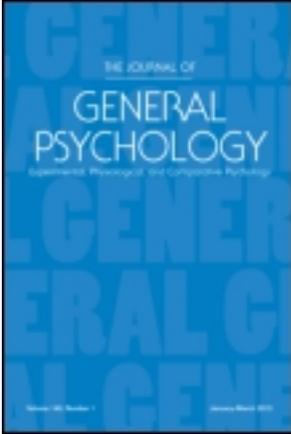


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The Journal of General Psychology

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/vgen20>

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To cite this article: Yaşar Kuzucu & Ömer Faruk Şimşek (2013) Self-Determined Choices and Consequences: The Relationship Between Basic Psychological Needs Satisfaction and Aggression in Late Adolescents, *The Journal of General Psychology*, 140:2, 110-129, DOI: [10.1080/00221309.2013.771607](https://doi.org/10.1080/00221309.2013.771607)

To link to this article: <http://dx.doi.org/10.1080/00221309.2013.771607>

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Self-Determined Choices and Consequences: The Relationship Between Basic Psychological Needs Satisfactions and Aggression in Late Adolescents

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ABSTRACT. This research examined the mediatory role of life purpose and career indecision in the relationship between the satisfaction of basic psychological needs and aggression. Data were collected from high school students ($n = 466$) and results showed that life purpose and career indecision fully mediated the relationship between basic psychological needs satisfaction and aggression. These findings suggested that unsatisfied basic psychological needs foster late adolescents' aggression by promoting less clear life purposes and career indecision.

Keywords: aggression, career development, statistics/data analysis, violence

AGGRESSION IS ONE OF THE MOST COMMON AND DESTRUCTIVE BEHAVIORS that adolescents face today. Prior research shows a number of individual risk factors contributing to the development of adolescent aggression. Low self-esteem (Trzesniewski et al., 2006), antisocial behavior, adjustment problems (Tarolla, Wagnera, Rabinowitzb, & Tubman, 2002) and negative emotions (Brezina, Piquero, & Mazerolle 2001) have all been found to be related to adolescent aggressive behavior. It is surprising that there is very limited empirical support for the relationship between self-determination theory (SDT; Ryan & Deci, 2000) and aggression. There are, however, some bases for arguing that SDT could provide a framework for a thorough examination of adolescent aggression. The aims

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of this research are to show the relationship between basic psychological needs satisfaction proposed by SDT and aggression, and to account for this association by the mediation of life goals and career indecision in the period of late adolescence.

Self-Determination theory (Deci & Ryan, 2000) is perhaps the most influential framework for understanding the basic characteristics of autonomous individuals who are able to determine their own way of living without being alienated from the community. Autonomy, in this respect, refers to an internal locus of causality and is conceptualized as an intrinsic motivation to satisfy one's innate psychological needs (autonomy, competence, and relatedness). This theory argues that when these three needs are supported by social contexts and are able to be fulfilled by individuals, well-being is enhanced. Conversely, when cultural, contextual, or intra psychic forces block the fulfillment of these basic needs, ill-being increases. Consistent with these arguments, research findings have shown that the satisfaction of basic psychological needs is related to indicators of well-being (Reis, Sheldon, Gable, Roscoe, & Ryan, 2000; Sheldon, Ryan & Reis, 1996), while the lack of satisfaction contributes to psychological problems (Deci & Ryan, 2000).

There are some research findings supporting the relation of basic psychological needs to aggression indirectly. These findings indicate that unsatisfied psychological needs are linked to the risk factors of adolescent aggression, such as lack of self-confidence (Ryan & Deci, 2000) and negative emotions (Sheldon, Elliot, Kim, & Kasser, 2001). Moreover, research shows that uncertainty, anger and fear are indicators of an absence of, or a low-level of fulfillment of the basic psychological needs (Miserandino, 1996; Reis et al., 2000; Sheldon et al., 2001; Tong et al., 2009). On the other hand, satisfied psychological needs have positive associations with pro-social behavior (Kokko, Tremblay, Lacourse, Nagin & Vitaro, 2006).

