



Addictive behaviors and psychological distress among adolescents and emerging adults: A mediating role of peer group identification



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ABSTRACT

Objective: Research suggests the sense of belonging to primary groups functions as an important social resource for youth well-being, but it can be compromised among those dealing with addiction. The current study examined how adolescents' and emerging adults' identification with a primary peer group consisting of friends, mediates the relationship between addictive behaviors and psychological distress.

Method: The study utilized demographically balanced survey data on 1200 Finnish participants aged 15 to 25 (mean age 21.29, 50% female). Measures were included for psychological distress, excessive drinking, excessive drug use, excessive gambling, excessive Internet use, and peer group identification.

Results: All forms of addictive behaviors had a significant direct relationship with higher psychological distress. Excessive drug use, gambling and Internet use were associated with a weaker identification with a peer group, which predicted higher psychological distress. Contrary to the above findings, excessive drinking was linked to stronger peer group identification, mediating psychological distress downwards.

Conclusions: These findings support past research and provide a mediation model explanation onto how weaker social relations add to negative well-being consequences in different addictive behaviors, thus underlining the importance of expanding our understanding of social group outcomes among young individuals.

1. Introduction

Adolescents' and emerging adults' psychological well-being and overall health are a continuous concern world-wide (Arnett, 2005; Salam, Das, Lassi, & Bhutta, 2016; Torikka, Kaltiala-Heino, Rimpelä, Marttunen, Luukkaala, and Rimpelä, 2014). These are critical time-periods in human development as many harmful and often-times life-long behavior patterns stem during them (Mawson, Best, Beckwith, Dingle, & Lubman, 2015; Merikangas & McClair, 2012). Research has consistently shown that adolescents and emerging adults engage in detrimental and health-threatening behaviors, which inevitably influence their psychological well-being. These behaviors include alcohol and drug use, unsafe sex, poor diet choices, and even delinquent acts characterized by peer influence and heightened risk-taking (Balogh, Mayes, & Potenza, 2013; Salam et al., 2016).

Addictive behaviors of the youth are a particular cause for significant negative outcomes, as they may develop into long lasting habits and have detrimental effects on individuals' physical health (Balogh et al., 2013), social relationships (Yao & Zhong, 2014; Dhir, Chen, & Nieminen, 2015) and financial status (Canale, Griffiths, Vieno, Siciliano, & Molinaro, 2016). Well-being, defined through a set of

psychological features, including personal relationships and lack of distress (Ryff & Singer, 1996; Sagone & De Caroli, 2014), is vital to positive human functioning but highly susceptible to addictive behaviors. Additional challenge in supporting youths' well-being arises as addictions and addictive behaviors can occur in many forms. Although addiction is commonly associated with substance misuse, there exists a wide range of objects and activities one can become addicted to (West, 2006; Jorgenson, Hsiao, & Yen, 2016; Orford, 2001a, 2001b).

In this study, we attempt to provide a supplementary explanation onto how addictive behaviors and psychological well-being fluctuate among adolescents and emerging adults, when social identification with a primary peer group functions as a mediator. We focus on examining four types of addictions: alcohol, drugs, gambling, and the Internet. Here, addictions are discussed in terms of excessive behaviors, as suggested by Orford (2001a, 2001b). Next, we explain briefly why these four addiction types were chosen and why examining social identification's mediating role in addiction is important.

1.1. Excessive drinking

Excessive drinking, particularly among youth, is a long-prevailing

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global issue (Johnston, O'Malley, Bachman, Schulenberg, & Miech, 2016; World Health Organization, 2014). In the United States, for instance, alcohol is the most frequently used and misused substance among youth, with an 18% prevalence rate in monthly binge drinking. For males, this typically equals five or more drinks and, for females, four or more drinks within approximately two hours (Centers for Disease Control and Prevention [CDC], 2016; CDC, 2017). Additionally, heaviest episodic alcohol consumption is taking place among youths between 15 and 19 years-old (Jernigan, Noel, Landon, Thornton, & Lobstein, 2017). Similarly, in Finland, 37% of adolescents reported they had experienced with alcohol (i.e., been drunk) at least once during their lifetime, and 7% reported drinking on a weekly basis with the intention of getting drunk (Raitasalo, Huhtanen, & Miekka, 2016).

