	217	Problem Avoidance	Random	World-Wide	0.464
	217	Self-Criticism	Random	World-Wide	0.390
	217	Social Withdraw	Random	World-Wide	0.436
**Hagström and Kaldo (2014)	201	Internet Addiction with Negative Escape	Random	World-Wide	0.604
	201	Internet Addiction with original Escape scale	Random	World-Wide	0.365
	201	Time wasted	Random	World-Wide	0.354
**Maroney et al. (2019)	2261	Problem Video Game Playing	Random	World-Wide	0.935
	2261	Depression	Random	World-Wide	0.655
	2261	Anxiety (SIAS)	Random	World-Wide	0.705
	2261	Anxiety (SPS)	Random	World-Wide	0.455
	2261	Loneliness	Random	World-Wide	0.600
**Király et al. (2017)	5222	Problematic Use	Random	Western	0.522
**Chang et al. (2018)	389	Problematic Internet Use	Non-Random	Non-Western	0.388
Dauriat et al. (2011)	696	Addiction	Random	Worldwide	0.234
**Kardefelt-Winther (2014a)	702	Social Anxiety	Random	Worldwide	0.522
	702	Negative Outcomes	Random	Worldwide	0.777
	702	Loneliness	Random	Worldwide	0.443
	702	Stress	Random	Worldwide	0.714
**Laconi et al. (2017)	418	Depression	Random	Western	.342
Biegun et al. (2020)	651	Problematic Video Gaming	Non-Random	Western	0.883
**Yang and Liu (2017)	262	Loneliness	Random	Western	0.153

(Note: **Asterisk for the papers having both positive and negative outcomes).
*18 studies had 19 samples with 41 effect sizes and a sample size of $n = 18400$ (only negative outcomes $n = 7850$, mixed studies $n = 10550$). The sample size is calculated for each study, not for each effect size.

countries. Whereas non-Western countries were from East Asia (i.e., China, Taiwan, and South Korea). Worldwide studies had both Western and non-Western countries. Mostly, worldwide studies were done via online platforms. Thereby, it was impossible to dissect them as the Western or non-Western context.

3.5.2. Sampling method

We used the sampling method as a categorical moderator because it helped us know the difference between the sampling procedures used in the studies. We coded the studies as non-random sampling (e.g., convenience sampling) and random sampling (e.g., random selection) studies.

3.6. Statistical analyses

In this study, we have used a confirmatory meta-analysis approach with reported effect sizes to test hypotheses (Jeyaraj & Dwivedi, 2020). We did all the calculations and visualization in the R robumeta and metaphor package (Fisher & Tipton, 2015; Viechtbauer, 2010). The two separate meta-analyses were conducted to compare the positive and negative outcomes with escapism. We transformed studies having d values to r by using the formula $r = \frac{d}{\sqrt{a+d^2}}$ (Borenstein et al., 2009), in this formula $a = \frac{(n_1+n_2)^2}{n_1 n_2}$. Additionally, in the studies where d values were not given, we calculated Cohen's $d = (M_2 - M_1) / SD_{pooled}$ and transformed d into r. Further, Hunter and Schmidt (1990, 2004) argued that the correlation values tend to be attenuated due to measurement errors in the variables. Thereby, artifact corrections are needed. We used Hunter and Schmidt's artifact corrections (1990, 2004) method to correct for the unreliability via a formula $T_i^C = \frac{T_i}{\sqrt{r_{yy_i}}\sqrt{r_{xx_i}}}$. For some studies, reliability values were not reported; for those studies, we used only the r values. Next, for both analyses, we computed the sample variance: $var_r = \frac{(1-r^2)^2}{n-1}$. After that, we transformed r values into z by using the Fisher's Z transformation: $Z \equiv \text{arctanh } r = ½ \ln (1 + r/1 - r)$ for correcting for the sample sizes. Next, the variance for each effect size estimate was computed by employing the formula $varZ = (1/n - 3)$.

We calculated the effect size homogeneity in several ways. We used the Caterpillar plot for exploratory data visualization for both negative and positive outcomes separately (See Fig. 3 and Fig. 5). After that, we calculated the Q value for both the fixed-effect and random effect model for the positive and negative outcomes separately. We reject the null hypothesis if Q is greater than the critical value of a chi-square distribution with a $K - 1$ degree of freedom (i.e., the number of effect sizes in the meta-analysis minus one) (Hedges & Vevea, 1998).

$$Q = \sum_{k=1}^{K} \frac{(T_k - T_\bullet)^2}{v_k} \quad : T_\bullet = \frac{\sum_{k=1}^{K} \frac{1}{v_k} T_k}{\sum_{k=1}^{K} \frac{1}{v_k}}$$

Table 2
Positive outcomes.

Authors	N	Escapism Outcome	Sampling Type	Context	Z-Value
**Liu and Chang (2016)	215	Social-Interactivity	Random	Worldwide	0.330
	215	Flow	Random	Worldwide	0.671
	215	Entertainment	Random	Worldwide	0.606
Li et al. (2015)	3919	Enjoyment	Random	Non-Western	0.178
	3919	Fantasy	Random	Non-Western	0.811
	3919	Achievement	Random	Non-Western	0.633
	3919	Social Interaction	Random	Non-Western	0.812
**Laconi et al. (2017)	418	Fantasy	Random	Western	0.792
	418	Recreation	Random	Western	0.320
	418	Self-esteem	Random	Western	−0.037
	418	Social	Random	Western	0.331
Herodotou et al. (2014)	1298	Social	Random	Worldwide	0.533
	1298	Autonomy	Random	Worldwide	−0.113
	1298	Achievement	Random	Worldwide	0.401
Koo (2009)	576	Enjoyment	Random	Non-Western	0.733
	576	Social affiliation	Random	Non-Western	0.564
	576	Epistemic curiosity	Random	Non-Western	0.829
van Reijmersdal et al. (2013)	2261	Social interaction	Random	Worldwide	0.532
Dindar and Akbulut (2014)	307	Socializing	Random	Non-Western	0.150
Jin (2014)	560	Fantasy	Non-Random	Non-Western	0.235
	560	Social capital	Non-Random	Non-Western	0.148
Merhi (2016)	308	Enjoyment	Non-Random	Western	0.789
	308	Flow	Non-Random	Western	0.757
	308	Achievement	Non-Random	Western	0.417
	308	Social Interaction	Non-Random	Western	0.408
	308	Intention to Play	Non-Random	Western	0.560
**Bowditch et al. (2018)	217	Wishful Thinking	Random	Worldwide	0.585
	217	Social Support	Random	Worldwide	0.0160
	217	Problem-Solving	Random	Worldwide	−0.107
	217	Express Emotion	Random	Worldwide	0.279
Reer and Krämer (2019)	409	Bonding Social Capital	Random	Worldwide	0.053
(Note: Two samples in the study)	409	Bridging Social Capital	Random	Worldwide	0.141
	409	Social Motivation	Random	Worldwide	0.09
	409	Social Support	Random	Worldwide	−0.125
	409	Achievement	Random	Worldwide	−0.050
	419	Achievement	Random	Worldwide	−0.029
	419	Bridging Social Capital	Random	Worldwide	0.189
	419	Social Motivation	Random	Worldwide	0.022
	419	Bonding Social Capital	Random	Worldwide	−0.060
Abbasi et al. (2019)	436	Fantasy	Random	Non-Western	0.474
	436	Enjoyment	Random	Non-Western	0.483
	436	Sensory Experience	Random	Non-Western	0.521
	436	Social Connection	Random	Non-Western	0.299
	436	Enthusiasm	Random	Non-Western	0.411
	436	Interaction	Random	Non-Western	0.336
**Blasi et al. (2019)	390	Acceptance	Random	Worldwide	0.298
**Kardefelt-Winther (2014a)	702	Achievement	Random	Worldwide	0.486
	702	Social Interaction	Random	Worldwide	0.471
**Deleuzea et al. (2019)	273	Socialization	Random	Western	0.123
	273	Engagement	Random	Western	0.452
	273	Teamwork	Random	Western	−0.112
	273	Discovery	Random	Western	0.332
**Hagström and Kaldo (2014)	201	Socializing	Random	Western	0.181
	201	Achievement	Random	Western	0.213
**Király et al. (2017)	5222	Coping	Random	Western	0.758
	5222	Fantasy	Random	Western	0.847
	5222	Recreation	Random	Western	0.161
	5222	Social Interaction	Random	Western	0.320
**Yang and Liu (2017)	262	Friendship Maintenance	Random	Western	0.299
	262	Fun	Random	Western	0.333
	262	Achievement	Random	Western	0.232
	262	Life Satisfaction	Random	Western	−0.007
	262	Physical Health	Random	Western	0.059
	262	Social Bonding	Random	Western	−0.181
	262	Social Bridging	Random	Western	−0.045
**Chang et al. (2018)	389	Socialization	Non-Random	Non-Western	0.48
	389	Advancement	Non-Random	Non-Western	0.661
**Maroney et al. (2019)	2261	Social Interaction	Random	Worldwide	1.096

