

Loneliness, Emotional Autonomy and Motivation for Solitary Behavior During Adolescence

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Abstract Loneliness is a crucial part of people’s experience in the transition to adulthood. Several developmental tasks, such as the separation/individuation process and exploration in the interpersonal domains connected with identity acquisition, lead adolescents to seek solitary experiences. Adolescents are involved in the redefinition of their relationships with parents and peers, moving away from their dependence on the family. The aim of the present study is to assess the effects of two aspects of autonomy: emotional autonomy (separation and detachment) and autonomous motivation for solitary behavior, on parent- and peer-related loneliness during adolescence. The participants were 977 adolescents (447 males and 530 females), aged between 14 and 20 years ($M = 16.31$; $SD = 1.57$), recruited from Italian high schools. The Italian versions of the Loneliness and Aloneness Scale for Children and Adolescents, of the Emotional Autonomy Scale and of the Frequency of and Autonomy for Solitary and Interpersonal Behavior scale were administered to each participant. Structural equation models and path analysis indicate the effects of separation–individuation process dimensions both on parent- and peer-related loneliness. Specific differences emerge between the two dimensions of loneliness. Peer-related loneliness is more influenced by autonomous motivation than is parent-related loneliness, and controlled motivation mediates its relationship with separation. The relationships among the constructs are

discussed in the light of the separation–individuation process and with regard to the prevention of maladaptive outcomes.

Keywords Loneliness · Aloneness · Emotional autonomy · Motivation for solitary behavior · Adolescence

Introduction

Loneliness is a crucial experience in the transition toward adulthood. A number of developmental tasks, such as the separation–individuation process (Blos 1967) and exploration in the interpersonal domains connected with identity acquisition (Musetti et al. 2012), lead adolescents to seek solitary experiences. Adolescents are involved in the redefinition of their relationships with parents and peers, moving away from their dependence on family and spending increasing amounts of energy in the construction of their social networks with peers (Koepke and Denissen 2012; Palmonari 2011). As a consequence, they experience two opposite developmental needs related to the definition of their social identity: on the one hand they need to be connected with peers and to be supported by parents, on the other they need to define a separate sense of self (Blos 1967; Kroger 1998). Therefore adolescence can be thought of as the stage of life when being alone becomes a major, and often ambivalent, experience. Therefore the state of being alone (solitude) could be related to two different dimensions: “physical absence of a companion, and sadness because one is alone or dejection because of a lack of friends or company” (Laursen and Hartl 2013, p. 1261). The first (aloneness) represents an objective state of social isolation that is not necessarily undesirable, whereas the latter (loneliness) is a subjective impression of social

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isolation. Aloneness does not always lead to sadness and distress: individuals can actively search for solitude (Marcoen et al. 1987) and could be internally motivated towards being alone (Beiswenger 2008; Corsano et al. 2011). In other cases, however, aloneness is unwanted and is experienced as social refusal and could be associated with high levels of loneliness (Laursen and Hartl 2013).

Both aloneness and loneliness (in particular with respect to peers) peak in the first part of adolescence (Goossens 2006a; Ladd and Ettekal 2013) and then decrease over time (van Roekel et al. 2010). However, not all individuals travel the same paths: recent studies have reported a range of different developmental trajectories of loneliness among adolescents (see van Dulmen and Goossens 2013). It has been shown (e.g., Harris et al. 2013; Qualter et al. 2013; Schinka et al. 2013; Luyckx et al. 2014) that most adolescents experience only a negligible amount of loneliness and a small number of individuals feel a moderate degree of loneliness, decreasing over time. But some adolescents do show chronically high levels of, or increasing, loneliness over time. As these individuals are particularly prone to the symptoms of psychological distress, such as health problems, sleep disorders and depression, it might be appropriate to clarify the factors that could affect the different trajectories using an approach that considers solitude as a multidimensional experience.

For this reason the hybrid multidimensional model developed by Goossens and colleagues in their wide ranging research (e.g., Goossens et al. 2009; Maes et al. 2014; Marcoen et al. 1987) seems to be particularly useful for assessing the different dimensions of loneliness/aloneness and examining the individual and social correlates of different developmental trajectories of loneliness (Qualter et al. 2013). This model has differentiated two kinds of loneliness (parent- and peer-related) and two attitudes toward aloneness (affinity and aversion), assessed by the Loneliness and Aloneness Scale for Children and Adolescents (LACA) (Marcoen et al. 1987).

Loneliness could play different roles, and be important in different ways, in relation to the separation–individuation process during adolescence (Musetti et al. 2012). Parent-related loneliness is associated with a “gradual transformation of the attachment system” (Goossens 2006a, p. 62) that leads to an increasing psychological distance from parents and, consequently, could be considered a ‘normal’ dimension of loneliness experience, whereas peer-related loneliness is considered more stressful by emerging adults (Vanhalst et al. 2012). In fact, one of the most important needs of adolescents is integration with their peer group (Nelis and Rae 2009; Palmonari 2011), which constitutes the primary context for the ‘exploration’ process associated with the construction of social identity (Erikson 1968; Musetti et al. 2012). Thus,

peer-related loneliness has been considered a risk factor associated with negative psychological aspects (see Heinrich and Gullone 2006, for a review) such as depressive symptoms (e.g., Morley and Moran 2011; Vanhalst et al. 2012), stress symptoms (e.g., Axelsson and Ejlertsson 2002; Cacioppo and Hawkley 2009), social withdrawal (Sletta et al. 1996; Vanhalst et al. 2014), lower self-esteem and lower social acceptance (e.g., Vanhalst et al. 2013), suicidal ideation (Jones et al. 2011; Roberts et al. 1998) and morbidity and mortality (Hawkley and Cacioppo 2010). Finally, Vanhalst et al. (2013) reported a negative relationship among peer-related loneliness and extraversion, emotional stability, agreeableness, and openness to experience.