Excessive drinking of alcohol in any age group is a serious public health concern, but especially among young people during important developmental stages. As past research has shown, it can impact brain development, lead to intoxication, accidents, infectious diseases, or even death (Mitchell, Gryczynski, O'Grady, & Schwartz, 2013; Rosenquist, Murabito, Fowler, & Christakis, 2010).

1.2. Excessive drug use

Drugs characterize another group of substances that has an immense potential to seriously impact the health and well-being of the individual and society alike (Macleod et al., 2004; Mitchell et al., 2013; Nutt, King, & Phillips, 2010). Past research has consistently shown that drug use and misuse are often at their highest during emerging adulthood, which may lead to a heightened risk of substance use disorders later in life (Arnett, 2005; Moss, Chen, & Yi, 2014; Mitchell et al., 2013). In Finland, to illustrate, the overall drug supply and use have increased during the past two decades and statistics indicate that drugs are most often offered to youngsters in the 15–24 age-group: 13% reported having been offered drugs during the past year (Karjalainen, Savonen, & Hakkarainen, 2016). At the same time, people's collective attitudes towards drugs have become more lenient and are particularly liberal towards experimentation with cannabis (Raitasalo et al., 2016; Hakkarainen, Karjalainen, Raitasalo, & Sorvala, 2015). A partial reason for this attitudinal shift is believed to be attributable to an observed increase in the amount of social relationships general people have with individuals who regularly sell or use drugs. It is suggested that personal affiliations with drug users may lessen the fear and concern typically associated with drugs and drug use (Hakkarainen, Karjalainen, Ojajarvi, & Salasuo, 2015; Karjalainen et al., 2016).

Repeated use of illicit -or even certain legally allowed drugs, can become detrimental to their users and have many negative consequences: on top of being destructive to health, they increase the likelihood of accidents and involvement in criminal activities (DeLisi, Angton, Behnken, & Kusow, 2015; Orford, 2001b), and can damage people's social relationships and financial situation (Arria et al., 2013; Degenhardt, Coffey, Moran, Carlin, & Patton, 2007). Excessive drug use can lead to further problems, such as poor decision making and additional addictions, due to the possible altering of the functions of the motivational circuitry of the brain (Balogh et al., 2013). Moreover, drug use issues that begin in adolescence are more likely to persist into adulthood (Merikangas & McClair, 2012).

1.3. Excessive gambling

Like other addictive behaviors, excessive gambling can have extensive harmful impacts both on individual and societal level (Salonen & Raisamo, 2015; St-Pierre & Derevensky, 2016). Even though various gaming activities are illegal for youths under 18 years old in many countries, gambling is a popular activity among adolescents and emerging adults worldwide (Blinn-Pike, Worthy, & Jonkman, 2010; Canale et al., 2016; Calado, Alexandre, & Griffiths, 2017). As a result, youth problem gambling is a growing international concern (Elton-

Marshall, Leatherdale, & Turner, 2016; Kristiansen, Reith, & Trabjerg, 2017; Volberg, Gupta, Griffiths, Ólason, & Delfabbro, 2010). Excessive gambling is an evolving issue also due to the advances in technology; as multiple new forms of gaming activities are now taking place online, they become easier and faster for young people to access (Elton-Marshall et al., 2016).

According to the Finnish National Institute of Health and Wellbeing (THL), gambling activities start typically at the age of 16. Risky gambling behavior has increased during the past years and it is most common among individuals between 18 and 24 years of age (Salonen & Raisamo, 2015). When excessive, gambling can induce emotional distress, cause serious financial issues, facilitate other risky behaviors, such as illicit substance use, and strain social relationships (Calado et al., 2017; Raisamo, Halme, Murto, & Lintonen, 2013; Splevins, Mireskandari, Clayton, & Blaszczynski, 2010).