(Note: **Asterisk for the papers having both positive and negative outcomes).
*20 studies having 21 samples with 68 effect sizes and a sample size of $n = 21{,}403$ (only positive outcomes $n = 10{,}493$, mixed studies $n = 10{,}550$). The sample size is calculated for each study, not for each effect size.
* The total sample size $N = 7850$ (negative) + 10,493 (positive outcomes) + 10,550 (mixed) = 28,893.

Also, we calculated the I^2 index. The I^2 the index unveils the effect size variability, which is not explained by the sampling error. The higher value of the I^2 (range of 0% to −100%) can indicate surplus effect size heterogeneity.

$$I^2 = \max\left(0, \frac{Q - K + 1}{Q}\right) \times 100\%$$

Finally, the variance of true effects (τ^2) were calculated in R. After assessing effect size homogeneity, we used the unconditional random effect model (RE). The RE model was used due to the following reasons: First, our measures of effect-size heterogeneity (Q, I^2 τ^2) indicate model appropriateness (Hedges & Vevea, 1998). Second, we wanted to generalize studies beyond the current meta-analysis (Hedges & Vevea, 1998).

3.7. Robust variance estimation approach-issue of dependency

We took into account the potential issue of statistical dependency, which would exist in studies with more than one effect size (Becker, 2000, pp. 499–525; Gleser & Olkin, 2009; Hedges et al., 2010). Becker (2000, pp. 499–525) and Gleser and Olkin (2009) proposed different means through which the issue of statistical dependency can be resolved. One of the methods proposed by Becker (2000, pp. 499–525) is to create independent data sub-sets and run meta-analysis separately. In this study, we have already created two different sub-sets of positive and negative outcomes.

The more rigorous approach to resolve the issue of dependency is using the robust variance estimation (RVE) approach (Fisher & Tipton, 2015; Tipton, 2015). RVE aids in sorting the issues introduced by unknown within-study correlations in a meta-analysis (Jackson et al., 2011). RVE takes information from each outcome variable, rather than a synthetic unweighted average (Fisher & Tipton, 2015). Thereby, RVE can offer more rigorous estimates for the standard errors, which leads to a narrower confidence interval (Hedges et al., 2010). In the RVE, approximately inverse weights are used, calculated using the weighted correlated model (Hedges et al., 2010; Tipton, 2015). The RVE correlational weighted model's basic assumption is that all of the effect sizes are dependent on each other in essence at the same level (Hedges et al., 2010; Tipton, 2015). Therefore, we can choose a ρ value to correct for the dependency. Hence, for the study j the correlated effects dependence structure would be $\Sigma aj = \tau^2 Jj + \rho\nu j(Jj - Ij) + \nu jIj$ (Fisher & Tipton, 2015).

In this study, first, we conducted statistical analyses by assuming that all effect sizes are independent. We then used the RVE approach (Hedges et al., 2010) to check the results' differences. Our results show that overall analyses were approximately equal for both traditional and RVE approaches for negative outcomes. However, the RVE results for the positive outcomes differed marginally for the standard error. Tanner-Smith et al. (2019) argued that the RVE is principally a method for correcting standard errors. Thereby, the RVE approach cannot offer exact variance parameter estimates nor test null hypotheses involving heterogeneity parameters (Tanner-Smith et al., 2019). This limitation of RVE directly could affect answering our study's primary purpose. Hence, we present the results using both the traditional and RVE approach.

Following the RVE approach, the corrected I^2 and τ^2 was calculated by using Fisher and Tipton's (2015) robumeta method. We checked ρ (1, 0.80, 0.60, 0.40, 0.20, and 0.10) values on different levels of correlational weights and found that all the estimates to be approximately equivalent. Therefore, we are only reporting $\rho = 0.80$ (default value). The corrected formula used is $I^2 = [(Q_E - df)/Q_E]$ 100%.

3.8. Type of model for moderator analysis and publication bias checking

We conducted categorical moderators' analysis using the fixed-effect ANOVA-like model (Jain et al., 2019). This was done to generalize the current meta-analysis (Jain et al., 2019). Finally, the last statistical analyses were done to check the publication bias or the tendency for researchers to produce statistically significant results because of bias in academia related to publishing only statistically significant results. First, we visually analyzed the publication bias using the funnel plot (Duval & Tweedie, 2000). Second, we used the Trim-and-Fill method to see the missing effect sizes' imputations on the right and left-hand side (Shi & Lin, 2019). The higher the missing effect sizes via the Trim-and-Fill method demonstrates, the higher the chances of publication bias. Additionally, we used Egger's regression test to assess funnel plot asymmetry (Egger et al., 1997). When publication bias is alleged to be present, we should get a statistically significant test result for Egger's regression test (Egger et al., 1997).

Table 3
Overall model results-traditional approach.

Outcome	*n*	Z_{RE}	95% CI	Q
Negative Outcomes	41	0.46***	[.37, .55]	2411.001
Positive Outcomes	68	0.34***	[.27, .41]	6384.554

*$p < .05$; **$p < .01$; ***$p < .001$.