However, no study has considered the link between loneliness and autonomy specifically in relation to the separation–individuation process during adolescence, considering loneliness as an emotional dimension that could be determined by the outcomes of the construction of a separate and self-determined sense of self. With regard to these factors, during adolescence the construction of autonomy is a very complex process that can influence the various relationships experienced by young people, particularly with parents and peers (Goossens 2006b) and has been explored by many studies in at least two different dimensions: emotional autonomy and being self-determined in a behavior (self-determination).

The first aspect, the emotional autonomy construct, was proposed by Steinberg and Silverberg (1986) as an operationalization of the separation/individuation process during adolescence (Blos 1979) and has been widely studied and revised (cfr. Beyers et al. 2005). Specifically, contradictory results have been reported on the possible outcomes related to high and low levels of emotional autonomy and, as a consequence, the positive or negative effect of a high level of autonomy (the ‘detachment debate’) (Ryan and Lynch 1989; Silverberg and Gondoli 1996; Steinberg and Silverberg 1986). To resolve this contradiction, some researchers have suggested to distinguish two types of emotional independence from the family. The first type represents a healthy distance from parents (separation), “which involves a move away from the childhood representations of the parents toward a representation of self and parents as separate individuals” (Beyers et al. 2005, p. 154). The second type represents a more radical separation from and distrust of family (detachment), which involves negative and, in some cases, paranoid feelings and alienation toward parents. Separation scores tend to increase as the separation/individuation process unfolds, from preadolescence to adulthood (Beyers et al. 2005). Among the maladaptive outcomes of emotional autonomy, only a small number of studies have considered loneliness. Corsano et al. (2012, 2014)

investigated the relationship between the two dimensions of emotional autonomy (separation and detachment) and loneliness. In particular, four emotional autonomy profiles were constructed combining separation and detachment percentile scores and parent- and peer- related loneliness. These profiles were referred to as ‘not yet separated’, ‘detached’, ‘separated’, and ‘ambivalent’. Results indicated that both ‘detached’ and ‘separated’ profiles were associated with higher levels of parent-related loneliness than the ‘not yet separated’ profiles. In addition, the ‘detached’ profile stood out from all others for its highest scores of peer-related loneliness. According to these findings, parent-related loneliness could be interpreted as an indicator of the psychological separation–individuation process, whereas peer-related loneliness was a feature only of the detachment profile.

The second dimension of the adolescent autonomy is being self-determined in the behavior (specifically solitary behavior) “perceived as personally endorsed and consistent with one’s sense of self” (Beiswenger 2008 p. 9), which represents the need for individuation. According to a specific theoretical approach, the Self-Determination Theory (SDT; Deci and Ryan 1985, 2008), human actions are based on different kinds of motivation positioned along a continuum: intrinsic, integrated and identified (autonomous) motivations and introjected or external (controlled) motivations. Autonomous motivations have the highest level of self-determination, which indicates that the value of the action has been internalized and integrated within the self. Focusing on the separation–individuation process, self-determined behaviors are typical of the emerging adult who is constructing a sense of self as separate from others, because he/she feel responsible for her/his own action (Luyckx et al. 2009). This adolescent is committed to her/his choices, but is also aware of the possible alternatives (Berzonsky and Neimeyer 1994). Specifically, self-determined solitary behavior can result from the wish to undergo some experiences separately from others as a consequence of a personal choice or necessity, typical of adolescence. Behaviors carried out for personal satisfaction (intrinsic motivated) or because they are considered important (identified motivated) are viewed as self-determined and highly autonomous. According to Deci and Ryan (2008), self-determination is the motivational aspect of autonomy and it increases progressively along with the internalization process, its highest point being that of intrinsic motivation, which is characteristic of those activities that allow the individual to experience competence, autonomy and relatedness (e.g., Beiswenger and Grolnick, 2010; van den Broeck et al. 2008).

Some authors have investigated in recent years whether and how adolescents feel self-determined in

moments of solitary behavior. In a pioneering exploratory study, Chua and Koestner (2008) showed that when individuals spend time alone in an autonomous manner, they report lower levels of loneliness and higher levels of well-being. Similarly, Beiswenger (2008) found that autonomous motivation for interpersonal behavior was related to a range of well-being and social adaptation indicators (comfort in solitude, social competence perception, coping ability), whereas controlled motivation for solitary behavior was related to maladjustment and psychological distress. More recently, Corsano et al. (2011) have found a relationship between autonomous motivation for solitary behavior and affinity for aloneness. Individuals who are intrinsically motivated to spend time alone considered aloneness as important and actively searched for moments of solitude (Beiswenger 2008; Corsano et al. 2011).