1.4. Excessive Internet use

In a relatively short amount of time, the Internet has become an inseparable part of people's lives. It is estimated that about 40% of the world population has Internet connection (Kuss, Griffiths, Karila, & Billieux, 2014). However, because modern portable devices (e.g., smartphones, tablets, and laptops) include Internet, the percentage might be even higher. Yao and Zhong (2014) estimate that an average Internet user spends an equal or a greater amount of time online as offline. While the Internet has many benefits, its use has brought within new types of problems and challenges, especially in terms of adolescent psychosocial development (Durkee et al., 2016; Kuss, Van Rooij, Shorter, Griffiths, & van de Mheen, 2013). Like substance use and gambling behavior, Internet use can become excessive and start to interfere normal functioning (Yau, Potenza, & White, 2012).

Past research has investigated excessive Internet use under many terms, including *Internet addiction*, *compulsive*, *excessive*, and *pathological Internet use*, yet regardless of the term used, heavy Internet use and its addictive properties have been relatively difficult to measure. Multiple studies (e.g., Durkee et al., 2016; Dhir et al., 2015; Kuss et al., 2014; Cheng & Li, 2014; Sinkkonen, Puhakka, & Meriläinen, 2014) have attempted to map how common pathological Internet use (PIU), or Internet addiction (IA), is, and what types of people are more likely to use the Internet compulsively. The studies consistently found that adolescents were more likely to both engage in compulsive Internet use and even become addicted to it -they were also more vulnerable to its negative effects. Cheng and Li (2014) estimate that the global prevalence rate for pathological Internet use is approximately 6%. A youth study in Finland found that 22.9% of adolescent participants used the Internet excessively and 1.3% were identified as PIUs (Sinkkonen et al., 2014). Internet addiction, as discussed in past research, is highly problematic and can lead to poor eating and sleeping habits, lower academic performances, and lessen traditional face-to-face interactions with friends and family (Durkee et al., 2016; Balogh et al., 2013; Kuss et al., 2014; Yao & Zhong, 2014).

1.5. The role of social relationships

Social relationships are a major determinant of well-being for people at large (Baumeister & Leary, 1995; Thoits, 2011), but especially for young people (Best, Manktelow, & Taylor, 2014; Lavy & Sand, 2012). One possible linkage between social relationships and subsequent well-being is social identification, often operationalized as a subjective sense of belonging to a certain group (Cruwys, Steffens, Haslam, Haslam, Jetten, & Dingle, 2017; Jetten, Haslam, Haslam, Dingle, & Jones, 2014; Buckingham, Frings, & Albery, 2013). Social identification refers to a process in which individuals' identity is partly determined by the connectedness to certain social groups (Tajfel & Turner, 1979). These 'in-groups', and social support derived from them, have been shown to have significant outcomes in terms of psychological

well-being (Frings & Albery, 2015; Greenaway, Cruwys, Haslam, & Jetten, 2016; Mawson et al., 2015).

As discussed in Sections 1.1 through 1.4, excessive behaviors have several adverse consequences on health and well-being. In addition, they often disrupt the dynamics of people's social relationships (Yao & Zhong, 2014; Dhir et al., 2015). For example, adolescents with problematic gambling habits often replace their social ties with gambling-related connections and distance themselves from their pre-existing peer groups, while excessive Internet users often substitute social interactions with family to online communications with similar users (Blinn-Pike et al., 2010; Dhir et al., 2015). However, it is noteworthy that the relationship between addictive behaviors and social outcomes may not always be negative: in earlier research, alcohol use has been linked to stronger connection to and investment in peer groups (Brechtwald & Prinstein, 2011; Boman IV, Stogner, & Lee Miller, 2013; Stogner, Boman IV, & Lee Miller, 2015). Thus, more research is needed in understanding how social relationships and their changing role in young people's lives can result in either negative or positive individual and group outcomes.

This study aims to contribute to this research gap by considering a wide range of addictive behaviors and their impact on peer group identification and psychological distress among young people. As young people are particularly vulnerable to the costs of addictive behaviors (Balogh et al., 2013; Calado et al., 2017), recognizing the potential mediating role of social identification on well-being can provide further insight in understanding additional causes of addiction-related harms in young people as well as induce clinical and policy changes.