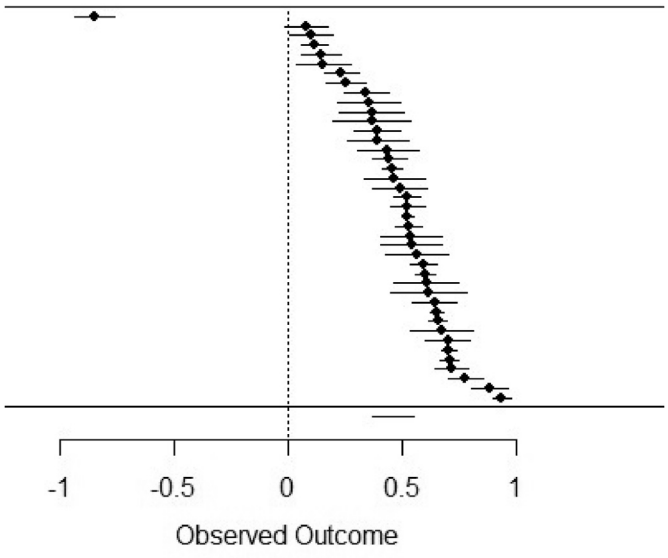

Fig. 3. Caterpillar plot for negative outcomes.

4. Results

4.1. Escapism and negative outcomes (Meta-analysis 1)

We had seven independent studies for the relationship between escapism and negative outcomes, while 11 additional studies reported both positive and negative outcomes associated with escapism. Hence, we used 18 studies having 41 effect sizes, ranging from $z = -0.84$ to $z = 0.93$ (Table 1). The effect size heterogeneity tests using the traditional method [$Q(40) = 2411.001$, $p < .001$, $I^2 = 98.77\%$, $\tau^2 = 0.29$] confirms that the effect size was not homogenous (Table 3). These results were consistent with the Caterpillar plot inspection (Fig. 3). We used the random effect (RE) model for further analysis due to the effect size heterogeneity. The overall effect size for the RE model using the traditional meta-analytic approach demonstrated escapism has a statistically significant relationship with the negative outcomes ($Z_{RE} = 0.46$, $p < .001$) with an associated 95% confidence interval of [0.37, 0.55] (Table 3). According to the Cohen's (1988) effect size conventions (small = 0.1, moderate = 0.3, and large = 0.50), the overall effect size was moderate to large. Further, to test for the dependency, the RVE results (I^2 (corrected) = 97.91%, τ^2 (corrected) = 0.067, z (corrected) = 0.44) showed approximately similar significant results at an associated 95% confidence

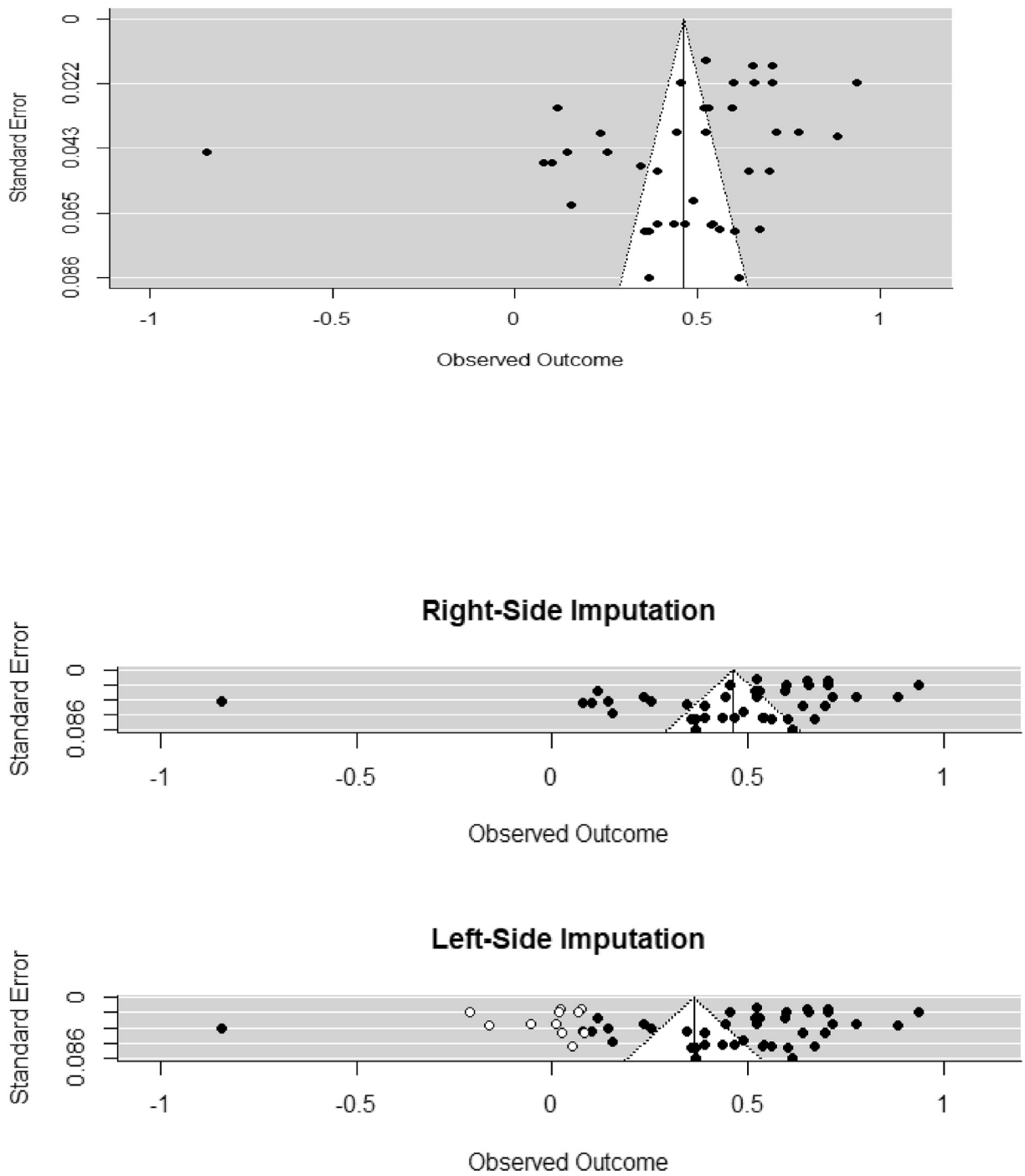

Fig. 4. Funnel plot and trim and fill effect (escapism and negative outcomes).

interval of [0.31, 0.56]. We also checked the changes in the standard error using the RVE approach at $\rho = 1.00, 0.80, 0.60, 0.40, 0.20$, and 0.10. There were no significant changes in the results. Hence, the H1 is supported by using both the traditional and RVE approach.

The visual assessment for publication bias via the Funnel plot (See Fig. 4) indicated a potential asymmetry. Further, Trim-and-Fill results showed 11 missing effect sizes on the left-hand side (Fig. 4). Thus, there might be publication bias. To also check publication bias, we used Egger's regression test, which showed significant results ($t\,(39) = -2.40$, $p = .02$). Therefore, the alleged publication bias is present in the studies investigated in the current meta-analysis.

4.1.1. Moderator analysis

We took the context and sampling method as moderators to explain effect-size heterogeneity (See Table 4). We used the fixed-effects ANOVA-like model to conduct the moderator analysis (Jain et al., 2019).

