Conceptual Analysis and Measurement of Adolescent Autonomy

Marc J. Noom,¹ Maja Deković,² and Wim Meeus³

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The aim of the present study was to examine the concept of adolescent autonomy. A conceptual analysis of different theoretical perspectives has resulted in an integrative model of attitudinal, emotional, and functional autonomy. Attitudinal autonomy refers to the cognitive process of choosing and defining a goal. Emotional autonomy refers to the affective process of feeling confident about one's own choices and goals. Functional autonomy refers to the regulatory process of developing a strategy to achieve these goals. The empirical value of this model was tested by developing a questionnaire assessing adolescent autonomy. Subjects were 400 adolescents between 12 and 18 years old. Confirmatory factor analyses (LISREL 8) provided evidence for the 3 hypothesized dimensions.

INTRODUCTION

Several developmental tasks can be distinguished that adolescents must pass to achieve adulthood and healthy psychosocial functioning. One element of the transition from adolescence to adulthood is the development of autonomy (Havighurst, 1948). Many different approaches to the conceptualization of

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¹Postdoctoral Fellow, Department of Child and Adolescent Studies, University of Utrecht, The Netherlands. Received PhD in psychology from the University of Utrecht. Current research interests focus on adolescent autonomy and attachment, the parent-adolescent relationship, family-peer linkages, and homeless youth. To whom corresponding should be addressed at Department of Child and Adolescent studies, Utrecht University, P.O. Box 80.140, 3508 TC Utrecht, The Netherlands; e-mail: m.noom@fss.uu.nl.

²Professor, Department of Educational Sciences, University of Amsterdam, The Netherlands. Received PhD in psychology from the University of Nijmegen. Current research interests focus on adolescent social development and family relationships during adolescence.

³Professor, Department of Child and Adolescent Studies, University of Utrecht, The Netherlands. Received PhD in psychology from the University of Utrecht. Current research interests focus on personal and social development of adolescents.

adolescent autonomy exist. Examples of these approaches are separation-individuation, detachment, psychosocial maturity, self-regulation, self-control, self-efficacy, self-determination, decision making, and independence. The length and diversity of this list indicate that "autonomy is probably more appropriately conceptualized as a chapter heading, under which a variety of putatively related phenomena might be grouped, than as a unidimensional aspect of adolescent psycho-social development" (Steinberg and Silverberg, 1986, p. 841; cf. Ryan and Lynch, 1989). This diversity in conceptualizations of adolescent autonomy often makes the comparison of theories and empirical results difficult, sometimes impossible. The purpose of the present study was to examine different theoretical perspectives and to search for general dimensions in the concept of adolescent autonomy. We approached this task by first making an overview of theories in which autonomy or similarly labeled phenomena play a central role. These conceptualizations were found in the 3 theoretical approaches that prevail in adolescent autonomy research: the psychodynamic, the cognitive, and the eclectic approach. Researchers with psychodynamic, cognitive, and eclectic approaches have distinguished different aspects of autonomy. Psychodynamic researchers have stressed the relational changes between parents and adolescents. The unequal relationship between parents and child is gradually transformed into a more egalitarian relationship. In cognitive perspectives the importance of making a decision and the perception of control is stressed. The connection between attitude and behavior is specified in processes of listing the alternatives, making a choice, and being aware of one's own responsibility in these processes. In the eclectic perspectives the relational and cognitive aspects are integrated, often connected with a 3rd or 4th element.

Table I presents an overview of theoretical perspectives on adolescent independence (for an extensive review, see Noom, 1999). First, a list of all distinguished concepts was made. Second, all concepts were categorized according to the extent to which they refer to cognitive, affective, or regulatory processes. Third, based on this categorization a conceptual model was proposed, where an attempt was made to integrate all theoretical constructs into a model with a cognitive, an affective, and a regulatory dimension. Finally, a definition was presented for these dimensions.

In the definitions of the constructs, similarities and differences can be found. In most theories a cognitive element can be found, referring to cognitive processes of evaluating possibilities and desires, developing personal values, and defining personal goals. All these concepts have in common is that they refer to the perception adolescents have about what to do with their lives. We have labeled this dimension as *attitudinal autonomy*, defined here as "the ability to specify several options, to make a decision, and to define a goal." This idea of attitudinal autonomy is most closely related to the concepts of beliefs about one's capabilities (Bandura, 1977); attitudinal independence (Hoffman, 1984); goal setting (Markus and Wurf, 1987); reflection upon preferences, wishes, and desires (Dworkin, 1988); decision making (Frank *et al.*, 1988); and personal goals (Allen *et al.*, 1994).