However, no study has considered the link between loneliness and autonomy specifically in relation to the separation–individuation process, considering loneliness as an emotional dimension that could be determined by the outcomes of the construction of a separate and self-determined sense of self. This study aims to investigate the effects of emotional autonomy and self-determination on loneliness (parent- and peer- related) during adolescence. Our first hypothesis is that, as parent-related loneliness is involved in the process of constructing distance from family (Goossens 2006a), it is predicted by healthy independence (separation) (Beyers et al. 2005; Zimmer-Gembeck and Collins 2003) and by more radical detachment, whereas peer-related loneliness is predicted by detachment (Luyckx et al. 2014). The second hypothesis is that autonomous motivation is associated with both parent- and peer-related loneliness. The third hypothesis, is that external factors (e.g., perceived social isolation as indicated by controlled motivation for being alone) could mediate the relationship between predictors (emotional autonomy and motivation for solitary behaviors) and peer-related loneliness, especially in the case of separation. The fourth and final hypothesis is that the model would be invariant across age and gender and, by contrast, there would be a moderating effect (i.e., lack of invariance) for affinity for aloneness. Specifically, we expected that affinity for aloneness would increase the influence exerted on each other by the two different dimensions of loneliness, increasing the individual’s perceived loneliness. In addition, such an attitude would reduce the impact of controlled motivation for being alone because the individual might feel less socially isolated (i.e., loneliness controlled by external factors) as a result of a specific cognitive style, a preference for being alone, or an attempt to explain his or her feelings of loneliness.

Method

Participants

The group of participants comprised 977 adolescents (447 males and 530 females), aged between 13 and 20 years, ($M = 16.31$; $SD = 1.57$), recruited from Italian high schools by school managers and teachers. The participants were divided into three age groups: 13–15 years old ($N = 308$, 31.5 %), 16–17 years old ($N = 422$, 43.2 %) and 18–19 years old ($N = 247$, 25.3 %). Of 1,000 adolescents originally contacted, 33 (3.3 %) did not participate, because their families did not give their consent. All participants came from white, monolingual Italian middle-class families (skilled workers and professionals); parents were high school educated or college graduates. 88.5 % of these adolescents came from intact families (i.e., both parents present).

Procedure

Data were collected with the permission of the school authorities in various high schools in the North and South of Italy. Researchers conducted the classroom assessments from December 2010 to March 2011. All classroom assessments were performed during regular school hours and lasted no more than 40 min. The instructions to the adolescents emphasized the confidentiality of the data and the importance of completing the questionnaire independently. Each participant, or their family in the case of individuals under 18 years of age, gave informed consent.

Measures

Solitude

The (LACA: Marcoen et al. 1987; Italian version by Melotti et al. 2006) was administered to each participant to investigate the multidimensional nature of their loneliness by means of four subscales. *Parent-related loneliness* (L-Part) measures feelings of rejection and isolation occurring within the relationship with parents, *peer-related loneliness* (L-Peer) measures feelings of isolation and abandonment in relationships with peers, *aversion to aloneness* (A-Neg) assesses a negative attitude to being alone leading the individual to avoid being alone and *affinity for aloneness* (A-Pos) assesses a positive attitude to aloneness connected to the attempt to find time to be alone.

Each subscale comprises 12 items measured on a 4-point Likert-type scale (1 = never; 2 = seldom; 3 = sometimes; 4 = often). The validity of the subscales and of the overall scale was assessed with a confirmatory factor analysis (CFA) showing an adequate fit. In line with an

earlier CFA on Italian adolescents (Melotti et al. 2006), which provided a good fit, CFA on the present sample indicated that the expected four-factor structure showed an acceptable fit to the data ($\chi^2_{(1027)} = 2063.85$, CFI = .84, TLI = .84, RMSEA = .039 and SRMR = .047). Reliability was assessed using Cronbach's alpha (L-Part: .90, L-Peer: .89, A-Neg: .83, A-Pos: .83).

Emotional Autonomy

Participants completed the Italian version (Meleddu and Scalas 2002) of the *Emotional Autonomy Scale* (EAS; Steinberg and Silverberg 1986). The scale consists (Beyers et al. 2005) of 20 items concerning seven first-order factors of emotional autonomy (*Deidealization*, *Nondependence*, *Nonimitation*, *Privacy*, *Perceived ignorance*, *Distrust* and *Perceived alienation*) and two second-order factors (*Separation*, 12 items and *Detachment*, 8 items). In view of the aims of this study, only the two second-order factors were considered for analysis. Each item was measured on a 4-point Likert-type scale, ranging from 1 (*don't agree at all*) to 4 (*completely agree*).

As a validity check, we established through CFA that a factor model with multiple first-order factors and the two second-order subscales used in this study (Beyers et al. 2005) showed an adequate fit in the present sample ($\chi^2_{(977)} = 71.87$, CFI = .94, TLI = .89, RMSEA = .08 and SRMR = .04). Reliability was assessed using Cronbach's alpha (Separation: .77, Detachment: .55). Although the alpha for detachment is lower than in other Italian studies (cfr. Meleddu and Scalas 2002; Pace and Zappulla 2010), we decided not to remove item 19 in order to improve the internal consistency of the scale (as in the other Italian studies) but to use all the items for two reasons. Firstly, following the 7 + 2 model of Beyers et al. (2005), the subscale "Perceived ignorance" is composed of only two items (14 and 19), secondly the CFA indices are good and, following other studies using the same instrument (Ingoglia 2001) and the same factor structure, it can be considered an appropriate assessment of the instrument validity of the construct.