4.1.2. Context

The context as a categorical variable explained a statistically significant amount of effect-size heterogeneity ($Q_b\,(2) = 80.4517$, $p < .001$). Specifically, the mean effect size for the Western countries ($z = 0.58$, SE $= 0.007$) was greater in magnitude than that of the worldwide ($z = 0.56$, SE $= 0.007$) and non-Western contextual studies ($z = 0.43$, SE $= 0.014$).

Table 4
Moderator analysis results for negative outcomes.

Moderator [Q_b]	K_j	*z (SE)*	95% CI	Q_{Wj}
Context [Q_b (2) = 80.4517, p < .001]	41			
Western	13	0.58 (0.007)	[0.56,0.59]	448.4068***
Non-Western	5	0.43 (0.014)	[0.40 0.46]	163.0420***
World-wide	23	0.56 (0.007)	[0.54 0.57]	1719.1013***
Sampling Method [Q_b (1) = 29.001, p < .001]				
Non-Random Sampling	8	0.48 (0.013)	[0.46, 0.51]	281.1143***
Random Sample	33	0.56 (0.005)	[0.55, 0.57]	2100.886***

*p < .05; **p < .01; ***p < .001.
Note: Means within groups are weighted under the fixed-effects model; j indicates a specific group.

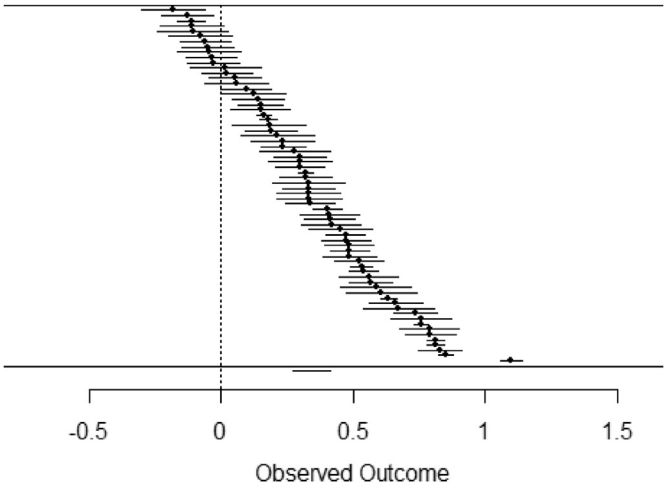

Fig. 5. Caterpillar plot for positive outcomes.

However, world-wide contextual studies had a larger mean effect size than the non-Western countries. The overall effect size heterogeneity was significant (Q_o = 2330.55, p < .001). All the three, Western (Q_w (12) = 448.4068, p < .001), Non-Western (Q_w (4) = 163.0420, p < .001) and worldwide (Q_w (22) = 1719.1013, p < .001) context showed a significant within-group variability (See Table 4). Hence, the H3a is supported.

4.1.3. Sampling method

The sampling method as a categorical variable explained a statistically significant amount of effect-size heterogeneity (Q_b (1) = 29.001, p < . 001: See Table 4). Specifically, the mean effect size for the random-sampling group (z = 0.56, SE = 0.005) was greater in magnitude than that of the non-random sampling method (z = 0.48, SE = 0.013). The overall effect size heterogeneity was significant (Q_o = 2382.00, p < .0001). Both random sampling (Q_w (32) = 2100.886, p < .001) and non-random sampling methods (Q_w (7) = 281.1143, p < .001) illustrated significant within-group variability. Hence, the H4a is supported.

4.2. Escapism and positive outcomes (Meta-analysis 2)

We had nine independent studies for the relationship between escapism and positive outcomes, plus 11 additional studies showing both positive and negative outcomes associated with escapism. Thus, we used 20 studies having 68 effect sizes, ranging from z = −0.18 to z = 1.09. The effect size heterogeneity tests (Q (67) = 6384.554, p < .001, I^2 = 98.77%, τ^2 = 0.29) confirms that the effect size was not homogenous (Table 3). These results were consistent with the Caterpillar plot inspection (Fig. 5). We used a random effect (RE) model for further analysis due to the effect size heterogeneity. The overall effect size for the RE model demonstrated escapism having a statistically significant relationship with the positive outcomes (Z_{RE} = 0.34, p < .001) with an associated 95% confidence interval of [0.27, 0.41] (Table 3). According to Cohen's (1988) effect size conventions, the overall effect size was in the moderate category. Further, to test for the dependency, the RVE results (I^2 (corrected) = 99.10%, τ^2 (corrected) = 0.11, z (corrected) = 0.40) showed significant results at an associated 95% confidence interval of [0.28, 0.52]. We also checked the changes in the standard error using the RVE approach at ρ = 1.00, 0.80, 0.60, 0.40, 0.20 and 0.10. Hence, the H2 is supported using both the traditional and RVE approach.

The virtual assessment for Publication bias via Funnel plot (See Fig. 6) suggested potential asymmetry. Further, trim-and-fill results indicated six missing effect sizes on the right-hand side (Fig. 6). Thus, there might be a publication bias issue. To further check publication bias, we used Egger's regression test, which was significant (t (66) = −3.3703, p = .0013). Hence, we detected alleged publication bias in the studies investigated.

4.2.1. Moderator analysis

We took the context and sampling method as moderators to explain effect-size heterogeneity. As mentioned previously, we used the fixed-effect ANOVA-like model to conduct the moderator analysis.

4.2.2. Context

The context as a categorical variable explained a statistically significant amount of effect-size heterogeneity (Q_b (2) = 280.4252, p < .001). Specifically, the mean effect size for the non-Western countries (z = 0.56, SE = 0.006) was greater in magnitude than that of the Western countries (z = 0.47, SE = 0.006) and Worldwide contextual studies (z = 0.39, SE = 0.008). However, Western context studies had a slightly larger mean effect size as compared to the Worldwide context studies. The overall effect-size heterogeneity (Q_o (65) = 6104.12, p < .001) values were significant. All the three, Western (Q_w (23) = 2477.041, p < .001), non-Western (Q_w (17) = 1422.315, p < .001) and Worldwide (Q_w (21) = 2204.772, p < .001) context showed a significant within-group variability (See Table 5). Hence, the H3b is supported.

4.2.3. Sampling method

The overall effect size heterogeneity was significant (Q_o (66) = 6381.1474, p < .001). Though, the sampling method as a categorical variable did not had a statistically significant amount of effect-size heterogeneity (Q_b (1) = 3.406, p = .0649). However, both non-random sampling (Q_w (8) = 162.3991, p < .001) and random sampling methods (Q_w (58) = 6218.748, p < .001) independently demonstrated significant within-group variability (See Table 5). Specifically, the mean effect size for the random sampling method (z = 0.48, SE = 0.004) was greater in magnitude than that of the non-random sampling group (z = 0.45, SE = 0.017).

5. Discussion

Previously, researchers have argued that the primary purpose of a meta-analysis is not only to synthesize but to expand the current scholarship for future research (Borenstein et al., 2009; Valentine et al., 2010). For instance, Borenstein et al. (2009) claimed that only two studies might be enough for a meta-analysis if it adds to the body of knowledge, and the authors clearly identify the limitations of the meta-analysis. We reported statistical limitations of our results by conducting the publication bias analysis and using the sampling method as a moderator. Further, in light of previous scholarship, we aim to expand the current literature about escapism based upon 27 individual studies.