More direct support for the link comes from the findings of several studies based on self-determination theory. Neighbors, Vietor, and Knee (2002) tested the hypothesis that individuals having high levels of controlled orientation (less autonomy) would experience more feelings of pressure and ego-defensiveness, leading to more aggressive driving. This motivational hypothesis was supported by the findings, indicating that less autonomy results in more aggressive behaviors while driving. Similarly, Soenens, Luyckx, Vansteenkiste, and Duriez (2008) showed that psychologically controlling parenting positively predicted adolescents' relational aggression, implying that aggressive behavior is learned from the parents and affects subsequent behaviors in the domain of close relationships. Mask, Blanchard, Amiot and Deshaies, (2005) studied the relation between trait-level autonomy and pro-social behaviors. Autonomy predicted more pro-social behavior, less interpersonal harm and less aggressive driving-related behaviors. Finally, the study by Kernis (1982) indicated that people who had higher score in autonomy orientation behaved less aggressively in the lab, while higher scores on the control were related to more self-derogation (i.e., self-directed aggression).

The Mediatory Function of Goals: Life Purpose and Career Decisiveness

Although this indirect and direct empirical evidence suggest that satisfaction of basic psychological needs is related to aggressive behaviors, the mechanisms behind this relationship are not clear, especially for the period of adolescence. One possible explanation for this relation is that unsatisfied basic psychological needs have a detrimental effect on goal pursuits of adolescents, which, in turn, result in increased aggression. According to Deci and Ryan (2000), as individuals' needs are satisfied, they are motivated to act autonomously in pursuing goals, which contributes to their growth and self-actualization. They are motivated for self-actualization by defining goals that are concordant with the self. When the reverse is the case, according to the authors, individuals choose the goals that are not concordant with their organismic self; rather, they choose to pursue compensatory ones such as aggression or antisocial behavior.

The development of purpose is known to be a lifelong process, starting in the late childhood or adolescence (Fry, 1998). It is indicated that adolescents increasingly become engaged in intentional self-development, and personal goals become particularly important for this period (Nurmi, 2004). Adolescent goals reflect the developmental tasks and age-graded developmental deadlines (Cantor, Norem, Niedenthal, Langston & Brower, 1987; Nurmi, 1991). For the period of adolescence, growth means engaging in the pursuit of two important goals: clarifying a life purpose and defining a career path, as indicated by the literature below.

Life purpose is important component of positive mental health (Ryff & Singer, 1998) and it has been explored as a precursor of life satisfaction (Diener and Fujita, 1995). Identifying and engaging one's life goals facilitate transition to adulthood during adolescence (Eccles et al., 1993). Goals serves as a self-directing and self-defining process (Nurmi, 1991, 1993) and having clear paths through self-actualization tends to motivate adolescents to concentrate on the search for a job (Soenens & Vansteenkiste, 2005) or to define clear goals for the future (Lee, McInerney, Liem, & Ortiga, 2010).

Adolescents who have goals show higher subjective well-being (Salmela-Aro & Nurmi, 1997). Undecided students, on the other hand, tend to be more anxious, externally controlled, and confused concerning their self-concept (Hartman & Fuqua, 1983). Promoting purpose may lead to successful youth development (Damon, 2008) by preventing substance abuse (Luthar & Goldstein, 2008) and adolescent depression and suicide (Costello, Erkanli, & Angold, 2006).

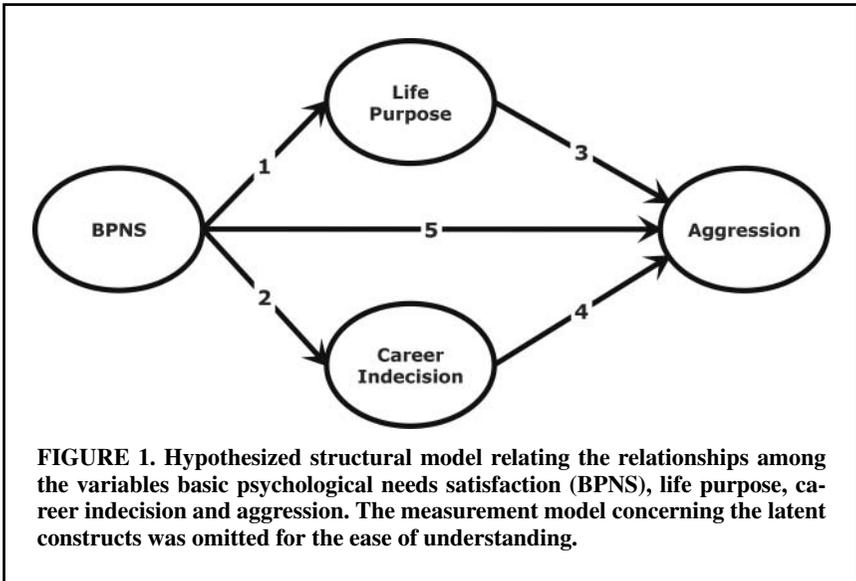
One of the most important personal goals during adolescence is regarding a future occupation or work role (Nurmi, 1991), namely career decision. Exploring and then committing to a career is considered a normative part of the transition from adolescence to adulthood (Arnett, 2000; Schwartz, Côté, & Arnett, 2005). Deciding on a career and career preparation represents a major developmental task in late adolescence and early adulthood (Super, 1990; Havighurst, 1972). Career

