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To cite this manuscript, use the following citation:

Inguglia, C., Costa, S., Ingoglia, S., Liga, F. (2019). Associations between peer pressure and adolescents' binge behaviors: The role of basic needs and coping. *The Journal of Genetic Psychology*, 180, 144-155. doi: 10.1080/00221325.2019.1621259

Abstract

Framed from a framework based on the integration of SDT (Ryan & Deci, 2000) and Endler and Parker's conception of coping strategies (1990), the current study analyzed the relationships between peer pressure and binge behaviors (binge eating and binge drinking) in adolescence. Moreover, the study explored the mediating role of satisfaction/frustration of basic psychological needs and coping strategies in these associations. Participants were 570 high school students ($M = 15.75$; $DS = 1.14$) living in Italy. The study design was cross-sectional and adolescents were administered self-report questionnaires. Path analysis showed significant and positive direct associations of peer pressure with both binge eating and binge drinking. Moreover, findings show that there is an indirect path in which peer pressure is positively associated with need frustration that is related to the use of emotion-oriented coping strategies that, on their turn, are associated with binge eating. Differently, binge drinking seems to be only directly related to peer pressure. Our study puts light to the complex nature of the relationships between peer pressure and binge behaviors in adolescence, taking into account the separate contribution of need satisfaction and need frustration, as well as of coping strategies. Finally, practical implications of our study are discussed.

Keywords: Peer Pressure, Binge Drinking, Binge Eating, Psychological Basic Needs, Coping

Brief running head: PEER PRESSURE AND BINGE BEHAVIORS

Associations between peer pressure and adolescents' binge behaviors: the role of basic needs and coping

The term binge refers to a category describing acts of excessive or compulsive consumption of either food or alcohol (Ferriter & Ray, 2011). Binge eating refers to consuming a very large amount of food within a short period of time with no sense of control over one's eating (American Psychiatric Association, 2013), whereas binge drinking describes the act to consume consecutive alcoholic beverages in a limited period of time (Courtney & Polich, 2009; Kuntsche et al., 2017). Both binge behaviors are diffuse among adolescents and are linked to acute consequences for physical and psychological health (Laghi et al., 2014; Stickley et al., 2015). Hence, identifying and understanding the psychological factors underlying binge behaviors represents a key issue to design research-based prevention programs (Kenny et al., 2017).

Previous research showed that binge eating and binge drinking frequently co-occur among youth, arguing that there are many overlapping features between these behaviors (Ferriter & Ray, 2011; Laghi et al., 2014). For instance, both behaviors entail loss of control, cravings, negative consequence in physical and social terms. Moreover, both behaviors have usually their onset in late adolescence and are thought to be shared among the same peer networks (Ferriter & Ray, 2011; Parra et al., 2007).

However, these behaviors also differ for some aspects. For instance, youth consider binge drinking more socially acceptable in public than binge eating (Birch et al., 2007; Wakeford et al., 2017). Moreover, binge drinking is more likely than binge eating to occur in interpersonal situations involving pleasant emotions, pleasant times with others, and social pressure, whereas binge eating is a relief from psychological distress (Birch et al., 2007).

In light of these similarities and differences, it is interesting to investigate the psychological processes underlying these behaviors. Thus, our paper tries to extend prior research by examining the relationships between peer pressure and both binge behaviors. At the same time, we take into

account the mediating role of satisfaction/frustration of psychological basic needs and coping strategies in these relationships.

Binge behaviors and peer pressure

Given that binge behaviors are shared among individuals in the same peer networks (Parra et al., 2007), the role of peer pressure in their onset is crucial. Peer pressure is an aspect of peer influence that refers to a subjective experience of feeling pressured, urged, or dared by others to do certain things (Santor et al., 2000). Peer pressure has been identified as one of the top reasons for adolescents to drink alcohol (Loke et al., 2016). Adolescents who are sociable and have more friends are at a higher risk of drinking behaviors (Engels et al., 2006). Indeed, during adolescence the importance of peers increases and there is an augmented susceptibility to peer pressure that may be associated with risky behaviors (Laghi et al., 2012, , 2019; McCoy et al., 2017).