Researchers have previously established that escaping in leisure activities can result in positive and negative outcomes (Stenseng et al,

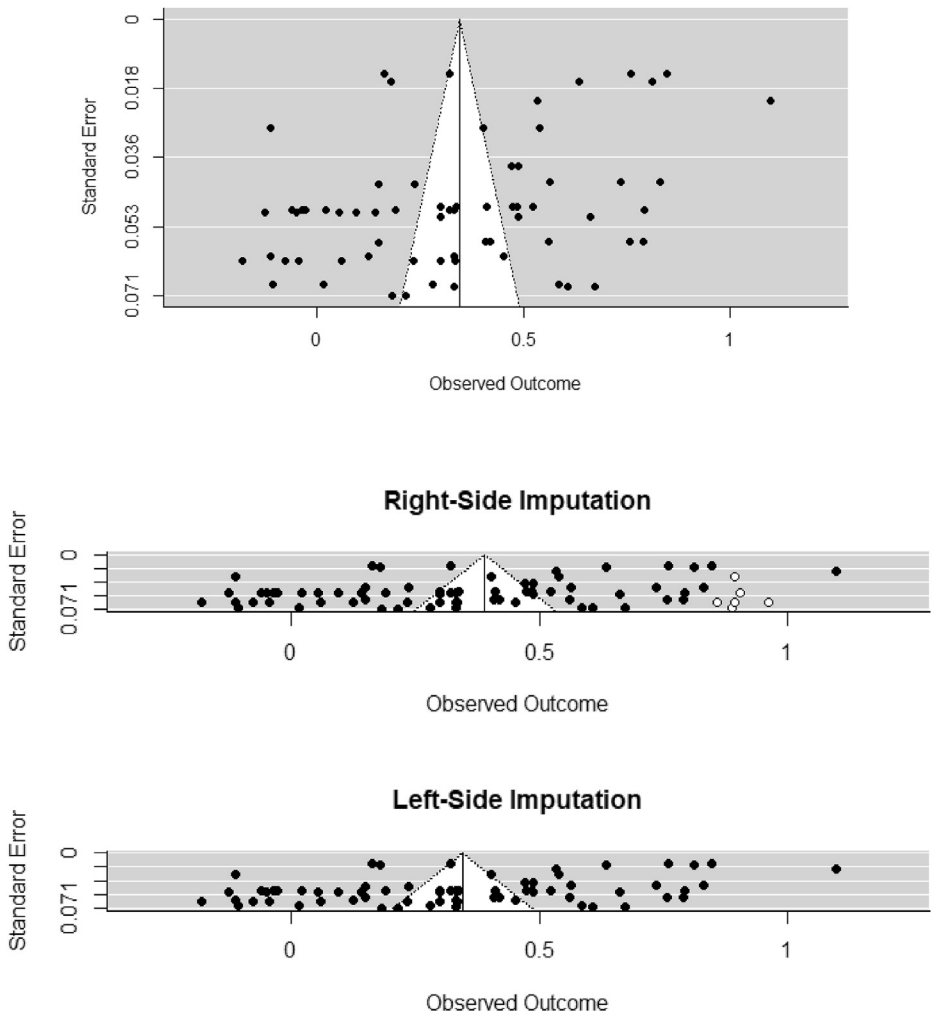

Fig. 6. Funnel plot and trim and fill effect (escapism and positive outcomes).

Table 5
Moderator analysis results for positive outcomes.

Moderator [Q_b]	K_j	*z (SE)*	95% CI	Q_{Wj}
Context [Q_b (2) = 280.4252, $p < .01$]	68			
Western	24	0.47(0.006)	[0.46,0.48]	2477.041***
Non-Western	18	0.56 (0.006)	[0.53, 0.57]	1422.315***
World-wide	26	0.39 (0.008)	[0.37, 0.40]	2204.772**
Sampling Method [Q_b (1) = 3.406, $p = .064$]				
Non-Random Sampling	9	0.45(0.017)	[0.42,0.48]	162.3991***
Random Sample	59	0.48(0.004)	[0.47, 0.49]	6218.748***

*$p < .05$; **$p < .01$; ***$p < .001$.
Note: Means within groups are weighted under the fixed-effects model; j indicates a specific group.

2011, 2012; Stenseng & Phelps, 2016). Nevertheless, there was a gap in scholarship concerning which outcomes (negative or positive) outweigh others in the video gaming environment. In this paper, we tried to address this gap by grounding our work in the dual model of escapism (Stenseng et al, 2011, 2012; Stenseng & Phelps, 2016). Overall, the study results supported all of the hypotheses and confirmed the dualistic nature of escapism. We found a significant relationship between escapism and positive and negative outcomes. Thus, H1 and H2 are supported. The magnitude of the negative outcomes mean effect size was larger than the positive outcomes mean effect size. This shows that escapism has a stronger association with negative outcomes.

Chen and Chang (2019) claimed that escapism is commonly referred to as the best predictor for internet addiction. Similarly, numerous scholars have predicted the relationship between physiological disorders and escapism (Chen & Chang, 2019; Kwon et al., 2011). On the other hand, Hagström and Kaldo (2014) differentiated between positive and negative escapism. A plethora of research also supports the escapism motive relationship with positive outcomes (Jin, 2014; Reer & Krämer, 2019). However, our current scholarship synthesis in agreement with the earlier escapism literature shows that escapism has a stronger association with negative outcomes than positive outcomes. This gives researchers a future direction to explore various moderators, which might influence the relationship between escapism and its dual outcomes.

In this study, we took cultural context (Western vs. Non-Western) as the moderator between escapism and its dual outcomes. The context (moderator) analysis between escapism and negative outcomes shows that all contextual groups (Western, Non-Western, and Worldwide) had a significant relationship (H3a). However, the Western group had a greater mean value than the non-Western group for the negative outcomes. Thus, in Western countries, escaping in video games has a higher association of adverse outcomes than in non-Western countries. Harris (1973) underscored that people participate in leisure activities to appease either their psychological or somatic needs or both needs together. Sloan (1989, pp. 175–240), based upon Harris's (1973) work, highlighted that sport fans occasionally discover sports as a vehicle to escape from their everyday monotony. Similarly, Melnick (1993) claimed that individuals in Western countries are looking for socialization methods (e.g., sports) to escape

from growing loneliness in Western cultures. Our study results elucidate that in Western countries, escapism might have a stronger association with negative outcomes in the gaming environment. Our findings support Stenseng and Phelps's (2016) argument and the dual model of escapism's main thesis that escaping in leisure activities due to self-suppression from negative elements (e.g., loneliness) can result in negative outcomes.