Table I. A Comparison of Theoretical Perspectives on Adolescent Autonomy

Theoretical framework	Dimensions of adolescent autonomy		
	Cognitive dimension	Affective dimension	Regulatory dimension
Psychodynamic perspectives			
Autonomy (Douvan & Gold, 1966)	Moral autonomy	Emotional autonomy	Behavioral autonomy
Psychosocial maturity (Greenberger, 1984)	Identity		Self-reliance
Psychological separation (Hoffman, 1984)	Attitudinal independence	Emotional independence	Work orientation
Individuation (Grotevant and Cooper, 1985)	Self-assertion	Conflictual independence	Functional independence
Autonomy (Steinberg and Silverberg, 1986)	Separateness	Mutuality	
		Permeability	
		Emotional autonomy	
		Resistance to peer pressure	
		Subjective sense of self-reliance	
Autonomy and relatedness (Frank <i>et al.</i> , 1988)	Competence	Connectedness/separateness	
Autonomy and relatedness (Allen <i>et al.</i> , 1994)	Personal values	Emotional autonomy	
	Personal goals	Positive relationship with parents and peers	
Cognitive perspectives			
Self-efficacy theory (Bandura, 1977)	Causal attribution	Mood states	Selection of activities and environments
	Outcome expectancies		
	Goals		

(Continued)

Table I. (Continued)

Theoretical framework	Dimensions of adolescent autonomy		
	Cognitive dimension	Affective dimension	Regulatory dimension
Perceived control (Skinner <i>et al.</i> , 1988)			Control beliefs Means—ends beliefs Agency beliefs Cognitive preparation for action
Self-regulation (Markus and Wurf, 1987)	Goal setting Cycle of monitoring, judgement, evaluation		
Autonomy (Dworkin, 1988)	Reflect upon preferences Accepting or changing these preferences		
Eclectic perspectives Self-determination (Deci, 1980, Deci and Ryan, 1987)	Autonomy	Relatedness	Competence
Self-regulation (Flammer, 1991)	Internalization of actions Regulation of development	Social independence Social regulation Reactive autonomy	Personal control Reflective autonomy
Autonomy (Koesstner and Loster, 1996)			

Second, an emotional dimension can be discerned, which has both an affective and a relational meaning. This dimension involves the perception of emotional independence from parents and peers. Both parents and peers exert pressure on the adolescent to comply with their wishes. Adolescents need to maintain a feeling of confidence in their own goals, while showing consideration for the goals of others. We have labeled this dimension as *emotional autonomy*, to be defined here as “a feeling of confidence in one’s own choices and goals.” This concept of emotional autonomy has similarities with the definition of Douvan and Gold (1966), and with the concepts of emotional independence (Hoffman, 1984), resistance to peer pressure (Steinberg and Silverberg, 1986), self-other responsibility (Frank *et al.*, 1988), and social independence (Flammer, 1991). Steinberg’s concept of emotional autonomy (Steinberg, 1985, Steinberg and Silverberg, 1986) has a negative connotation and is generally considered to be better conceptualized as *detachment* (for a review on the “detachment debate,” see Silverberg and Gondoli, 1996).

Third, a regulatory dimension can be distinguished, which refers to different approaches to achieve one’s goal. This ability incorporates regulatory processes such as the perception of competence and the perception of control. The perception of competence concerns the availability of different strategies to achieve a goal. The perception of control refers to the ability to choose a specific strategy, which is effective enough to succeed. Furthermore, an important aspect that can function as an incentive for adolescent behavior is the perception of responsibility. We have labeled this regulatory dimension as *functional autonomy*, and we have defined this concept as “the ability to develop a strategy to achieve one’s goal”. This conception can be found best in the concepts of functional independence (Hoffman, 1984), cognitive preparation for action (Markus and Wurf, 1987), independence (Frank *et al.*, 1988), and personal control (Flammer, 1991).