2. Method

2.1. Participants

A total of 1200 participants entered into the study from a pool of volunteers administered by Survey Sampling International. The sample consisted of Finnish young people aged 15 to 25 (Mean Age = 21.29, $SD = 2.85$, 50% female) and was demographically balanced in terms of age, gender, and living area. The research was approved by the Ethics Committee of Tampere region in Finland. All respondents were informed about the aims of the study and their participation in the study was fully voluntary. The participants were informed they could withdraw from the study at any time. The survey was fully anonymous and participating in the study did not inflict any harm to the participants.

2.2. Survey

The *YouGamble* online-survey was conducted during March–April 2017 using LimeSurvey software, and it was optimized for both computers and mobile devices. Average survey response time was 15.50 min. The survey included measures for all target variables, including hazardous alcohol use, drug use, gambling behavior, compulsive Internet use, psychological wellbeing, and identifying with a primary peer group.

2.3. Measures

Excessive alcohol use was measured by a 3-item Alcohol Use Disorders Identification Test, AUDIT-C. The measure is validated for several populations and provides a reliable and quick way to identify individuals with hazardous drinking habits (Bush, Kivlahan, McDonell, Fihn, & Bradley, 1998; Rubinsky, Dawson, Williams, Kivlahan, & Bradley, 2013). The measure had good internal consistency ($\alpha = 0.82$).

Excessive Drug Use was measured by a set of five questions screening for the use of different drugs with intoxicative intentions. A dummy variable was created to identify those individuals who had not used drugs regularly and those who had used regularly or are still using one or more of the following substances: cannabis, stimulants,

hallucinogens, opioids, or other pharmaceuticals. The proportion of those who had used drugs either in the past or were currently using was 52.4%, half of which were cannabis users.

Excessive Gambling was measured by the South Oaks Gambling Screen (SOGS) which is regularly used in studies screening for pathological gambling behavior (Castrén et al., 2013; Edgren, Castrén, Mäkelä, Pörfors, Alho, and Salonen, 2016; Salonen & Raisamo, 2015). The scale was slightly modified to accommodate the Finnish version of the SOGS and included a question set of 20 items and has good internal consistency ($\alpha = 0.89$).

Excessive Internet Use was assessed by the Compulsive Internet Use Scale, CIUS (Meerkerk, Van Den Eijnden, Vermulst, & Garretsen, 2009). The scale has good psychometric properties and consists of 14 items, each targeting the consequences and states of mind involved in Internet use. Responses range on a five-point scale from 0 (never) to 4 (very often) with a higher score indicating compulsive Internet use. The scale had excellent internal consistency ($\alpha = 0.93$).

Psychological distress was measured with the General Health Questionnaire, GHQ-12 (Goldberg et al., 1997; Pevalin, 2000). The instrument is extensively used in clinical settings and widely utilized in mental health research. The scale has good internal consistency ($\alpha = 0.88$) and reliability. A total of 12 questions with a 4-point scale (0–3) screen for psychological well-being. A higher score indicates higher psychological distress.

Identifying with a Primary Peer Group consisting of friends was assessed with an inquiry regarding the subjective sense of belonging to a primary peer group. The item asked; “How strongly do you feel you belong to the following: A Peer Group?” Answers were provided on a scale ranging from 1 (no belonging at all) to 10 (very strong belonging).

2.4. Statistical analysis

Descriptive statistics were calculated as means (M) and standard deviations (SD) for continuous variables, and as frequencies (n) and relational proportions (%) for categorical variables. This information is presented in Table 1. The mediation analysis was conducted with multistep regression approach suggested by Baron and Kenny (1986). In the approach, four regression models were estimated for each form of addictive behavior (Table 2). The statistical significance of indirect associations was assessed based on these models by using Sobel tests (Sobel, 1982). Gender and age were used as covariates in all models.

3. Results

According to our full models including addictive behaviors, social identification as a moderator and covariates, excessive drinking ($b = 0.4$, $SE = 0.06$, $t(1199) = 7.09$, $p < .001$), excessive drug use ($b = 2.3$, $SE = 0.77$, $t(1199) = 3.00$, $p = .003$), excessive gambling ($b = 0.4$, $SE = 0.07$, $t(1199) = 5.86$, $p < .001$), and excessive Internet use ($b = 0.1$, $SE = 0.02$, $t(1199) = 8.42$, $p < .001$) all had a significant positive relationship with psychological distress. In addition, there was a significant relationship between all forms of addictive behaviors and social identification (Table 2 and Fig. 1). This association was negative in excessive drug use ($b = -1.13$, $SE = 0.31$, $t(1199) = -3.61$, $p < .001$), excessive gambling ($b = -0.11$, $SE = 0.03$, $t(1199) = -3.55$, $p < .001$), and excessive Internet use ($b = -0.02$, $SE = 0.01$, $t(1199) = -3.12$, $p = .002$). Excessive drinking, however, was positively associated with peer group identification ($b = 0.11$, $SE = 0.02$, $t(1199) = 4.49$, $p < .001$).