Nonetheless, the study results for the negative outcomes unveil, there might be an issue of publication bias in the studies analyzed. This was further illustrated with the sampling method (moderator) analysis. We found that both non-sampling and random sampling method groups had a significant effect on the relationship between escapism and negative outcomes (H4a). However, the random sampling group's mean effect size was greater in magnitude than that of the non-random sampling group. This shows that most of the studies investigated used more rigorous methods of data collection. Overall, the issue of publication bias and non-rigorous procedures adopted in previous studies raises the question about the effect size magnitude. Nevertheless, by looking at the statistical analysis, we can argue that escaping in video games has a stronger association with negative outcomes, especially among Western video gamers.

We also found a significant relationship between escapism and positive outcomes (H2). The moderator analysis showed that both sampling and non-sampling groups individually had a significant relationship with positive outcomes (H4b). However, the random sampling method's mean effect size was greater in magnitude than that of the non-random sampling group. This illustrates that most of the studies analyzed have used rigorous sampling procedures. Additionally, we found out that all the groups for the context (moderator) had a significant relationship with positive outcomes (H3b). The mean effect size for the non-Western countries group was higher in magnitude than the Western group. Thereby, escaping via video games by individuals from non-Western countries has a higher association with positive outcomes than individuals from Western countries. This result needs theoretical support in future investigations.

6. Conclusion, limitations, and future research

The study results unveil that the negative outcomes outweigh the positive outcomes. However, the escapism motive has a significant relationship with both (i.e., negative and positive outcomes). The two meta-analyses conducted serves to expand the escapism and video gaming literature. Though the studies analyzed may not fully represent all of the literature related to escapism and its positive and negative outcomes. The risk of publication bias and non-rigorous methods (e.g., non-random sampling) used in the selected studies also create doubts about our study results' generalizability. Nonetheless, the study's theoretical framing and overall results explicate escapism's dualistic nature.

The unique relationship explored in this study about how people escape differently in the Western and non-Western cultural contexts needs further investigation. The study results unearth that individuals in the Western and Non-Western countries escape differently in the video-gaming environment. These results need theoretical and empirical support beyond the current study context. In the future, a cross-cultural study should be conducted about how escapism motive is used by individuals while consuming video games in non-Western and Western countries, and what is theoretical reasoning about any difference is found.

Borenstein et al. (2009) highlighted that clearly mentioning the limitations of a meta-analysis can help scholars discuss the results' generalizability. This study's major limitation is that we did not include the game genre as a moderator. We did not take the game genre because many studies did not specifically mention what type of games the participants were playing. In the studies in which video game names were mentioned, it was difficult for us to categorize that a particular game genre as negative or positive. In addition, selecting game genre property by ourselves would have been a subjective choice, which would raise doubts about the study results. We acknowledge that the type of game would influence the outcome. For instance, the violent game may lead to negative outcomes. In the future, the game genre should be taken as a moderator. Further, some studies included in our statistical analysis were not from high impact factor journals. This might have influenced our results. Thereby, in the future, the impact factor of journals should be taken as a moderator. Lastly, most of the video gaming studies in the non-Western context are conducted in East Asian countries, which are predominantly collectivistic (Hofstede, 2010). Therefore, Hofstede's (2010) cultural dimensions could be taken as a moderator in the future to understand the dual nature of escapism. Similarly, the studies investigated do not cover the complete Western and non-Western world. We also found publication biases in the studies investigated, which raises doubts about our study results. Thus, the study results need further investigation.

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References

(Note: Asterisk with the studies included in the meta-analysis).

Abbasi, A. Z., Ting, D. H., Hlavacs, H., Costa, L. V., & Veloso, A. I. (2019). A empirical validation of consumer video game engagement: A playful-consumption experience approach. *Entertainment Computing, 29*, 43–55. https://doi.org/10.1016/j.entcom.2018.12.002. *.

Achternbosch, L., Miller, C., Turville, C., & Vamplew, P. (2014). Griefers versus the griefed — what motivates them to play massively multiplayer online role-playing games? *The Computer Games Journal, 3*(1), 5–18. https://doi.org/10.1007/bf03392354

Bányai, F., Griffiths, M. D., Demetrovics, Z., & Király, O. (2019a). The mediating effect of motivations between psychiatric distress and gaming disorder among esport gamers and recreational gamers. *Comprehensive Psychiatry, 94*, 117–152. https://doi.org/10.1016/j.comppsych.2019.152117

Bányai, F., Griffiths, M. D., Király, O., & Demetrovics, Z. (2019b). The psychology of esports: A systematic literature review. *Journal of Gambling Studies, 35*(2), 351–365. https://doi.org/10.1007/s10899-018-9763-1

Baumeister, R. F. (1990). Suicide as escape from self. *Psychological Review, 97*(1), 90–113. https://doi.org/10.1037/0033-295x.97.1.90

Becker, B. J. (2000). Multivariate meta-analysis. In H. E. A. Tinsley, & S. Brown (Eds.), *Handbook of applied and multivariate statistics and mathematical modeling*. Academic Press.

Benson, V., & Filippaios, F. (2019). The role of learning analytics in networking for business and leisure: A study of culture and gender differences in social platform users. *Computers in Human Behavior, 92*, 613–624. https://doi.org/10.1016/j.chb.2018.02.027

* Biegun, J., Edgerton, J. D., & Roberts, L. W. (2020). Measuring problem online video gaming and its association with problem gambling and suspected motivational, mental health, and behavioral risk factors in a sample of university students. *Games and Culture, 1*, 1–23. https://doi.org/10.1177/1555412019897524.

* Blasi, M. D., Giardina, A., Giordano, C., Coco, G. L., Tosto, C., Billieux, J., & Schimmenti, A. (2019). Problematic video game use as an emotional coping strategy: Evidence from a sample of MMORPG gamers. *Journal of Behavioral Addictions, 8*(1), 25–34. https://doi.org/10.1556/2006.8.2019.02.

Blumler, J. G. (1979). The role of theory in uses and gratifications studies. *Communication Research, 6*(1), 9–36. https://doi.org/10.1177/009365027900600102

Borenstein, M., Hedges, L., Higgins, J. P. T., & Rothstein, H. R. (2009). *Introduction to meta-analysis* (1st ed.). Wiley.

* Bowditch, L., Chapman, J., & Naweed, A. (2018). Do coping strategies moderate the relationship between escapism and negative gaming outcomes in World of Warcraft (MMORPG) players?. *Computers in Human Behavior, 86*, 69–76. https://doi.org/10.1016/j.chb.2018.04.030.

Calleja, G. (2010). Digital games and escapism. *Games and Culture, 5*(4), 335–353. https://doi.org/10.1177/1555412009360412

* Chang, S.-M., Hsieh, G. M. Y., & Lin, S. S. J. (2018). The mediation effects of gaming motives between game involvement and problematic Internet use: Escapism, advancement and socializing. *Computers & Education, 122*, 43–53. https://doi.org/10.1016/j.compedu.2018.03.007.

* Chen, C.-Y., & Chang, S.-L. (2019). Moderating effects of information-oriented versus escapism-oriented motivations on the relationship between psychological well-being and problematic use of video game live-streaming services. *Journal of Behavioral Addictions, 8*(3), 564–573. https://doi.org/10.1556/2006.8.2019.34.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Publishers: Lawrence Erlbaum Associates.

Costa, P. T., & McCrae, R. R. (1992). *Revised neo personality inventory (neo pi-r) and neo five-factor inventory (neo-ffi)*. Psychological Assessment Resources.