Also binge eating may be associated with peer pressure (Laghi et al., 2012). Some studies suggest that adolescence is a vulnerable period for increased pressures from peers with regard to physical appearance that may be related to dysfunctional eating patterns, from extreme weight loss to binge eating (Swanson et al., 2011; Thompson et al., 2017). Some studies underline that these behaviors are shared in the same peer networks (Hutchinson & Rapee, 2007) because they represent a strategy to feel integrated with friends and peers who show similar behaviors. In this way, susceptibility to peer pressure can be considered as risk factor for the onset of binge behaviors.

The role of mediating variables

The relationships between peer pressure and binge behaviors may be mediated by other variables. Among them, we focus on basic psychological needs and coping strategies.

According to Self-Determination Theory (SDT; Ryan & Deci, 2000) there are three basic psychological needs, namely autonomy, competence, and relatedness. These needs are universal motives, whose satisfaction is associated with high levels of psychological functioning. Conversely,

their frustration is expected to lead to energy depletion and maladjustment (Inguglia et al., 2018; Vansteenkiste and Ryan, 2013).

SDT argues that the perception of pressure from one's environment is related to experiencing a lack of true choice in regulating one's behaviors and therefore is linked to need frustration (Neighbors et al., 2004). Thus, feeling pressured by peers may result in low levels of satisfaction, as well as in high levels of need frustration, and this may be linked to binge behaviors. Accordingly, some studies showed that need frustration is a predictor of binge eating among youth (Verstuyf et al., 2013). Others found that need satisfaction is negatively related to drinking behavior (Knee & Neighbors, 2002). In this context, binge behaviors could represent a compensatory, yet dysfunctional behavior to handle the negative affect elicited by need frustration related to peer pressure.

Coping strategies refer to cognitive and behavioural efforts to deal with the demands of stressful person-environment transactions (Lazarus & Folkman, 1984). Coping can be used to face the stress related to peer pressure, as well as to need frustration (Vansteenkiste and Ryan, 2013). According to Endler and Parker (1994) there are three basic coping strategies: task-oriented, aimed at resolving the stressful event (e.g., planning, seeking assistance in handling the situation); emotion-oriented, aimed at managing the emotions that arise during the stressful situation instead of changing the situation itself (e.g., distancing or wishful thinking); avoidance, that involve efforts oriented toward denying, minimizing, or avoiding dealing directly with stressful events.

According to Skinner and Zimmer-Gembeck (2007) there is a relationship between need satisfaction/frustration and coping strategies, because the way in which individuals face stressful situations is affected by their perception of the extent to which their basic needs are satisfied. For instance, when the need for autonomy is satisfied, individuals may evaluate a stressful situation as changeable and controllable, thus they are more likely to use task-oriented strategies. Similar considerations can be done for competence and relatedness needs (Ntoumanis et al., 2009).

Adolescents who use a broad range of appropriate coping strategies are likely to be the most adaptive, whereas teens who use few coping strategies report poorer psychological functioning (Markova & Nikitskaya, 2017). In particular, active coping such as task-oriented strategies is generally associated with lower levels of externalizing problems during adolescence (Modecki et al., 2017). Instead, adolescents who use avoidance-oriented strategies tend to show higher levels of binge behaviors (Creswell et al., 2015). Moreover, emotion-oriented coping seems to be positively associated with binge eating (Goldstein et al., 2017).

The current study

The current study sought to contribute to a more detailed knowledge of the relationships between peer pressure and binge behaviors (binge eating and binge drinking) in adolescence. In doing so, we were also interested in exploring the mediating role of need satisfaction/frustration and coping strategies in this association. To our knowledge, research has never examined a combination of such variables in a comprehensive model.

Framed from a conceptual framework based on SDT (Ryan & Deci, 2000), it was hypothesized that:

H1. Peer pressure would be positively and directly associated with both binge eating and binge drinking.

H2. Peer pressure would be positively related to need frustration, whereas negatively related to need satisfaction.

H3. Need satisfaction would be related to the use of positive coping strategies (i.e., task-oriented), whereas need frustration would be related to negative coping strategies (i.e., avoidance-oriented).