Motivation for Being Alone

Finally, participants completed the Italian version (Corsano et al. 2011) of the *Frequency of and Autonomy for Solitary and Interpersonal Behavior Scale* (FASIB; Beiswenger 2008), a self-report questionnaire which assesses the frequency (10 items) of adolescents' solitary and interpersonal behavior and the level of autonomy (20 + 20 items) for this behavior. Subscales are composed of four items each and include *Intrinsic*, *Identified*, *Introjected* and

External motivation and *A-motivation*. Respondents rate each item on a 4-point scale from 1 (not true at all) to 4 (very true). As reported in Beiswenger (2008) and Corsano et al. (2011) using CFA, the 40 items represent different aspects of motivation: autonomous motivation (*Intrinsic* and *Identified*) for solitary/interpersonal behavior, controlled motivation (*Introjected* and *External*) for solitary/interpersonal behavior and a-motivation. For the purposes of the present study only the autonomous and controlled motivation for solitary behavior subscales were considered. The validity of the subscales was assessed with a CFA showing an adequate fit (Controlled motivation: $\chi^2_{(977)} = 27.84$, CFI = .98, TLI = .95, RMSEA = .12 and SRMR = .02; Autonomous motivation: $\chi^2_{(977)} = 155.49$, CFI = .93, TLI = .89, RMSEA = .08 and SRMR = .04). Reliability was assessed using Cronbach's alpha (Autonomous Motivation: .80; Controlled Motivation: .81).

Data Analyses

After the preliminary descriptive analyses, structural equation modeling (ML-SEM) with full maximum likelihood estimation in Mplus 5.2 (Muthén and Muthén 1998) was used in order to model the relationships among variables.

To integrate the findings of previous research (e.g., Beyers et al. 2005; Deci and Ryan 2008; Goossens et al. 2009), and to assess the effect of autonomy on loneliness (considered as a dependent variable), and to test the role of controlled motivation, five models were tested. These were: two models exploring the mediating role of controlled and autonomous motivations between detachment and separation and the two dimensions of loneliness; two models which tested parent-related (L-Part) and peer-related (L-Peer) loneliness separately; and a last model where they were tested together because the two dimensions of loneliness are reported to be correlated in other studies (e.g., Corsano et al. 2006; Goossens et al. 2009). A variety of indices as indicators of the models' overall goodness of fit were considered. Chi square (χ^2), for example, was used as a test of the null hypothesis that the model fit the data. However, as reliance on Chi square has been criticized, especially in the case of large samples (more than 200; Muthén and Muthén 1998), the comparative fit index (CFI) and the non-normed fit index (NNFI), with values ranging from 0 (a poor fit) to 1 (a perfect fit) were computed. The root-mean-square error of approximation (RMSEA) measure of a good fit when lower than .06 and the standardized root mean square residual (SRMR) measure of a good fit when lower than .08, were used (Hu and Bentler 1999). Finally, the squared multiple correlations for the structural

equations were calculated in order to evaluate the accounted-for variability of the dependent variables.

To evaluate the effects of gender, age and affinity for aloneness on the model, a multi-group approach was used (Marsh et al. 2009). This method allows estimation of the fit of the model and the parameters simultaneously on different subgroups. Because of the complexity of the model, the multi-group evaluation was conducted by means of a path analysis. In addition, the moderation effects of the variables considered on the single relationships in the model were tested. Because multi-group analysis can be conducted considering only categorical variables, affinity for aloneness was recoded, focusing only on those adolescences with a high level (one standard deviation above the mean) or a low level (one standard deviation below the mean) of affinity for aloneness.

Results

Means and standard deviations for LACA, EAS and FASIB scores according to gender and age are reported in Table 1.

A series of 3×2 Analyses of variance (ANOVAs) showed that males displayed lower levels than females of L-Peer ($F_{(1,976)} = 9.94$, $p = .01$, $\eta^2 = .011$), autonomous motivation ($F_{(1,976)} = 15.68$, $p < .001$, $\eta^2 = .015$) and A-Neg ($F_{(1,976)} = 12.24$, $p < .001$, $\eta^2 = .012$), whereas females reported lower levels than males of controlled motivation ($F_{(1,976)} = 4.96$, $p = .02$, $\eta^2 = .011$). The youngest adolescents (13–15 years) showed lower levels of separation ($F_{(2,976)} = 6.73$, $p = .001$, $\eta^2 = .014$), of autonomous motivation ($F_{(2,976)} = 24.88$, $p < .001$, $\eta^2 = .049$) and of affinity for aloneness ($F_{(2,976)} = 5.48$, $p = .004$, $\eta^2 = .011$) than did the others two groups (16–17 and 18–19 years) (Bonferroni test of pairwise comparison respectively $p = .005$; $p < .001$; $p = .037$), and higher levels of detachment ($F_{(2,976)} = 6.61$, $p = .001$, $\eta^2 = .013$) than the older ones (18–19 years, Bonferroni test of pairwise comparison: $p = .001$). Correlations among all the dimensions are presented in Table 2.

As reported in Table 2, parent-related loneliness was correlated with separation and detachment, whereas peer-related loneliness was correlated with detachment, affinity for aloneness and controlled motivation for being alone. Furthermore, affinity for aloneness was correlated with autonomous motivation for being alone. Finally, a high correlation between separation and detachment emerged.