According to Sobel tests, the indirect effects between addictive behaviors and psychological distress via social identification were significant in the case of excessive drinking ($z = -4.06$, $p < .001$) excessive drug use ($z = 3.30$, $p < .001$), excessive gambling ($z = 3.45$, $p = .001$), and excessive Internet use ($z = 2.91$, $p = .004$). Notably, excessive drinking was the only form of addictive behavior to be indirectly associated with lower psychological distress ($b = -0.07$,

$SE = 0.02$), while the indirect association was higher in case of excessive drug use ($b = 0.65$, $SE = 0.20$), excessive gambling ($b = 0.06$, $SE = 0.02$), and excessive Internet use ($b = 0.01$, $SE = 0.00$). The total effects, including both the direct and indirect effects, were positive in case of all forms of addictive behavior (see Table 2).

4. Discussion

While research on social relationships' impact on youth behavior is abundant, no previous research, to our knowledge, has considered how addictive behaviors intervene with social identification mechanisms and thus impact youths' psychological well-being. Here, our aim was to provide a mediation model explanation for this interplay. In line with earlier research, we found that all addictive behaviors examined had a direct negative impact on psychological well-being. In terms of our mediation model, we found significant indirect effects where the strength of social identification mediated psychological well-being. The indirect effect was negative in terms of excessive drug use, excessive gambling, and excessive Internet use. Excessive drinking, in contrast, had a positive indirect effect on psychological well-being. Consequently, our analysis suggests that social identification among alcohol users can function as a unitive factor safeguarding psychological well-being. Among excessive gamblers, drug users and excessive Internet users, social identification is weakened and therefore increases the level of experienced psychological distress. This accentuates the complex social outcomes addictions possess.

In line with previous studies, our results show that a sense of belonging to a primary group is meaningful to individuals and has significant health related consequences (Buckingham et al., 2013; Cruwys et al., 2017; Jetten et al., 2014). Within the current study, the contradiction between high and low social identification and their consequence in each given addictive behavior (excessive drinking, drug use, Internet use, and gambling), is likely due to the different underlying characteristics of these behaviors. In many adolescent and emerging adult peer groups, alcohol drinking can be regarded as an extravert and normative behavior which helps individuals to integrate themselves into a desired primary group (Brechtwald & Prinstein, 2011; Demant & Järvinen, 2006; Neighbors et al., 2011). It can also be expected that these types of extrovertedly oriented peer groups are easier for youths to find. We suggest that the higher well-being among alcohol consuming youth lies in these social ties.

It is also notable that heavy drinking behavior can strengthen friendships among youth who share this behavior (Boman IV et al., 2013). Past research has found that adolescents who share similar drinking patterns experience their quality of friendship to be higher (Stogner et al., 2015). Thus, it is possible that higher social identification with alcohol consuming peers correspondingly indicates higher quality friendships among those youths, which then contributes to experiencing higher psychological well-being. It is worth noting, however, that even given this positive mediation effect, the total effect of alcohol consumption on young people's well-being is still negative.

Unlike alcohol consumption, other forms of addictive behaviors appear to disintegrate young people from their peer groups. This is in line with earlier research reporting harmful social consequences of addictive behaviors (see e.g. Blinn-Pike et al., 2010; Dhir et al., 2015; Yao & Zhong, 2014). Using drugs, surfing the Internet, and taking part in gambling activities, could be, particularly in their excessive forms, viewed as lonesome behaviors more likely to be carried out by individuals who do not have an immediate primary group to identify with. We further propose that, in young individuals who excessively

engage in these behaviors, the need to belong to a primary social group is hindered and, to an extent, the behaviors themselves function as a replacement for missing social relationships. This then manifests in higher psychological distress and lower well-being.