preparation incorporates decidedness, clarity of occupational goals, planning, and confidence (Bardick, Bernes, Magnusson & Witko, 2004; Kuzgun, 2000). Career indecision means being uncertain about one's choice in a situation that requires making choices (Crites, 1969) and is characterized by difficulties in acquiring occupational information, in identifying and evaluating alternative career options, and in selecting and committing to a single alternative (Kuzgun, 2000).

Career development theory has suggested that successful career development has positive effects on well-being (Vondracek, Lerner, & Schulenberg, 1986). Adolescence can be characterized by potential difficulties in making decisions (Crites, 1969) and career indecision in adolescence is positively related to indicators of poorer adjustment (Creed, Prideaux, & Patton 2005), depression (Saunders, Peterson, Sampson, & Reardon, 2000), and lower self-esteem (Chartrand, Martin, Robbins, & McAuliffe, 1994).

As indicated before, basic psychological needs are regarded as the motivational force behind goal setting, and successful goal attainment is achieved by satisfying these needs (Deci & Ryan, 2000). In addition to the psychological needs, adolescents also have a fundamental need to matter (Eccles, 2008). SDT (Deci & Ryan, 2000) clarifies why personal strivings may have differential influences on well-being. According to SDT, satisfaction of basic psychological needs and autonomy are closely related. That is, if individuals are able to satisfy the basic psychological needs, they are more likely to define goals concordant with the self. One of the basic features of an autonomous personality is, thus, to choose activities and defining goals based on organismic needs and values. If strivings are self-selected and well-integrated with a person's preferences or personality traits, benefits are increased (Sheldon, Ryan, Deci, & Kasser, 2004).

It is highly plausible, at this point, to argue that the adolescents lacking adequate preparation for the requirements of this life period, i.e. clarifying a life purpose and defining a career path, would be more prone to follow negative trajectory routes, such as towards aggression. According to Deci and Vansteenkiste (2004), as individuals satisfy their basic psychological needs, they are more inclined to growth and self-actualize by autonomously choosing the paths toward such ends. The authors also indicate that satisfaction of the basic psychological needs would contribute to the prevention high-risk behaviors. Consistent with these results, violence prevention programs that incorporated vocational development and job orientation showed positive effects on violence-related behaviors and other health risk factors (Thornton, Craft, Dahlberg, Lynch, & Baer, 2000). Having a clear life purpose and a career decision, in this respect, are intrinsic motivators for adolescents to engage in self-actualization and growth. In contrast, individuals having no clear paths for development and self-actualization tend to be more prone to employing coercive or controlling behaviors to adjust to the environment and maximize self-worth (Deci & Ryan, 2000). Lee, Uken, and Sebold (2007) found that a lack of self-determined goals has a negative impact on recidivism in domestic violence offenders. Similarly, Gavin, Catalano, David-Ferdon, Gloppen,



and Markham (2010) indicated that successful youth development programs emphasize practicing self-determination and developing and clarifying goals for the future.

In order to clarify the reasons for adolescent aggression, thus, it is necessary to understand adolescents' aspirations, and the factors that influence a healthy pursuit of goal attainment. There has been no study, to our knowledge, which examines how pursuing a life which is not concordant with the requirements of a developmental period could contribute to aggressive tendencies. We therefore presumed that life purpose and career decisiveness would be positively predicted by the satisfaction of basic psychological needs, while they would contribute negatively to aggression in the period of late adolescence. In other words, we tested the hypothesis that life purpose and career indecision would serve as mediators for the relationship between basic psychological needs satisfaction and aggression using structural equation modeling (Figure 1).