Csikszentmihalyi, M. (2000). *Beyond boredom and anxiety*. Jossey-Bass.

* Dauriat, F. Z., Zermatten, A., Billieux, Thorens, G., Bondolfi, G., Zullino, D., & Khazaal, Y. (2011). Motivations to play specifically predict excessive involvement in massively multiplayer online role-playing games: Evidence from an online survey. *European Addiction Research, 17*(4), 185–189. https://doi.org/10.1159/000326070.

Deci, E. L., & Ryan, R. M. (2012). Self-determination theory. In P. A. M. Van Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), *Handbook of theories of social psychology* (pp. 416–436). Sage Publications Ltd.

* Deleuze, J., Maurage, P., Schimmenti, A., Nuyens, F., Melzer, A., & Billieux, J. (2019). Escaping reality through videogames is linked to an implicit preference for virtual over real-life stimuli. *Journal of Affective Disorders, 245*, 1024–1031. https://doi.org/10.1016/j.jad.2018.11.078.

Dindar, M., & Akbulut, Y. (2014). Motivational characteristics of Turkish MMORPG players. *Computers in Human Behavior, 33*, 119–125. https://doi.org/10.1016/j.chb.2014.01.016. *.

Duval, S., & Tweedie, R. (2000). Trim and fill: A simple funnel-plot-based method of testing and adjusting for publication bias in meta-analysis. *Biometrics, 56*(2), 455–463. https://doi.org/10.1111/j.0006-341x.2000.00455.x

Egger, M., Juni, P., Bartlett, C., Holenstein, F., & Sterne, J. (2003). How important are comprehensive literature searches and the assessment of trial quality in systematic reviews? Empirical study. *Health Technology Assessment (Winchester, England), 7*(1), 1–76.

Egger, M., Smith, G. D., Schneider, M., & Minder, C. (1997). Bias in meta-analysis detected by a simple, graphical test. *BMJ, 315*, 629–634. https://doi.org/10.1136/bmj.315.7109.629

Fisher, Z., & Tipton, E. (2015). robumeta: An R-package for robust variance estimation in meta-analysis (Retrieved from: https://arxiv.org/abs/1503.02220 .

Gholipour, H. F., & Tajaddini, R. (2014). Cultural dimensions and outbound tourism. *Annals of Tourism Research, 49*, 203–205. https://doi.org/10.1016/j.annals.2014.08.006

Gleser, J. J., & Olkin, I. (2009). Stochastically dependent effect sizes. In H. M. Cooper, L. V. Hedges, & J. C. Valentine (Eds.), *The handbook of research synthesis and meta-analysis* (pp. 357–376). Russell Sage Foundation.

Goldberg, L. R. (1990). An alternative «description of personality: The Big-Five factor structure. *Journal of Personality and Social Psychology, 59*(6), 1216–1229. https://doi.org/10.1037/0022-3514.59.6.1216

Gross, J. J. (2002). Emotion regulation: Affective, cognitive, and social consequences. *Psychophysiology, 39*(3), 281–291. https://doi.org/10.1017/S0048577201393198

Gruber, J., Dutra, S. J., Hay, A. C., & Devlin, H. C. (2014). Positive emotion and reward dysregulation across disorders. In M. N. Shiota, M. M. Tugade, & L. Kirby (Eds.), *Handbook of positive psychology*. Guilford Press.

Hagström, D., & Kaldo, V. (2014). Escapism among players of MMORPGs—conceptual clarification, its relation to mental health factors, and development of a new measure. *Cyberpsychology, Behavior, and Social Networking, 17*(1), 19–25. https://doi.org/10.1089/cyber.2012.0222. *.

Harris, D. V. (1973). *Involvement in sport: A somatopsychic rationale for physical activity*. Lea and Febiger.

Hedges, L. V., Tipton, E., & Johnson, M. C. (2010). Robust variance estimation in meta-regression with dependent effect size estimates. *Research Synthesis Methods, 1*(1), 39–65. https://doi.org/10.1002/jrsm.5

Hedges, L. V., & Vevea, J. L. (1998). Fixed- and random-effects models in meta-analysis. *Psychological Methods, 3*(4), 486–504. https://doi.org/10.1037/1082-989X.3.4.486

* Herodotou, C., Kambouri, M., & Winters, N. (2014). Dispelling the myth of the socio-emotionally dissatisfied gamer. *Computers in Human Behavior, 32*, 23–31. https://doi.org/10.1016/j.chb.2013.10.054.

Hofstede, G. (2010). Dimensionalizing cultures: The Hofstede model in context. *Online Readings in Psychology and Culture, 2*(1). https://doi.org/10.9707/2307-0919.1014

Hunter, J. E., & Schmidt, F. L. (1990). *Methods of meta-analysis: Correcting error and bias in research findings*. Sage.

Hunter, J. E., & Schmidt, F. L. (2004). *Methods of meta-analysis: Correcting error and bias in research findings* (2nd ed.). Sage.

Hwang, J., & Lyu, S. O. (2015). The antecedents and consequences of well-being perception: An application of the experience economy to golf tournament tourists. *Journal of Destination Marketing & Management, 4*(4), 248–257. https://doi.org/10.1016/j.jdmm.2015.09.002

Jackson, D., Riley, R., & White, I. R. (2011). Multivariate meta-analysis: Potential and promise. *Statistics in Medicine, 30*(20), 2481–2498. https://doi.org/10.1002/sim.4172

Jain, S., Sharma, S. K., & Jain, K. (2019). Meta-analysis of fixed, random and mixed effects models. *International Journal of Mathematical, Engineering and Management Sciences, 4*(1), 199–218. https://doi.org/10.33889/ijmems.2019.4.1-018

Jeyaraj, A., & Dwivedi, Y. K. (2020). Meta-analysis in information systems research: Review and recommendations. *International Journal of Information Management, 55*(102226). https://doi.org/10.1016/j.ijinfomgt.2020.102226

* Jin, C.-H. (2014). The role of users' motivations in generating social capital building and subjective well-being: The case of social network games. *Computers in Human Behavior, 39*, 29–38. https://doi.org/10.1016/j.chb.2014.06.022.

Kardefelt-Winther, D. (2014b). A critical account of DSM-5 criteria for internet gaming disorder. *Addiction Research and Theory, 23*(2), 93–98. https://doi.org/10.3109/16066359.2014.935350

Kardefelt-Winther, D. (2017). Conceptualizing internet use disorders: Addiction or coping process? *Psychiatry and Clinical Neurosciences, 71*(7), 459–466. https://doi.org/10.1111/pcn.12413

Kardefelt-Winther, D. (2014a). Problematizing excessive online gaming and its psychological predictors. *Computers in Human Behavior, 31*, 118–122. https://doi.org/10.1016/j.chb.2013.10.017. *.

* Király, O., Tóth, D., Urbán, R., Demetrovics, Z., & Maraz, A. (2017). Intense video gaming is not essentially problematic. *Psychology of Addictive Behaviors, 31*(7), 807–817. https://doi.org/10.1037/adb0000316.