The first, separate, tests were of two models exploring the mediating role of controlled and autonomous motivations between detachment and separation and the two dimensions of loneliness. The models showed good fit indices (L-Part: $\chi^2_{(448)} = 1021.12$ CFI = .92, TLI = .91,

Table 1 Descriptive statistics (means and standard deviations)

Scale	Age groups	Boys		Girls		Full sample	
		<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)
LACA ^a							
Parent-related loneliness	13–15	2.23	(.71)	2.26	(.74)	2.26	(.72)
	16–17	2.31	(.68)	2.24	(.74)		
	18–19	2.31	(.70)	2.21	(.75)		
Peer-related loneliness	13–15	2.00	(.77)	2.13	(.80)	2.06	(.80)
	16–17	1.95	(.77)	2.10	(.78)		
	18–19	1.97	(.77)	2.20	(.87)		
Affinity for aloneness	13–15	2.98	(.56)	2.99	(.50)	3.04	(.51)
	16–17	3.04	(.50)	3.10	(.42)		
	18–19	3.11	(.44)	3.11	(.37)		
Aversion to aloneness	13–15	3.11	(.53)	3.31	(.51)	3.10	(.53)
	16–17	3.12	(.53)	3.20	(.51)		
	18–19	3.08	(.52)	3.14	(.50)		
EAS ^b							
Separation	13–15	2.60	(.56)	2.69	(.56)	2.73	(.53)
	16–17	2.75	(.52)	2.72	(.51)		
	18–19	2.79	(.51)	2.83	(.51)		
Detachment	13–15	2.28	(.47)	2.34	(.56)	2.25	(.50)
	16–17	2.25	(.48)	2.25	(.49)		
	18–19	2.09	(.48)	2.22	(.50)		
FASIB ^c							
Autonomous motivation	13–15	2.32	(.57)	2.43	(.54)	2.54	(.53)
	16–17	2.51	(.52)	2.65	(.48)		
	18–19	2.59	(.51)	2.74	(.51)		
Controlled motivation	13–15	1.66	(.78)	1.46	(.61)	1.51	(.67)
	16–17	1.48	(.61)	1.43	(.65)		
	18–19	1.57	(.73)	1.54	(.67)		

^a Loneliness and Aloneness Scale for Children and Adolescents

^b Emotional Autonomy Scale

^c Frequency of and Autonomy for Solitary and Interpersonal Behavior

Table 2 Intercorrelations among loneliness, motivation and emotional autonomy

Measure	2.	3.	4.	5.	6.	7.	8.
1. Parent-related loneliness	.17**	.03	.05	.51**	.34**	-.02	.11**
2. Peer-related loneliness		.26**	.13**	.04	.16**	.13**	.37**
3. Affinity for aloneness			.03	.02	.08*	.43**	.12**
4. Aversion to aloneness				-.03	.09**	-.14**	.11**
5. Separation					.32**	.07*	.06
6. Detachment						.06*	.17**
7. Autonomous motivation							.02
8. Controlled motivation							-

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

RMSEA = .037 and SRMR = .043; L-peer: $\chi^2_{(418)} = 1039.59$, CFI = .92, TLI = .91, RMSEA = .039 and SRMR = .040). Controlled motivation played a mediating role in these relationships, but autonomous motivation was found only as a predictor of parent- and peer-related loneliness. Next, two models, one for each dimension of loneliness (third and fourth model), were tested in which controlled motivation was a moderator and autonomous

motivation was a predictor of detachment and separation. In the third model the link between controlled motivation and L-Part was not significant, rejecting the hypothesis of the mediating role of controlled motivation with parent-related loneliness. The link between detachment and autonomous motivation was also not found to be significant. The fit indices for the L-Part model were also good ($\chi^2_{(448)} = 1021.11$, CFI = .92, TLI = .91, RMSEA = .036

and SRMR = .043). The accounted variability for L-Part was very high, indicating that 51 % of its variance was explained and more so by separation ($\beta = .54, p < .001$) and detachment ($\beta = .36, p < .001$) than by autonomous motivation ($\beta = -.09, p < .001$).

Next, the antecedents of peer-related loneliness were tested. All factor loadings were statistically significant, suggesting that all indicators adequately reflected the latent constructs. One path coefficient, from separation to L-Peer, was not significant. The resulting model for peer-related loneliness produced these fit indices: $\chi^2_{(418)} = 977.74$, CFI = .92, TLI = .91, RMSEA = .034 and SRMR = .039. Observing the indices, it was possible to conclude that the model produces a good fit. Moreover, the model accounted for 22 % of the variance for peer-related loneliness. The analysis confirmed the total mediation of controlled motivation between separation and L-Peer (indirect effect = $-.04, p < .05$) and only partially confirmed the mediating role between detachment and L-Peer (indirect effect = $.09, p < .001$) because of the significance of the direct link. Furthermore, the model confirmed the predictive role of autonomous motivation ($\beta = .16; p < .001$).

Finally, a model testing L-Part and L-Peer jointly as predictors was run (see Fig. 1).

The fit indices were adequate ($\chi^2_{(823)} = 1772.94$, CFI = .91, TLI = .90, RMSEA = .034 and SRMR = .044). All the estimates of the paths were similar to those shown for the previous models. There was a significant degree of covariation between L-Peer and L-Part (.25, $p < .001$). The accounted variability remained the same for L-Part (.51 %) and increased slightly for L-Peer (.23 %).

After evaluating the overall fit of the model with the estimates of L-Peer and L-Part together, multi-group comparisons were used to examine the extent to which this

model is consistent across gender and age groups. Data analysis indicated that the model was not invariant ($\Delta CFI = .024$ more than .01) across gender. Therefore it was necessary to analyze and compare the structural parameters of the model for the different subgroups. All the paths were the same as in the original model, with just two exceptions. There were significant paths between detachment and L-Peer and between separation and L-Peer for males, but not for females. Conversely, there was a significant link between controlled motivation and L-Peer for females, but not for males. In particular, gender seems to moderate the relationship between controlled motivation and L-Peer and the relationships between L-Peer and L-Part. Moreover, the accounted variability in L-Peer and L-Part was 19 and 25 % for males and 21 and 34 % for females.