4.1. Limitations and future directions

While the study provides major results, it did not examine if the participants did indeed engage in these potentially lonesome addictive behaviors – excessive drug use, gambling and Internet use – alone. Future research should thus evaluate whether these behaviors are done in isolation. Further investigation is also needed to determine whether social identification's impact among alcohol consuming youth is unique, or whether it can influence addictive behaviors and well-being across addictions when the behaviors are carried out with peers. Lastly, due to the limits of the cross-sectional method, it cannot be determined whether weak social identification is a result or cause of addictive behaviors.

4.2. Conclusions

This study described a relationship between addictive behaviors and psychological distress through the mediating effect of primary group identification. The study was able to demonstrate that the said effect exists, thus expanding existing research on peer group outcomes. As previous research has shown, identification with primary social groups can function as a protective measure against harmful health- and addictive behaviors (Jetten et al., 2014; Rosenquist et al., 2010). In our study, increased social identification buffered young people against mental health problems related to alcohol consumption. Building upon the work of Cloud and Granfield (2008), proposing that social identification can provide important *recovery capital* in difficult substance use behaviors, the current study further recognizes the need for including and applying social identity means in addiction intervention and prevention work, especially when working with young populations on both public and clinical levels. As this study recognizes that addictive behaviors may be related to social identification in different ways, depending on their level of acceptance and normativity among adolescent and emerging adult peer groups, guiding and supporting youths' social engagements hold great potential in addiction prevention and recovery.

Author disclosure statements

Statement 1. Role of funding sources

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Statement 2. Contributors
 Authors Savolainen, I. and Oksanen, A. designed the study and wrote the procedure. Author Sirola, A. conducted most of the literature searches and provided insights of previous research studies. Author Kaakinen, M. conducted the statistical analysis. Author Savolainen, I. wrote the first draft of the manuscript and all authors participated in the final editing process. Each author has contributed a significant amount of time and effort to the work at hand and accepts the submission.

Statement 3. Conflict of interest
 The authors report that no conflict of interest exists regarding the content of the current manuscript.

Appendix A

Table 1
Descriptive statistics. Continuous variables as means (*M*) and standard deviations (*SD*). Categorical variables as frequencies (*n*) and relational proportions (%).

Continuous variables	Range	<i>M</i>	<i>SD</i>
Psychological distress	0–36	14.1	6.3
Social identification to peer group	1–10	6.8	2.5
Alcohol consumption	0–13	4.1	3.0
Problem gambling	0–20	1.6	2.6
Compulsive Internet use	0–56	18.8	11.1
Age	15–25	21.3	2.8
Categorical variables	coding	%	<i>n</i>
Gender	male	50	600
	female	50	600
Drug use	no	94.6	1135
	yes	5.4	65

Table 2
Regression results of our mediation analyses for each form of addictive behavior.

Path	Excessive drinking			Excessive drug use			Excessive gambling			Excessive internet use		
	<i>b</i> (<i>SE</i>)	<i>Z</i>	<i>p</i>	<i>b</i> (<i>SE</i>)	<i>Z</i>	<i>p</i>	<i>b</i> (<i>SE</i>)	<i>Z</i>	<i>p</i>	<i>b</i> (<i>SE</i>)	<i>Z</i>	<i>p</i>
<i>a</i> : Addictive Beh. → S. Identif.	0.11(0.02)	4.49	< .001	-1.13(0.31)	-3.61	< .001	-0.11(0.03)	-3.84	< .001	-0.02(0.01)	-3.12	.002
<i>b</i> : S. Identif. → Psych. Dist.	-0.66(0.07)	-9.49	< .001	-0.57(0.07)	-8.14	< .001	-0.55(0.07)	-7.89	< .001	-0.54(0.07)	-7.93	< .001
<i>c</i> : Addictive Beh. → Psych. Dist.	0.35(0.06)	5.70	< .001	2.95(0.78)	3.77	< .001	0.46(0.07)	6.60	< .001	0.14(0.02)	8.94	< .001
<i>c'</i> : Addictive Beh. → Psych. Dist.	0.42(0.06)	7.09	< .001	2.30(0.77)	3.00	.003	0.40(0.07)	5.86	< .001	0.13(0.02)	8.42	< .001
Addictive Beh. → S. Identif. → Psych. Dist.	-0.07(0.02)	-4.06	< .001	0.65(0.20)	3.30	< .001	0.06(0.02)	3.24	.001	0.01(0.00)	2.90	.004
Total effect	0.35(0.06)	5.70	< .001	2.95(0.78)	3.77	< .001	0.46(0.07)	6.60	< .001	0.14(0.02)	8.94	< .001
Proportion of total effect mediated			-.21			.22			.13			.08