H4. Positive coping strategies (i.e., task-oriented) would be negatively associated to binge behaviors, whereas negative coping strategies (i.e., avoidance-oriented) would be positively associated to binge behaviors.

H5. Peer pressure would be positively associated with both adolescents' binge behaviors through the mediating effect of need satisfaction/frustration and the coping strategies.

Method

Participants

570 high school students (263 male and 307 female) took part to the study and their age range was between 14 and 17 years ($M = 15.75$; $DS = 1.14$). Participants attended high schools in the cities of Palermo and Messina, in Sicily (Italy). Fathers' age ranged from 34 to 65 years ($M = 49.34$; $SD = 5.35$), while mothers' age ranged from 33 to 61 years ($M = 45.94$; $SD = 5.06$). Regarding paternal education, 273 (48%) reported that their fathers obtained an high school diploma, 190 participants (33%) reported that their father obtained a secondary school diploma, 86 (15%) that their father obtained a university degree, 21 participants (4%) reported that their father had a primary school certification. Regarding maternal education, majority ($n = 288$, 51%) of the participants reported that their mother had an high school diploma, 155 participants (27%) reported that their mother had a secondary school diploma, 115 (21%) reported to have a mother that obtained an university degree, 12 (2%) participants reported that their mothers obtained a primary school certification.

Procedure

Participants were recruited in some of the main high schools located in the cities of Palermo and Messina, in Sicily (Italy). The parents of the participants were informed about the purpose of the research, the voluntary nature of participation, and the anonymity of responses. Then, parents provided informed consent for their son or daughter's participation to the study. Fewer than 5% of the parents did not allow their son or daughter to participate. The questionnaires were administered in the classroom by a team of researchers. Instructions stated that the questionnaires were voluntary

and confidential treatment of the data was guaranteed and researchers were available to answer students' questions.

Measures

Peer pressure. The Peer Pressure Scale (Santor et al., 2000) was used and consist of 11 items (e.g.: "I've felt pressured to get drunk at parties") related to the perception of peers' pressure and the response categories were in a Likert scale from 1 (strongly disagree) to 4 (strongly agree). In this study, the scale has acceptable internal reliabilities (table 1).

Need Satisfaction and Need Frustration. Basic Needs Satisfaction and Need Frustration was assessed by the Psychological Basic Needs Satisfaction and Frustration Scale (PBNSFS; Chen et al., 2015; Costa et al., 2018; Liga et al., 2018). Participants rated on a scale of 1 (not at all true) to 5 (very true) as to whether they felt their needs for autonomy (e.g., "I feel my choices express who I really am"), competence (e.g., "I feel confident that I can do things well") and relatedness (e.g., "I feel connected with people who care for me and whom I care for") were satisfied during the past month. In this study the scale has acceptable internal reliabilites (table 1).

Coping Strategies. The Coping Inventory for Stressful Situations (CISS, Endler, & Parker, 1999) was used to evaluate three coping strategies: Task-oriented coping (Task scale), Emotion-oriented coping (Emotion scale), and Avoidance-oriented coping (Avoidance scale). CISS is a 48 items self-report instruments to evaluate coping strategies in stressful situations, on a five point Likert-type rating scale ranging from 1 (Not at all) to 5 (Very much). In this study, the scale has acceptable internal reliabilities (table 1).

Binge Eating. The Binge Eating scale (BES; Gormally et al., 1982) was used to measure behavioral and cognitions manifestations of binge eating. The BES consists the 16 groups of numbered statements that participants were instructed to mark the statement in each group that best

describe their situation. Items are recoded in a 4 point Likert scale from 0 to 3. In this study, the scale has acceptable internal reliabilities (table 1).