In contrast, the model was invariant ($\Delta CFI = .004 < .01$) across age groups. However, the relationship between detachment and separation was moderated by the grouping variable. For this relationship the regression weight was higher for the youngest group (.12) and lowest for the intermediate group (.07). The accounted variability in L-Peer and L-Part for each group was 20 and 29 % for the younger group, 20 and 34 % for the intermediate group and 20 and 28 % for the older group.

Finally, multi-group comparisons were used to examine the extent to which this model was consistent across different levels of A-Pos. The standardized estimates of the paths for each grouping variable are shown in Fig. 2.

The model was not invariant ($\Delta CFI = .057$ more than .01) across high and low levels of A-Pos. In particular, comparing the structural parameters of the model for the different subgroups, A-Pos moderates the relationship between separation and controlled motivation, between separation and L-Peer, between controlled motivation and

Fig. 1 Standardized path estimates of the Structural Model for loneliness in relation with parents and with peers tested together. *Note:* For the sake of simplicity, estimates of the measurement model are not shown. Beside latent variables accounted variability is shown. * $p < .05$; ** $p < .01$; *** $p < .001$

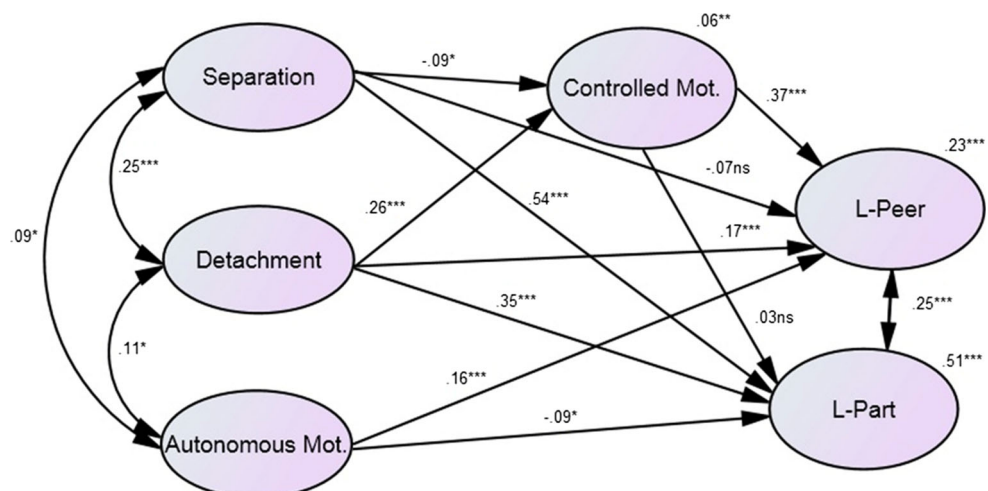
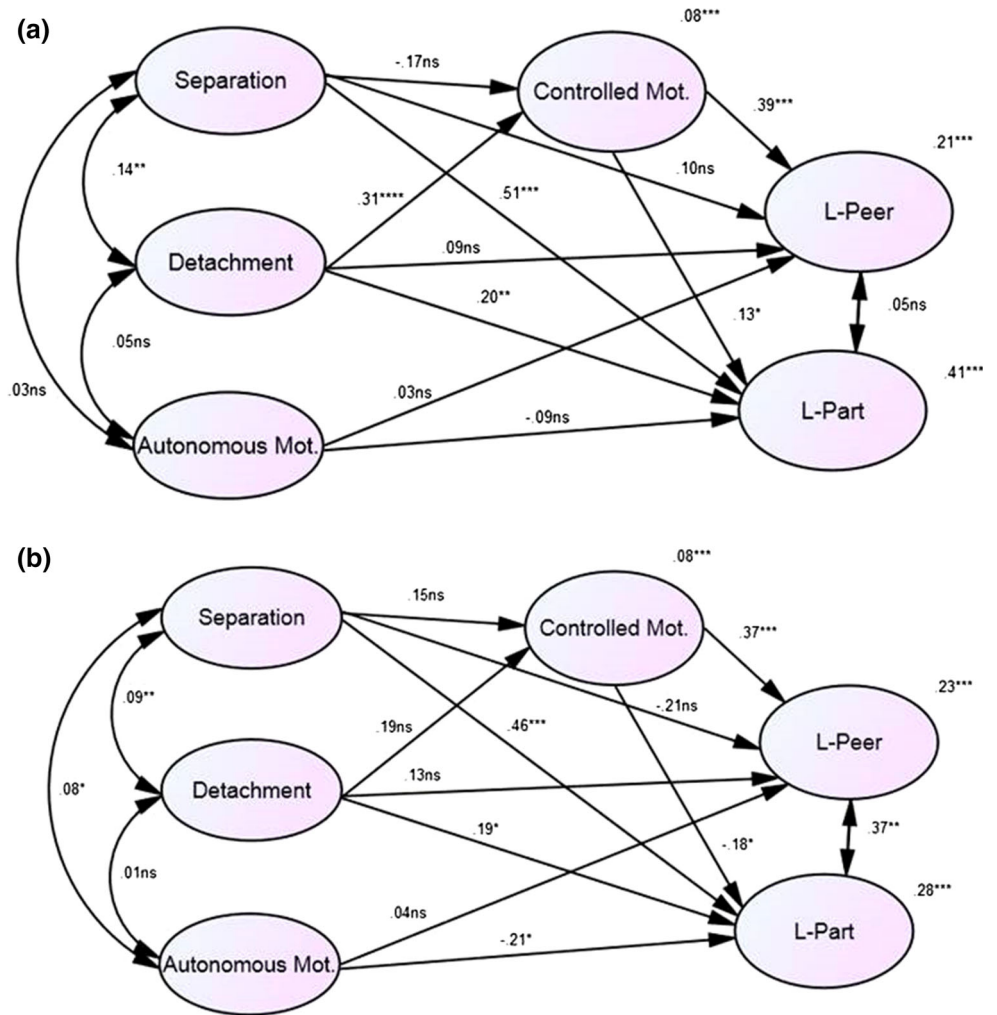