Note. Paths *a* and *b* are mediation paths. Path *c* is the direct effect without including the mediator in the model. Path *c'* is the direct effect after the mediator is included in the model. Addictive Beh. = addictive behavior, S. Identif. = social identification, Psych. Dist. = psychological distress, *b* = unstandardized regression coefficient, *SE* = standard error.

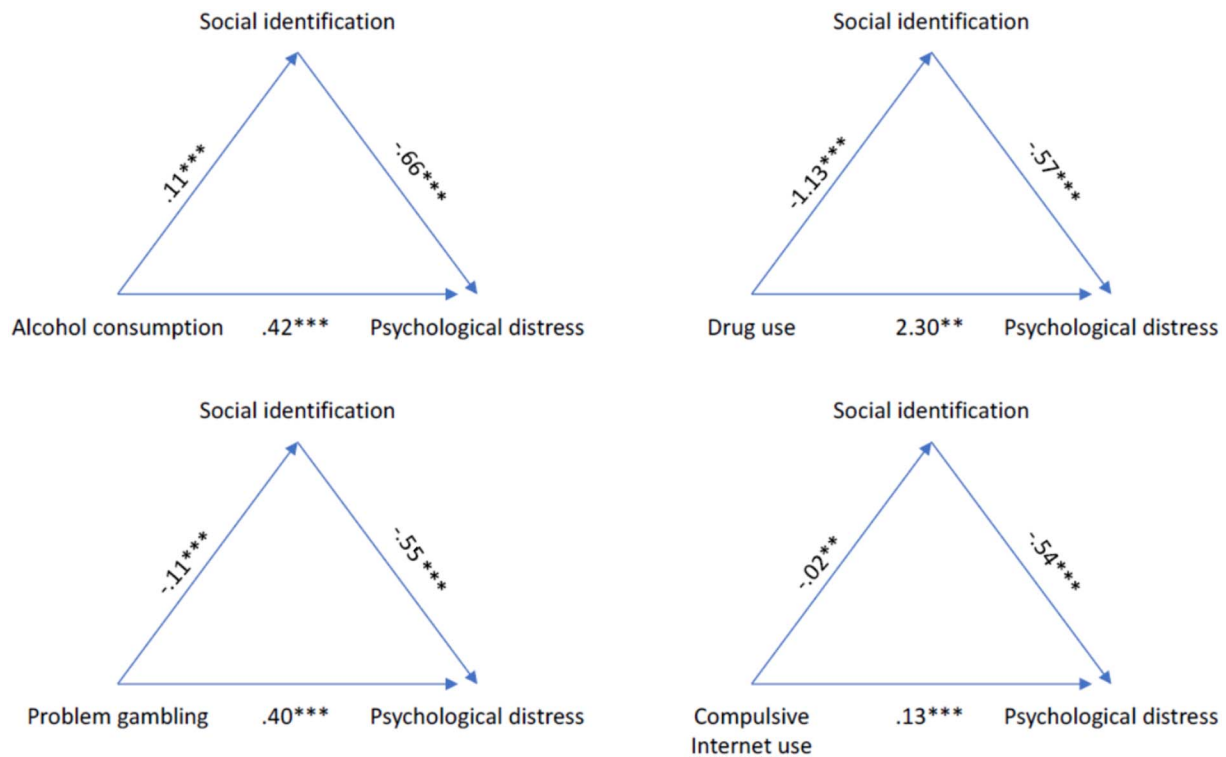


Fig. 1. The mediating role of social identification on psychological distress assessed for four types of excessive behaviors.

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