Binge Drinking. Binge Drinking Frequency was assessed with the Alcohol Use Disorders Identification Test (AUDIT-3; Bush et al., 1998; Cortés-Tomás et al., 2016). AUDIT-3 is a single item measure (i.e., “How often did you have 6 or more drinks on one occasion in the past year?”) from the third question of the AUDIT test for Alcohol consumption and it measure the binge-drinking characteristics during the previous month. Single item measures are widely used for binge drinking frequency (Luquiens et al., 2016; Patrick & Schulenberg, 2011) because they provide the typical and detailed binge-drinking characteristics and correspond to the definition of at least 4/5 drinks (female/male) consumed in one single occasion on a five point Likert-type rating scale ranging from 0 (never) to 4 (almost daily). Both the test-retest reliability and the validity of the AUDIT has been evaluated in many studies (i.e., Barry et al., 2013; de Meneses-Gaya et al., 2009), using samples composed of teenagers, college students, women, and elderly individuals. The results of these studies highlight the sound psychometric qualities of the AUDIT-C and its ability to produce valid and reliable scores.

Results

Descriptive statistics, internal reliability, and correlation

The descriptive statistics, Cronbach’s alpha values and correlations for all variables are reported in Table 1. Correlations showed that peer pressure was negatively related with need satisfaction and positively related to need frustration, emotion-oriented coping, avoidance-oriented coping, binge eating and binge drinking. Need satisfaction was positively related with task-oriented and avoidance-oriented coping and negatively related with emotion-oriented coping and binge eating, while need frustration was positively related with emotion-oriented coping and binge eating, and negatively related with task-oriented coping. Finally, emotion-oriented and avoidance-oriented

coping were positively related with binge eating, while task-oriented coping was negatively related with binge eating.

Hypothesized Model

To test the hypothesized model the Preacher and Hayes' (2008) bootstrapping approach was used, and aligned with previous recommendations (Preacher & Hayes, 2008; Wu, & Jia, 2013; Shrout & Bolger, 2002) confidence intervals of the direct and indirect effects with 5000 bootstrap replication samples were used and a 95% bias corrected confidence intervals was applied. Gender was included as a control variable in these models.

Estimation of the saturated model, and therefore no fit indices were reported, showed several significant paths, but in accordance with common procedure to test the saturated model a trimming process was conducted all nonsignificant paths were removed, and several indices indicated that the data well fit the final model (Fig. 1), $\chi^2(16) = 28.82$, $p > .05$, CFI = .98, SRMR = .02, RMSEA = .04 (90% CI = .01 –.06). The final model showed significant paths from peer pressure to need satisfaction ($\beta = -.14$, $p < .05$), need frustration ($\beta = .31$, $p < .05$), avoidance-oriented coping ($\beta = .18$, $p < .05$), binge drinking ($\beta = .27$, $p < .05$), and binge eating ($\beta = .17$, $p < .05$). Need frustration positively predict emotion-oriented coping ($\beta = .56$, $p < .05$), and binge eating ($\beta = .18$, $p < .05$), while need satisfaction positively predict task-oriented coping ($\beta = .40$, $p < .05$), an avoidance-oriented coping ($\beta = .23$, $p < .05$). Furthermore binge eating was also positively predicted by emotion-oriented coping ($\beta = .24$, $p < .05$), and negatively by task-oriented coping ($\beta = -.14$, $p < .05$). Finally gender had a direct effect on peer pressure ($\beta = -.20$, $p < .05$), need frustration ($\beta = .08$, $p < .05$), emotion-oriented coping ($\beta = .16$, $p < .05$), avoidance-oriented coping ($\beta = .12$, $p < .05$), and binge drinking attitude ($\beta = -.10$, $p < .05$). Examination of the direct and indirect effects are reported in Table 2.

Discussion

With growing recognition that binge behaviors are relatively common phenomena among youth and frequently co-occur, there is the need to analyze the psychological processes underlying them. In the current study, we analyzed the relationships between peer pressure and binge behaviors among adolescents. In doing so, we were also interested in exploring the mediating role of need satisfaction/frustration and coping strategies in these associations. Except for some findings, a number of our hypotheses were supported.