Fig. 2 Standardized path estimates of the final model testing invariance across groups with high and low A-Pos. *Note:* **a** shows the path estimates for the group with low A-Pos (N = 145). **b** Shows the path estimates for the group with high A-Pos (N = 102). Beside the variables is shown accounted variability. * $p < .05$; ** $p < .01$; *** $p < .001$



L-Part and finally between L-Peer and L-Part. Interestingly, the relationship between controlled motivation and L-Part was negative for individuals with high A-Pos and, in contrast, it was positive for those with low A-Pos. The link between L-Peer and L-Part was statistically significant and higher for the first group (.37) and not statistically significant for the second one (.05). The explained variance of L-Peer and L-Part was 23 and 28 % for the group with high A-Pos and 21 and 41 % for the group with low A-Pos.

Discussion

The aim of the present study was to assess the effects of emotional autonomy and self-determination on loneliness during adolescence. Whereas previous research has investigated independently the relationship between loneliness and autonomous motivation for solitary behaviors (Corsano et al. 2011) and the relationship between loneliness and emotional autonomy (Corsano et al. 2012, 2014), the role

of both motivational (self-determination) and emotional (emotional autonomy) dimensions of the autonomy have not yet been investigated. In the present research we adopt the multidimensional approach to loneliness and we define emotional autonomy as composed of separation and detachment processes, showing specific characteristics and differences in the paths from autonomy to peer- and parent-related loneliness.

The models tested confirmed that both autonomous motivation and emotional autonomy have an effect on peer- and parent- related loneliness. Peer-related loneliness is predicted by autonomous motivation and detachment and not by separation; the effect of separation, however, was shown to be mediated by controlled motivation. The separation process produced peer-related loneliness only if individuals considered the loneliness experience to be determined by external factors. These results can be explained in the light of the interconnection between the family relationship and other social experiences. One of the most important developmental task of adolescence is the

construction of a social network with peers (Palmonari 2011), but this construction is also connected with the process of re-definition of the bounds with parents (Blos 1967; Hutton and Cusack 2013; Koepke and Denissen 2012). Thus, the dysfunctional aspect of this re-definition (detachment), but not the more functional aspect (separation), could affect their dissatisfaction toward social relationships outside the family (peer-related loneliness). In this case, individuals explore other identity possibilities in a social context without the support from their family, or they experience a feeling of being forced to be “over-autonomous”, thus possibly perceiving greater feelings of peer-related loneliness (Luyckx et al. 2014). The separation process from family *per se* does not cause a feeling of social isolation, except when the person feels rejected or socially isolated (controlled motivated to be alone). So, during the process of redefinition of the role of parents and in the construction of autonomy, the social isolation is felt as a stressful event that leads to increased loneliness in relation to peers. Moreover, in this case being alone as a self-determined condition led *per se* to being lonely. It can be supposed that individuals who are self-determined to be alone have more opportunities to be alone and as consequence feel more lonely, or, in contrast, that the limitation of their options for being with others has made them think that being alone is important and pleasant (Goossens et al. 2009).

In the case of parent-related loneliness, both separation and detachment, especially the former, have a direct effect on loneliness, whereas autonomous motivation has a lesser influence. In this case, controlled motivation did not mediate the relationship between predictors and loneliness. Parent-related loneliness is a “healthy” experience for an individual, associated with the separation–individuation process. It could be considered the “price to pay” (Csikszentmihalyi and Larson 1984, p. 187) for constructing a separate sense of self. So both of the dimensions of emotional autonomy (in the case both of real independence and of conflictual over-autonomy), but not the motivational dimension, can be considered determinant of feelings of solitude, which are manifested even if the individual is not internally motivated.

Focusing on the role of motivation, the data indicate that aloneness considered as an autonomous choice is regarded as highly unsatisfactory in the context of relationships with peers but not in the context of relationships with parents. Individuals who deliberately desire to be alone (due to personality traits, or to self-determination, or to negative social experiences), could create more opportunities to spend time alone and as a consequence feel more alone in their relationships with peers, but not necessarily with parents. These results are in line with the suggestion of Beiswenger (2008), that there was not a significant

relationship between peer relatedness and autonomy for solitary behavior, but peer relatedness was negatively associated with non-autonomous motivation for solitary behavior. It is possible to hypothesize that dissatisfaction with peer relationships may make people inclined to spend time alone, or with others, for non-autonomous reasons. These findings are in line with earlier research that indicated associations between affinity toward aloneness and peer-related loneliness (Goossens et al. 2009). Two possible explanations for this relationship could be suggested. On the one hand we could hypothesize, in line with the literature, that individuals autonomously motivated to be alone are likely to have higher autonomy as an individual or as a cultural trait (Chircov et al. 2003). On the other hand, we could hypothesize a kind of rationalization about their desire to be alone as a consequence of external difficulties in establishing interpersonal relationships (Goossens et al. 2009).