Method

Participants

This study involved 466 high school students in Izmir, Turkey. The sample included 225 (48.3%) females and 241 (51.7%) males. The mean age of this sample was 17.83 years (*SD* 1.1 years; range 17–18 years). The late adolescents were randomly selected from five different high schools. Students were asked to

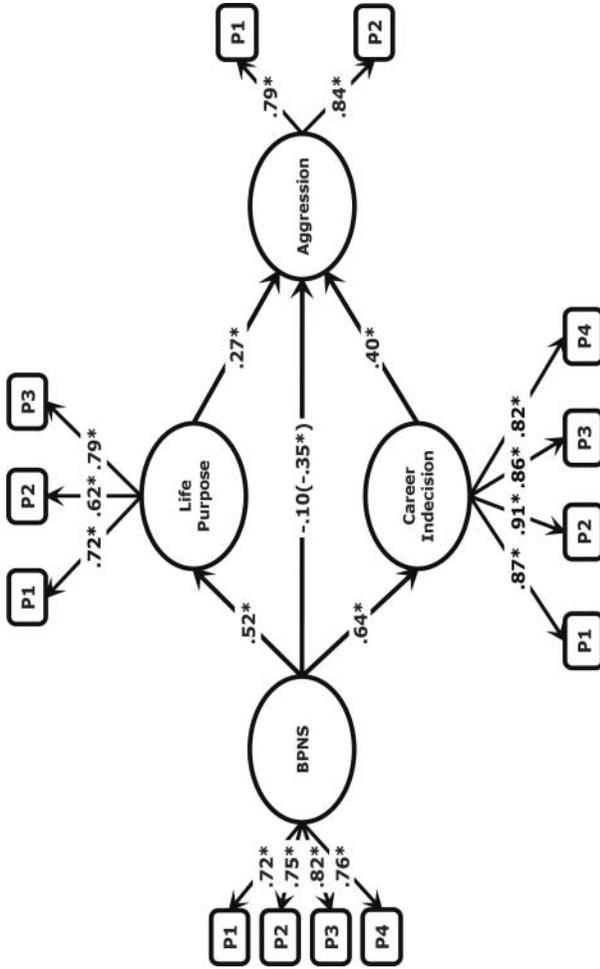


FIGURE 2. Standardized parameter estimates of the final structural model. $N = 422$; the number in the parentheses refers to the standardized coefficient in the measurement model in which only covariances among the latent variables were freely estimated; BPNS = Overall basic psychological need satisfaction. * $p < .05$.

complete questionnaires including measures of life purpose, career indecision, basic psychological needs satisfaction, and aggression.

Measures

Basic Psychological Needs Scale

The Basic Psychological Needs Scale-general version contains 21 items and adapted from the BPNS-work version (Ilardi, Leone, Kasser, & Ryan, 1993). Respondents indicated on a scale from 1 (*not true at all*) to 7 (*definitely true*) the extent to which the psychological needs of autonomy (7 items, $\alpha = .69$), relatedness (6 items, $\alpha = .86$), and competence (8 items, $\alpha = .71$) are generally satisfied in their life. The coefficient alpha of general need satisfaction was .89 (Gagné, 2003). The scale was adapted into Turkish by Bacanlı and Cihangir-Çankaya (2003) who reported internal consistency coefficients of .82, .80 and .81 for the autonomy, competence and relatedness scores, respectively. The internal consistency coefficients for the present study were .83, .77 and .79, respectively.

Career Decision Scale

The CDS was developed to measure difficulties in making a career decision (Osipow, Carney, Winer, Yanico, & Koschir, 1976). The CDS adapted for high school students with permission (Hartman & Hartman, 1982). Hartman and Hartman (1982) demonstrated the concurrent validity of the CDS with this high school student sample. Test-retest reliabilities have been reported in the range of .70 to .90 and most of the item correlations are between .60 and .70 (Osipow et al., 1976). Since no Turkish translation of the scale existed, it was translated using a back translation procedure by two bilinguals. The internal consistency coefficient for the present study was .81.

Purpose in Life Scale

This is one of the subscales of the Ryff's (1989) Psychological Well-Being Scales. This scale consists of 14 items designed to measure Purpose in Life, which is the feeling that there is purpose and meaning to life, usually manifested through goals, direction, and clear objectives for living. Ratings are indicated on a scale from 1 (strongly disagree) to 6 (strongly agree) for each item. The internal consistency coefficient for the scale was .90. The test-retest reliability coefficient was .82. The internal consistency coefficient was .76 and the test-retest reliability coefficient was .75 for the Turkish form (Cenkseven, 2004). The internal consistency coefficient for the present study was .82.