H1 was fully confirmed since peer pressure was positively and significantly associated with both binge eating and drinking. Our study highlights once again the influence of peers in adolescence. The opportunity to be involved in peer networks during this period is associated with pitfalls and opportunities. On the one hand, peer relationships contribute to the development of socio-relational skills and provide youth with a sense of intimacy and friendship (Padilla-Walker et al., 2015). On the other hand, peer networks may represent a context in which youngsters learn a set of risky behaviors such as drinking and having unprotected sex (Huang et al., 2014; Bos et al., 2015). Alcohol consumption may be seen by the adolescents as a mean to be accepted by peers, especially because the occasions in which adolescents can drink heavily often fit with social events (e.g., parties) in which other youngsters are involved (Van Damme et al., 2013; Zamboanga et al., 2016). Also binge eating seems to be associated with peer pressure, although in a lesser extent, confirming that peer networks may be a source of social pressure for dysfunctional eating behaviors (Laghi et al., 2014).

Findings supported H2 because peer pressure was positively and significantly related to need frustration, whereas was negatively and significantly related to need satisfaction. These results are in line with SDT (Neighbors et al., 2003) stating that the perception of pressure from one's environment is associated with experiencing a lack of true choice in regulating one's behaviors and therefore is positively associated with need frustration and negatively related to need satisfaction. Generally, the studies based on this framework have focused their attention on forms of pressure

exerted from parents (Inguglia et al., 2017; Inguglia et al., 2018). However, also peer pressure plays an important role in need satisfaction/frustration, as showed by our data.

Instead, H3 was partly confirmed. As expected, need satisfaction was positively associated with the use of task-oriented coping, as well as need frustration was positively related to emotion-oriented coping. However, differently from our predictions, avoidance-oriented coping was positively related only to need satisfaction and not to need frustration. The first two findings confirm that when individuals are satisfied with their own psychological needs tend to use positive coping strategies, whereas when their needs are frustrated they tend to employ negative coping (Skinner & Zimmer-Gembeck, 2007). Instead, the results regarding the avoidance-oriented strategies may be explained considering that when adolescents feel satisfied with their basic psychological needs, the avoidant coping may be perceived as a mean to maintain the status quo in front of the stress related to peer experiences, at least temporarily. After all, need satisfaction is positively related to both task-oriented and avoidance-oriented strategies, thus it can designate adolescents' capacity to adopt a flexible coping style, ranging from avoidant to task-focused coping. Moreover, developmental psychology have encouraged some investigators to suggest that strategies such as avoidance can be seen as alternative adaptive strategies when adolescents must deal with stressors (Seiffge-Krenke, 2015).

With regard to H4, our predictions were confirmed only for what concern the relationships between coping strategies and binge eating. Specifically, we found that task-oriented coping was negatively associated with binge eating, whereas emotion-oriented coping was positively associated with this binge behavior. Instead, no significant associations have been showed with regard to the relationships between coping strategies and binge drinking. These results are in line with the literature showing a positive association between binge eating and negative emotion or emotional dysregulation (Marzilli et al., 2018). Binge eating may serve as a maladaptive strategy for coping with negative mood states (Skinner et al., 2012). The same studies show also a negative association

between binge eating and task-oriented coping. However, these considerations are not valid also for binge drinking, at least for the present data. In our model, the act of drinking heavily is mainly associated with peer pressure rather than with coping, although there is a positive and significant correlation between emotion-oriented coping and binge drinking. Probably, when we consider together the relationships among peer pressure, binge drinking and coping, the strong association between peer pressure and binge drinking tends to prevail.

Finally, also H5 was partly confirmed. Peer pressure is also indirectly associated with binge eating via the mediating effect of need satisfaction/frustration and coping strategies. In particular, there is an indirect path in which peer pressure is positively associated with need frustration that is related to emotion-oriented coping that, on its turn, is associated with binge eating. These findings highlights the complex nature of the relationships between peer pressure and binge eating in adolescence. The onset of these behaviors in youngsters may be not only directly related to peer pressure, rather peer pressure may stimulate a set of individual reactions related to need frustration, as well as to the use of negative coping that result in binge eating. Differently, binge drinking seems to be only directly related to peer pressure. Maybe, given that alcohol consumption has a social nature during adolescence and is considered more socially acceptable, the mechanisms through which the peer pressure are associated with binge drinking are less complex and more direct (Zamboanga et al., 2016).