In contrast, loneliness toward parents is less influenced by motivation, because it is a typical emotion in the separation–individuation process. Further research is needed to clarify the aspects (individual or social) that influence the motivation for being alone. However, the models proposed also indicated differences with regard to the role of controlled motivation. In the case of parents, controlled motivation did not mediate the effect of emotional autonomy, which has a direct effect on loneliness, but separation and detachment have an effect on controlled motivation. In contrast, in the case of loneliness toward peers, controlled motivation mediates the relationship between separation and loneliness, which does not have a specific effect on loneliness. So the healthy aspect of emotional autonomy has an effect on loneliness only when the individual perceives an external control on their being alone. So even if individuals are healthily separated from their parents, when they perceive that their time spent alone is due to external factors (that is a kind of social isolation), they feel a higher loneliness vis-à-vis peers. In fact, from the perspective of Blos (1967), the distancing from parents leads adolescents to invest in relationships with peers. If these are not satisfactory, their experience of loneliness increases.

This complex relationship among dimensions is confirmed when we assess the role of affinity for aloneness in intensifying the relationship between parent-related loneliness and peer-related loneliness. As reported in other studies, affinity for aloneness could be considered an ‘internal’ dimension influenced by cognitive-personality styles such as autonomy and sociotropy (Teppers et al. 2014), thus it could moderate the relationship among variables. It has also been suggested that affinity for aloneness could ‘modulate’ (Goossens et al. 2009, p. 894) perceived social isolation, because the individual could

attribute a positive value to loneliness because they spent more time alone. So, in line with the literature (Goossens et al. 2009), the affinity for being alone increases the reciprocal influence of the different dimensions of loneliness: individuals who have a positive attitude toward aloneness could perceive a higher general sense of loneliness that is shifted to different domains (family or peers). In addition, affinity reduces the impact of controlled motivation on loneliness toward parents: where there is a low affinity for aloneness, loneliness toward parents is more influenced by controlled motivation, whereas in the case of a high affinity for aloneness the relationship between controlled motivation and parent-related loneliness decreases.

On gender and age, the model tested is invariant with regard to age groups, except for the relationship between separation and detachment, which becomes weaker as the individuals grow older. In contrast, gender moderates the relationships between controlled motivation and L-Peer and the relationships between L-Peer and L-Part. Loneliness towards peers is more influenced by external factors for females, and is more strictly associated with parent-related loneliness. In line with Beiswenger (2008) girls are traditionally viewed as more relationally oriented and internally focused, and may be more sensitive to breaches in relatedness. In fact, in line with other studies (Corsano et al. 2006; Goossens and Marcoen 1999), the females in the present study show a higher level of peer-related loneliness than males. On the other hand, girls are educated by their family to be more independent and they perceive more parental support for autonomy (Beiswenger and Grolnick 2010; Soenens and Vansteenkiste 2005). Thus, where there is peer-related loneliness, it could also strengthen parent-related loneliness.

The present study has demonstrated the effects of the motivational and emotional dimensions of the separation–individuation process—separation, detachment and autonomous motivation for solitary behavior—on aloneness/loneliness experienced during adolescence. The models proposed have distinguished two different paths from autonomy to loneliness, one to peer-related and the other to parent-related loneliness. In addition, the mediation of controlled motivation indicates the role of this aspect in differentiating these two dimensions of solitary experiences. In comparison with earlier models, the model testing parent- and peer-related loneliness jointly has allowed us to find the best indices and to take into account a more complex and a multidimensional approach to loneliness and related phenomena. This also allowed us to investigate this experience in different contexts (family and peers) and with respect to the separation/individuation process. This study contributes new evidence on the relationship between two specific dimensions (loneliness and emotional autonomy) which were thus far investigated independently. In

addition it includes and clarifies the role of the motivational dimension for solitary behavior, showing different paths of influence among the variables considered.

This study has some limitations. First, with regard to the reliability of the proposed model of emotional autonomy, in line with Beyers et al. (2005), the results showed better indices for the separation dimension than for the detachment dimension. Therefore the results for the detachment dimension should be interpreted with caution. Second, the study would benefit from a more specific consideration of the external factors (e.g., a direct measure of social relationships and popularity) and other possible mediators, such as self-esteem, in determining the experience of peer-related loneliness in adolescence. Further research is needed in this direction. Finally, the study was conducted in a single country (Italy) and the participants are a quite homogeneous group with similar educational and social backgrounds. This limits our ability to generalize the results to other countries or populations of adolescents with a lower socio-economic status. Future research might valuably compare populations from different countries or different social background, adding more direct measures and using a longitudinal design in order to better assess the effects of specific social and family circumstances on loneliness and other outcomes.

Despite these limitations, this research has important implications for the study of the relationship between autonomy and the experience of loneliness during adolescence, and could contribute to the prevention of negative outcomes such as loneliness in relationships with peers, especially by focusing on family relationships and family resources. This could be particularly important for attempts to prevent maladaptive outcomes among clinical populations such as adolescents with depressive symptoms and substance abusers.

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