Aggression Scale

This scale, developed by Orpinas ve Frankowski (2001), consists of 11 items designed to measure self-reported aggressive behaviors of young adolescents. The scale requests information regarding the frequency of the most common overt

aggressive behaviors, including verbal aggression (e.g. threatening to hurt) and physical aggression (e.g. pushing), as well as information about anger (e.g. getting angry easily). The scale was evaluated in two independent samples of ($n = 253$ and $n = 8,695$). Reliability scores were high in both samples, and did not vary significantly by gender and ethnicity. The internal consistency scores, estimated with Cronbach's alpha coefficient, was .87. The scale was adapted to Turkish by Kuzucu and Özdemir (in press) who reported Cronbach's Alpha reliability of .85 and re-test reliability of .84. The internal consistency coefficient for the present study was .85.

Procedure

The battery of instruments was administered to the participants at their school, with an overall administration time of approximately 40 minutes. They individually completed the questionnaires in group sessions. All participants were volunteers, and were allowed to withdraw at any point. They received course credit for participating in this study. No personal identifying information was collected. The participants were informed that the purpose of the study was to examine the various relationships between psychological needs, life purpose, career decision, and aggression. The data were collected in 2010.

Results

Preliminary Analyses

Means, standard deviations, and zero-order correlations for the 13 measured variables are shown in Table 1. All skewness and kurtosis values were less than 1, indicating that there is no problem concerning normality assumption.

Testing Measurement Model

SEM is a multivariate strategy of analysis, including the test of measurement and structural models. Before a structural model is tested, a confirmatory factor analysis is conducted to examine whether the measurement model provides an acceptable fit to the data. In this study, the measurement model was estimated using the maximum-likelihood method in the LISREL 8.3 program (Jöreskog & Sörbom, 1993). The measurement model specified the posited relations of the observed variables to their underlying constructs allowed to intercorrelate freely. Four latent variables were used in the structural equation model testing: Basic psychological needs satisfaction, life purpose, career indecision, and aggression. The measurement model was created using parcels for each latent construct in the models tested in this study. Item parceling is a method that normalizes the distribution of observed variables and increases the reliability of these indicators.

TABLE 1. Means, Standard Deviations, and Correlations Among 13 Observed Variables

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1. BSNS1	25.8	5.3	—												
2. BSNS2	24.8	5.3	.517	—											
3. BSNS3	24.9	5.1	.575	.638	—										
4. BSNS4	29.0	4.8	.552	.559	.654	—									
5. LP1	22.5	4.6	.397	.242	.327	.311	—								
6. LP2	22.6	4	.402	.318	.224	.283	.509	—							
7. LP3	18.3	3.9	.418	.418	.357	.363	.569	.516	—						
8. CI1	13.8	4	.319	.319	.302	-.201	-.215	-.170	-.341	—					
9. CI2	14.6	4	.347	.347	.374	-.268	-.262	-.168	-.367	.797	—				
10. CI3	14.3	4	.403	.403	.411	.305	-.320	-.233	-.392	.755	.790	—			
11. CI4	14.8	4.1	.378	.378	.402	.210	-.285	-.140	-.364	.721	.740	.686	—		
12. AG1	15.8	4.1	.258	.258	.220	-.270	-.308	-.244	-.323	.321	.329	.335	.295	—	
13. AG2	13.9	3.7	.286	.286	.257	-.281	-.318	-.217	-.292	.287	.332	.343	.369	.335	—

Notes. N = 466. BSNS = Basic Psychological Needs Satisfaction (Higher scores indicate satisfied of basic psychological needs), BSNS1–BSNS4 = Four parcel from the BSNS; LP = Life Purpose (Higher scores indicate having higher levels of life purpose) LP1–LP3 = Three parcel from the LP; CI = Career Indecision (Higher scores indicate higher levels of indecision about career) CI1–CI4 = Four parcel from the CI; AG = Aggression (Higher scores indicate higher levels of aggression) AG1–AG2 = Two parcel from the AG. All correlation coefficients were significant at $p < .01$.

Indicators as parcels were created for each latent variable by rank-ordering items by the size of the item-total correlation and summing sets of items to obtain equivalent indicators for those constructs. We chose to create multiple indicators to increase the reliability of the latent variables, since all the constructs, except for the basic psychological needs satisfaction, had one-dimensional measurement models. We thus used four parcels for career indecision, three parcels for life purpose, and two parcels for aggression according to the number of items: the more the items, the greater the number of items. We created four parcels also for the basic psychological needs satisfaction because the preliminary analyses showed that the original factor structure of the BPNS Scale was not evident in the data. Creating parcels for the overall psychological need satisfaction means using a composite score of the BPNS Scale, which is consistent with the past studies (Deci et al. 2001; Wei, Shaffer, Young, & Zakalik, 2005).