The present study is not without limitations. First, its cross-sectional nature precludes us from concluding the direction of the associations among the variables, whereas longitudinal design would be ideal to substantiate our hypotheses. Second, the study uses a single-item measure of binge drinking. Although, this method was has been used effectively (Tucker et al., 2003; Wilks, et al., 2018) future study should try to use different measures of binge drinking to extend this results. Third, all the measure of this study are self-reported, future studies could try to combine multi-source measures.

Despite these shortcomings, the study analyzes an understudied issue like the mediating role of need satisfaction/frustration and coping strategies in the associations between peer pressure and adolescents' binge behaviors. Moreover, the study provides evidence for the direct relationship between peer pressure and binge behaviors, at the same time highlighting that the association between peer pressure and binge eating is also mediated by other variables like need frustration and coping. Finally, our findings have practical implications because they can provide practitioners working with adolescents with suggestions. Interventions should be focused on enhancing youth ability to employ positive coping strategies protecting them from the stress related to peer pressure. This can be effective especially with adolescents showing binge eating. In general, prevention programs should be addressed to promote personal and ecological resources in youth which may allow them to face the pressure of their peers with regard to dysfunctional eating and drinking (Onrust et al., 2016).

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Table 1 – *Descriptive and Correlation analyses*

	α	Min	Max	M	SD	Ske	Kur	1	2	3	4	5	6	7
1. Peer Pressure	.80	1.00	3.45	1.54	.44	1.33	1.67							
2. Need Satisfaction	.86	1.45	5.00	3.85	.63	-.77	.89	-						
								.16**						
3. Need Frustration	.85	1.00	4.67	1.97	.66	.96	.95	.32**	-					
									.46**					
4. Emotion	.86	1.00	4.63	2.73	.72	.02	-.40	.14**	-	.44**				
									.17**					
5. Task	.87	1.00	5.00	3.30	.67	-.17	.10	-.07	.42**	-	.11*			
										.15**				
6. Avoidance	.84	1.00	4.75	2.92	.71	-.16	-.31	.12**	.20**	.02	.19**	.32**		
7. Binge Eating	.83	.00	2.88	.47	.41	1.23	2.12	.22**	-	.39**	.36**	-	.09*	
									.24**			.13**		
8. Binge Drinking	-	.00	4.00	.37	.86	2.80	7.90	.25**	-.01	.01	.03	-.03	.09*	.07

Note: * $p < .05$; ** $p < .01$

Table 2 - Path estimates, SEs and 95% CIs for models with direct effect and indirect effect

	β	Lower bound (BC) 95% CI	Upper bound (BC) 95% CI
<i>Direct Effect</i>			
Peer Pressure → Binge Drinking	.27	.16	.37
Peer Pressure → Avoidance-Oriented Coping	.18	.11	.25
Peer Pressure → Binge Eating	.17	.04	.30
Need Frustration → Binge Eating	.18	.05	.30
Need Frustration → Emotion-Oriented Coping	.42	.35	.49
Need Satisfaction → Task-Oriented Coping	.40	.33	.48
Need Satisfaction → Avoidance-Oriented Coping	.23	.15	.30
Emotion-Oriented Coping → Binge Eating	.24	.16	.32
Task-Oriented Coping → Binge Eating	-.14	-.23	-.06
<i>Indirect effect via Need Frustration</i>			
Peer Pressure → Binge Eating	.06	.01	.10
Peer Pressure → Emotion-Oriented Coping	.13	.09	.18
<i>Indirect effect via Need Satisfaction</i>			
Peer Pressure → Avoidance-Oriented Coping	-.03	-.05	-.01
Peer Pressure → Task-Oriented Coping	-.06	-.10	-.01
<i>Indirect effect via Task-Oriented Coping</i>			
Need Satisfaction → Binge Eating	-.06	-.09	-.02
<i>Indirect effect via Emotion-Oriented Coping</i>			

Need Frustration → Binge Eating	.10	.06	.14
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Indirect effect via Need Frustration and Emotion-Oriented Coping