Koo, D.-M. (2009). The moderating role of locus of control on the links between experiential motives and intention to play online games. *Computers in Human Behavior, 25*(2), 466–474. https://doi.org/10.1016/j.chb.2008.10.010. *.

Kubey, R. W., & Csikszentmihalyi, M. (1990). Television as escape: Subjective experience before an evening of heavy viewing. *Communication Reports, 3*(2), 92–100. https://doi.org/10.1080/08934219009367509

* Kwon, J.-H., Chung, C.-S., & Lee, J. (2011). The effects of escape from self and interpersonal relationship on the pathological use of internet games. *Community Mental Health Journal, 47*(1), 113–121. https://doi.org/10.1007/s10597-009-9236-1.

* Laconi, S., Pirès, S., & Chabrol, H. (2017). Internet gaming disorder, motives, game genres and psychopathology. *Computers in Human Behavior, 75*, 652–659. https://doi.org/10.1016/j.chb.2017.06.012.

Lazarus, R. S., & Folkman, S. (1984). *Stress,appraisal, and coping*. Springer.

* Li, H., Liu, Y., Xu, X., Heikkilä, J., & Heijden, H. V. D. (2015). Modeling hedonic is continuance through the uses and gratifications theory: An empirical study in online games. *Computers in Human Behavior, 48*, 261–272. https://doi.org/10.1016/j.chb.2015.01.053.

Liu, C.-C., & Chang, I.-C. (2016). Model of online game addiction: The role of computer mediated communication motives. *Telematics and Informatics, 33*(4), 904–915. https://doi.org/10.1016/j.tele.2016.02.002. *.

Maroney, N., Williams, B. J., Thomas, A., Skues, J., & Moulding, R. (2019). A stress-coping model of problem online video game use. * *International Journal of Mental Health and Addiction, 17*(4), 845–858. https://doi.org/10.1007/s11469-018-9887-7.

Melnick, M. J. (1993). Searching for sociability in the stands: A theory of sports spectating. *Journal of Sport Management, 7*(1), 44–60. https://doi.org/10.1123/jsm.7.1.44

* Merhi, M. I. (2016). Towards a framework for online game adoption. *Computers in Human Behavior, 60*, 253–263. https://doi.org/10.1016/j.chb.2016.02.072.

Michailidis, L., Balaguer-Ballester, E., & He, X. (2018). Flow and immersion in video games: The aftermath of a conceptual challenge. *Frontiers in Psychology, 9*. https://doi.org/10.3389/fpsyg.2018.01682

Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *PLoS Medicine, 6*(7). https://doi.org/10.1371/journal.pmed.1000097.

Muriel, D., & Crawford, G. (2020). Video games and agency in contemporary society. *Games and Culture, 15*(2), 138–157. https://doi.org/10.1177/1555412017750448

Oggins, J., & Sammis, J. (2010). Notions of video game addiction and their relation to self-reported addiction among players of world of warcraft. *International Journal of Mental Health and Addiction, 10*(2), 210–230. https://doi.org/10.1007/s11469-010-9309-y. *.

Ouzzani, M., Hammady, H., Fedorowicz, Z., & Elmagarmid, A. (2016). Rayyan—a web and mobile app for systematic reviews. *Systematic Reviews, 5*(1), 210–220. https://doi.org/10.1186/s13643-016-0384-4

* Reer, F., & Krämer, N. C. (2019). Are online role-playing games more social than multiplayer first-person shooters? Investigating how online gamers' motivations and playing habits are related to social capital acquisition and social support. *Entertainment Computing, 29*, 1–9. https://doi.org/10.1016/j.entcom.2018.10.002.

* van Reijmersdal, E. A., Jansz, J., Peters, O., & van Noort, G. (2013). Why girls go pink: Game character identification and game-players' motivations. *Computers in Human Behavior, 29*(6), 2640–2649. https://doi.org/10.1016/j.chb.2013.06.046.

Richards, J. M., & Gross, J. J. (2000). Emotion regulation and memory: The cognitive costs of Keeping one's cool. *Journal of Personality and Social Psychology, 79*(3), 410–424. https://doi.org/10.1037/0022 3514.79.3.410

Russell, A. M., Yu, B., Thompson, C. G., Sussman, S. Y., & Barry, A. E. (2020). Assessing the relationship between youth religiosity and their alcohol use: A meta-analysis from 2008 to 2018. *Addictive Behaviors, 106*, 1–10. https://doi.org/10.1016/j.addbeh.2020.106361

Shi, L., & Lin, L. (2019). The trim-and-fill method for publication bias. *Medicine, 98*(23), e15987. https://doi.org/10.1097/md.0000000000015987

Sloan, L. R. (1989). The motives of sports fans. In J. H. Goldstein (Ed.), *Sports, games, and play: Social and psychological viewpoints (2nd ed.)*. Lawrence Erlbaum Associates.

Snodgrass, J. G., Lacy, M. G., Dengah, H. F., Eisenhauer, S., Batchelder, G., & Cookson, R. J. (2014). A vacation from your mind: Problematic online gaming is a stress response. *Computers in Human Behavior, 38*, 248–260. https://doi.org/10.1016/j.chb.2014.06.004. *.

Stenseng, F., & Phelps, J. M. (2016). Passion for a sport activity, escapism, and affective outcomes: Exploring a mediation model. *Scandinavian Psychologist, 3*. https://doi.org/10.15714/scandpsychol.3.e2

Stenseng, F., Rise, J., & Kraft, P. (2011). The dark side of leisure: Obsessive passion and its covariates and outcomes. *Leisure Studies, 30*(1), 49–62. https://doi.org/10.1080/02614361003716982

Stenseng, F., Rise, J., & Kraft, P. (2012). Activity engagement as escape from self: The role of self-suppression and self-expansion. *Leisure Sciences, 34*(1), 19–38. https://doi.org/10.1080/01490400.2012.633849

Tanner-Smith, E. E., Tipton, E., & Polanin, J. R. (2019). Correction to handling complex meta-analytic data structures using robust variance estimates: A tutorial in R. *Journal*

of Developmental and Life-Course Criminology, 5(4), 614–615. https://doi.org/10.1007/s40865-019-00127-2

Tipton, E. (2015). Small sample adjustments for robust variance estimation with meta-regression. *Psychological Methods, 20*(3), 375–393. https://doi.org/10.1037/met0000011

Valentine, J. C., Pigott, T. D., & Rothstein, H. R. (2010). How many studies do you need?: A primer on statistical power for meta-analysis. *Journal of Educational and Behavioral Statistics, 35*(2), 215–247. https://doi.org/10.3102/1076998609346961

Viechtbauer, W. (2010). Conducting meta-Analyses in R with the metaphor package. *Journal of Statistical Software, 36*(3), 1–47. https://doi.org/10.18637/jss.v036.i03

* Yang, C., & Liu, D. (2017). Motives matter: Motives for playing pokémon go and implications for well-being. *Cyberpsychology, Behavior, and Social Networking, 20*(1), 52–57. https://doi.org/10.1089/cyber.2016.0562.

Yee, N. (2006). Motivations for play in online games. *CyberPsychology and Behavior, 9*(6), 772–775. https://doi.org/10.1089/cpb.2006.9.772