An initial test of the measurement model resulted in a relatively good fit to the data, $\chi^2(59, N = 466) = 143.50$; GFI = .95; CFI = .98; SRMR = 0.045; RMSEA = 0.058 (90 percent confidence interval for RMSEA = 0.046; 0.071). All of the loadings of the measured variables on the latent variables were large and statistically significant (standardized values ranged from 0.62 to 0.91, $p < .001$, see Table 2) indicating that the latent variables were adequately operationalized by their respective indicators. In addition, correlations among all latent variables in the model were all statistically significant ($p < .001$, see Table 3).

Testing Structural Model

The mediational hypotheses were tested by examining the fit of a series of structural models to the data. Figure 1 summarizes the full number of hypothesized relations among the latent variables. The numbers on the figure refer to the relationship of overall basic psychological needs to aggression with the mediatory role of career indecision and life purpose (1, 2, 3, and 4) or without such mediation (5).

The tests of mediation were performed by examining whether there were differences between the partially mediated model represented in Figure 1, which included the direct effect from overall basic psychological needs satisfaction to aggression (paths 5), and the model in which this path is omitted.

Test of the partial mediated model in Figure 1 (Model 1) resulted in an acceptable fit to the data as indicated by the following goodness of fit statistics: $\chi^2(60, N = 466) = 154.71$; GFI = .95; CFI = .98; SRMR = 0.054; RMSEA = 0.061 (90 percent confidence interval for RMSEA = 0.061–0.078).

Testing the mediational effect of career indecision and life purpose with respect to aggression where the path 5 was set to zero, resulted in the following goodness of fit statistics: $\chi^2(61, N = 436) = 157.04$; GFI = .95; CFI = .98; SRMR = 0.054; RMSEA = 0.061 (90 percent confidence interval for RMSEA = 0.049–0.03). Chi-square difference test statistic (2.33, 1: $p > .05$) indicated that there is no difference between these models, showing that the path

TABLE 2. Factor Loadings, Standard Errors, and T-Values For the Measurement Model

Measure and variable	Unstandardized factor loading	SE	t	Standardized factor loading
Basic Psychological Needs				
Parcel 1	3.91	0.24	16.09	0.72
Parcel 2	3.98	0.24	16.87	0.75
Parcel 3	4.22	0.22	19.22	0.82
Parcel 4	3.65	0.21	17.44	0.76
Life Purpose				
Parcel 1	3.38	0.23	14.97	0.72
Parcel 2	2.58	0.20	12.66	0.62
Parcel 3	3.13	0.19	16.66	0.79
Career Indecision				
Parcel 1	3.48	0.16	22.25	0.87
Parcel 2	3.62	0.15	23.92	0.91
Parcel 3	3.51	0.16	21.63	0.86
Parcel 4	3.35	0.17	20.21	0.82
Aggression				
Parcel 1	3.37	0.22	15.34	0.79
Parcel 2	3.12	0.19	16.14	0.84

Note. N = 466; Basic Psychological Needs 1, 2, 3, 4 = four parcels from Basic Psychological Needs Scale; Life Purpose 1, 2, 3 = Three parcels from Purpose in Life Scale; Career Indecision 1, 2, 3, 4 = Four parcel from Career Decision Scale; Aggression 1, 2 = two parcels from Aggression Scale.

from overall basic psychological needs satisfaction to aggression is not necessary for a better fit to the data, and therefore could be omitted from the model. Standardized parameter estimates of the final structural model are represented in Figure 2.

TABLE 3. Correlations Among Latent Variables for the Measurement Model

Latent Variable	1	2	3	4
1. Basic Psychological Needs	—			
2. Life Purpose	.49	—		
3. Career Indecision	-.44	-.36	—	
4. Aggression	-.35	-.38	.40	—

Note. N = 466; $p < .001$ for all statistics.