Peer Pressure → Binge Drinking			
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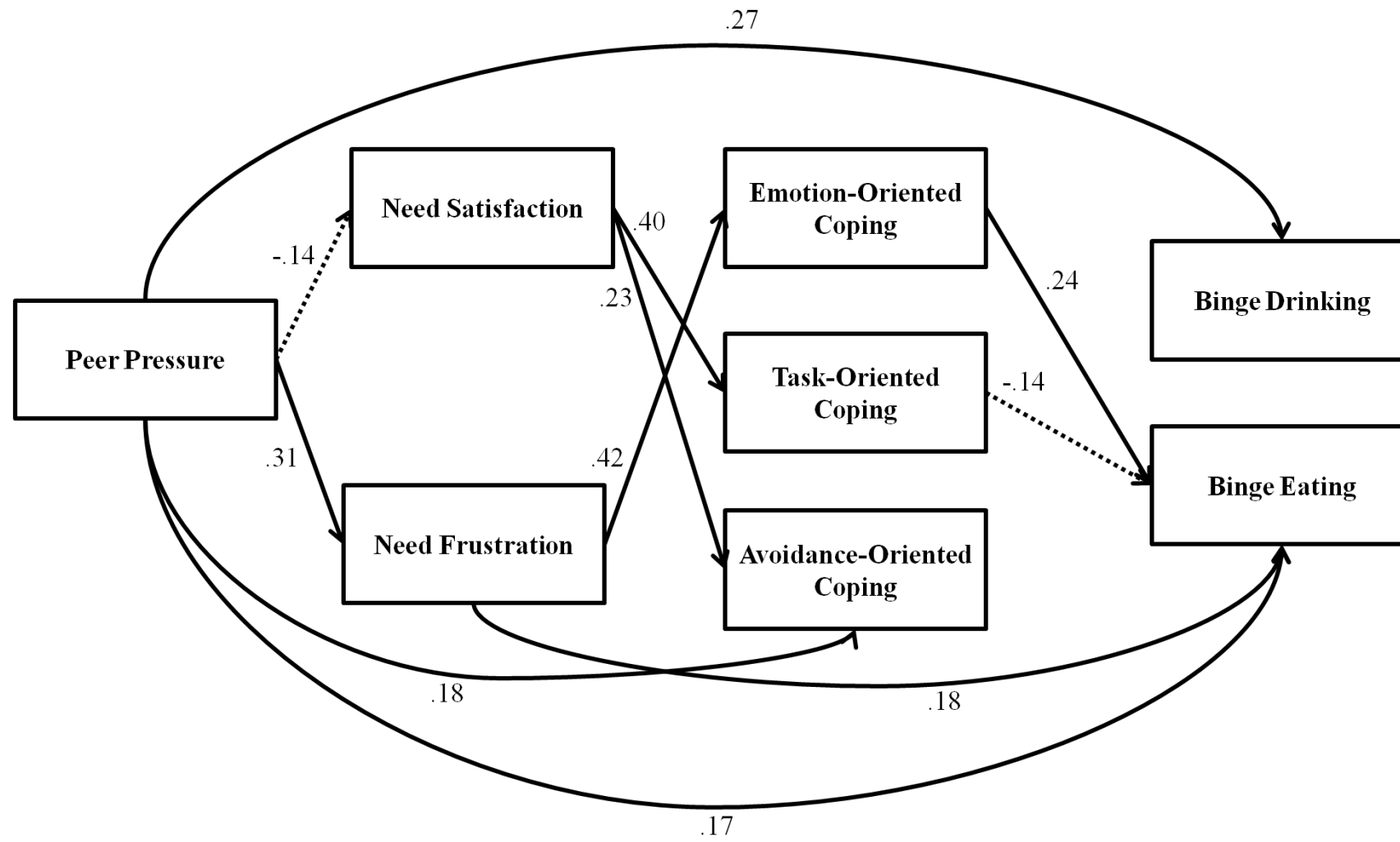
Peer Pressure → Binge Eating	.03	.02	.05
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Indirect effect via Need Satisfaction and Task-Oriented Coping

Peer Pressure → Binge Eating	.01	.01	.02
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Note: BC 95% CI = Bias Corrected-Confidence Interval.

Figure 1 - Structural model of associations between studies variables



Note: Coefficients shown are standardized path coefficients. Dotted lines represent negative relations. The effects of gender and correlations between variables are not reported for clarity.