Two alternative structural equation models were also tested to rule out the possibility that the fit of the proposed model was simply the result of a statistical coincidence. The first alternative model proposed that aggression and life purpose contribute to career indecision by the mediatory role of basic psychological needs satisfaction. Structural equation model results showed that this model deteriorated the model fit as indicated by the following goodness of fit statistics: $\chi^2(61, N = 466) = 166.58$; GFI = .94; CFI = .98; SRMR = 0.067; RMSEA = 0.064 (90 percent confidence interval for RMSEA = 0.053–0.076). The second alternative model tested the hypothesis that the relations of career indecision and life purpose with aggression were mediated by the satisfaction of basic psychological needs. Test of the model again resulted in a worse fit: $\chi^2(61, N = 466) = 177.71$; GFI = .94; CFI = .98; SRMR = 0.067; RMSEA = 0.067 (90 percent confidence interval for RMSEA = 0.056–0.079). Chi-square difference tests showed that both first (11.81, 1: $p < .01$) and second (23.00, 1: $p < .01$) model were worse than the proposed model.

As a more rigorous test of mediation hypotheses of the proposed model, we also used bootstrapping (Shrout & Bolger, 2002), found to be the most reliable way of examining the effects of intervening variables (McKinnon, Lockwood, Brown, Wang, & Hoffman, 2002). This method is based on testing the significance of the indirect paths from the independent variable (overall basic psychological need satisfaction) to mediators (life purpose and career indecision) and from the mediators to dependent variable (aggression). Bootstrapping produces a large number of samples from the dataset, from which estimates of the standard errors are obtained. The interval confidence of these standard errors is considered when testing the significance of indirect effects. An indirect effect is statistically significant if the confidence interval does not contain zero, which is the case for the values obtained for the proposed model both in 95% confidence interval (.31–.45) and 99% (.27–.48).

These results suggest that the relationship between overall basic psychological need satisfaction and aggression was mediated by career indecision and life purpose of the adolescents. However, it is unclear whether both of the mediator variables contribute to the indirect effect from overall basic psychological need satisfaction to aggression. To test the independent contributions of the mediator variables, a nested models strategy was used. Two nested models could be depicted from the final model: first, the model in which the path from career indecision to aggression (path 4 in Figure 1) was set to zero (Model a), and, the second in which the path from life purpose to aggression (path 3 in Figure 1) was set to zero (Model b).

Model a produced the following goodness of fit statistics: $\chi^2(62, N = 466) = 172.48$; GFI = .94; CFI = .98; SRMR = 0.076; RMSEA = 0.065 (90 percent confidence interval for RMSEA = 0.054–0.077). The chi-square difference test (15.44; 1, $p < .01$) indicated that this model was worse than the model in which the path was freely estimated. To set the path from life purpose to aggression

(Model b) resulted in worse goodness of fit statistics when compared to Model a: $\chi^2(62, N = 466) = 197.25$; GFI = .93; CFI = .97; SRMR = 0.083; RMSEA = 0.072 (90 percent confidence interval for RMSEA = 0.061–0.083). These results showed that both mediator variables contribute to the indirect effect from overall basic psychological need satisfaction to aggression.

Discussion

Theoretical Implications

This research examined the effect of basic psychological needs satisfaction on aggression with the mediator roles of life purpose and career indecision. Coupling the developmental tasks of adolescents with the tenets of self-determination theory, we assumed that unsatisfied needs would make adolescents less clear about their future in terms of life purposes and career, which in turn, would contribute to aggressiveness. The findings fully supported this hypothesis, indicating that these two variables fully mediated the relationship between basic psychological needs satisfaction and aggression. This is the first piece of research focusing specifically on the relationship between basic psychological needs satisfaction and aggression, and explaining the dynamics behind this association for the period of late adolescence.

Although past researches (e.g. Soenens et al., 2008) has given some clues about the importance of basic psychological needs in aggressiveness, this present research contributes in a more direct way to knowledge about and the reasons behind adolescent aggressiveness. The findings of the present research indicate that we should take into account adolescents' developmental paths to understand their aggressive tendencies. We agree with the SDT's presupposition that unsatisfied needs would lead to some compensatory routes for adolescents other than pursuing goals which would imbue their life with meaning.

Adolescence is a time period during which individuals try to understand who they are and thus choose certain developmental paths among many possibilities. Defining a path for the future is one of the most important developmental tasks of adolescence and requires adolescents to have clear life purposes and a career destination to some degree. Adolescents direct their own developmental path towards particular outcomes by selecting life goals and determining strategies to achieve them. This process defines how they evaluate themselves (Nurmi, 1993) and the developing self-concept influences adolescents' outcome expectations and choice of goals in a continuous interactive process (Markus & Nurius, 1986; Nurmi, 1991). Purpose is a central, self-organizing life aim that organizes and stimulates goals, manages behaviors and provides sense of meaning (McKnight & Kashdan, 2009). According to SDT (Deci & Ryan, 2000), if individuals are unable to pursue an organismic development, they would choose to find alternative means, such as withdrawing concern for others and focusing on self, or even engaging

in aggressive behaviors. Consistent with these provisions, the adolescents in the present study were more inclined to be aggressive toward others when their life goals and career aspirations were less well-defined.

Counseling Implications

Adolescents who have aggression problems can be subject to risk factors in all domains of their lives, including school (e.g., learning problems), family (e.g., domestic violence), and the community (e.g., neighborhood poverty) (Boxer & Butkus, 2005). The growing interest in youth aggression has been accompanied by an increased focus on prevention in schools (Hoagwood, 2000) and currently, administrators, teachers, and parents are engaged in identifying risk factors for preventable aggressive behavior (Tobin & Sprague, 2000). The results of this study showed clear evidence that SDT could be a useful framework for the prevention of aggression in adolescence. Having a life purpose and a preliminary career aim seems to be important intervening variables in the relationship between basic psychological needs satisfaction and aggression.

Early intervention with students who display aggressive behavior is important because they are at substantial risk for future violent behavior (Eron, 1987). School guidance programs aim to help students in making career decisions, and to provide the resources and materials to ensure that this process unfolds in a systematic and comprehensive manner (Kosteck-Bunch, 2000, as cited in Turner & Lapan, 2002). School counselors are increasingly attempting to facilitate the career decision-making process of high school students by supporting them in the face of difficulties encountered during their educational and career decision-making process. Therefore, identifying the difficulties which hinder these students in taking important decisions has become a significant area of research in career psychology (Germeijs & De Boeck, 2002). The results of the present research indicate that school counselors should also focus on decision making problems, not only in the context of career indecision but also in the context of aggression.

It is a prerequisite that counseling interventions should also take into account problem solving skills and improving self-efficacy, both of which are strong predictors of aggression as well as decision-making. Career decision-making processes have been conceptualized as a specific instance of problem solving (Holland & Holland, 1977) and research findings showed that problem-solving appraisal relates with career indecision (Henry, 1999; Heppner, Cook, Strozier, & Heppner, 1991). General self-efficacy aims at a broad and stable sense of personal competence to deal effectively with a variety of stressful situations such as career indecision. Many empirical studies have indicated that self-efficacy has an influence on career indecision (e.g. Sherer et al., 1982; Schwarzer & Scholz, 2000).

Additionally, helping adolescents to settle life purposes could serve as a prevention of aggression problems. Consistently, goal-setting interventions usually involve the setting of specific goals in a single domain, leading to domain-specific

improvements (Locke & Latham, 2002) and general self-efficacy (Schunk, 1990). Personal goal setting deserves greater attention as an effective technique not only for improving academic success (Morisano, Hirsh, Peterson, Pihl, & Shore, 2010) but also decreasing risky drinking behavior (Palfai & Weafer, 2006) and problematic substance abuse behavior (Petraitis, Flay, & Miller, 1995).

Implications for Future Research

Although the present research illuminated the link between basic psychological need satisfaction and aggression, future research should more fully explore the connection between life purpose and career decisiveness and aggression. In line with the arguments of SDT, we proposed that this link could be accounted for by compensatory need satisfaction. We consider that there could be some other possible causes that are worth examining. One possibility could be fragile self-esteem based on esteeming the self through adopting an attitude of superiority in relation to peers (Kernis, 2003) rather than actualizing the self through defining and working on goals. Esteeming the self is known to result in defensive behavior, manifested by anger and hostility (Kernis, Grannemann, & Barclay, 1989).

Another reason could be that having no clear life and career aspirations could be experienced by the adolescent as a frustration in terms of self-actualization, and thus results in aggressive behaviors. It is indicated that self-actualization is an organismic and innate tendency (Rogers, 1961). The perception of the life conditions which offer no paths toward future, in this regard, could be considered a threat or frustration by adolescents, and thus result in a general tendency to aggression.

Limitations

The basic limitation of the present research is the causal pathways indicated by the proposed model retrieved from the theoretical as well as empirical literature. Although we tested alternative models against the proposed model, a more rigorous test of causality should be tested in a longitudinal or experimental research.

AUTHOR NOTES

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Original manuscript received August 15, 2012

Final version accepted January 25, 2013