In summary, a conceptual analysis of theoretical perspectives on aspects of independence has resulted in 3 dimensions: attitudinal, emotional, and functional autonomy. These 3 dimensions represent cognitive, affective, and regulatory aspects of adolescent behavior. Obviously, there is no perfect correspondence between the list of terms and these 3 dimensions. Some concepts have a broader meaning than attitudinal, emotional, or functional autonomy, and other concepts have a more limited meaning. Alternatively, no theory corresponds perfectly with the 3 proposed dimensions.

The primary aim of this study is to empirically test the plausibility of the proposed model and to determine its predictive value. It is hypothesized that autonomy can best be described as a set of 3 dimensions, referring to attitudinal, emotional, and functional aspects of behavior. The empirical test of this theoretical model involved several steps. In the first step, items representing attitudinal, emotional, and functional autonomy were selected based on a conceptual analysis. The second step consisted of a pilot study in which exploratory analyses were performed in order to select the best items for each construct. Finally, in the third

step confirmatory factor analyses were performed on the data of a national study to test the validity of the initial structure.

Second, the relationship among the 3 dimensions is examined. Several empirical studies have examined the relationship between dimensions of autonomy. Greenberger *et al.* (1975) have found a positive association between the autonomy subscales of their Psychosocial Maturity Inventory. The correlations between self-reliance, work orientation, and identity ranged from 0.51 to 0.71. Hoffman (1984) reported that functional and emotional independence were positively correlated ($r = 0.61$). Attitudinal independence was moderately correlated with emotional and functional independence (r ranging from 0.31 to 0.44). In summary, a moderate positive correlation between attitudinal, emotional, and functional autonomy is hypothesized. A positive relationship is expected because the dimensions share elements of the same ability, which is giving direction to one's own life. This relationship is expected to be moderate, because the dimensions refer to different behavioral aspects.

Third, the relationship between autonomy and other similar constructs is considered. Convergent and divergent validity is demonstrated by high correlations between comparable concepts and low correlations between distinct concepts. Three constructs are chosen to determine the convergent and divergent validity of attitudinal, emotional, and functional autonomy: perception of institutional goals, locus of control, and coping. *Perception of institutional goals* is described here as an individual set of aims that one wishes to achieve (Palmonari *et al.*, 1990). A correspondence is expected between attitudinal autonomy and the perception of goals. Both concepts represent the definition of personal aims. *Locus of control* refers to beliefs about what the causes are of one's own behavior (Rotter, 1966). An internal locus of control represents the belief that an individual is responsible for the outcome of his or her own behavior. An external locus of control represents the belief that other people have a great impact on one's own behavior. A positive correspondence is expected between emotional autonomy and an internal locus of control. It can be argued that both emotional autonomy and an internal locus of control are an outcome of the opinion that personal thoughts and feelings are an important basis for one's own behavior. *Coping* can be described as one's personal style of dealing with everyday problems (Schreurs *et al.*, 1988). A correspondence is expected between functional autonomy and an active coping style. Both functional autonomy and an active coping style refer to a functional approach of developing a strategy to achieve a specific goal. In summary, it is hypothesized here that the correlations between convergent concepts are higher than the correlations between the divergent concepts.

Fourth, the developmental nature of adolescent autonomy will be examined. Autonomy is described here as a developmental task: the achievement of autonomy is considered a developmental prerequisite for reaching adulthood. This assumption can be tested by examining age-related trends in the development of autonomy.

Enright *et al.* (1980) have reported an age-related increase in a general measure of autonomy. A few studies have reported an age-related increase of concepts resembling attitudinal autonomy. In a review of her own research Greenberger (1984) consistently found that the ability to define one's goals increases during adolescence. Frank *et al.* (1988) have found an age-related increase in feeling capable of making personal decisions.

Developmental changes in emotional autonomy are less clear. Some researchers have found a linear increase in the deidealization of parents (Smollar and Youniss, 1989; Steinberg and Silverberg, 1986). Douvan and Gold (1966) did not find any relation between emotional independence from parents and age. Other researchers have found a curvilinear pattern with respect to susceptibility to peer pressure, indicating that during preadolescence and late adolescence susceptibility to peer pressure is higher than during early and middle adolescence (Berndt, 1979; Hill and Holmbeck, 1986). Greenberger (1984) has found an age-related increase in self-confidence.

An increase in functional autonomy is reported by Douvan and Gold (1966) and Greenberger (1984). In their review Douvan and Gold reported a sharp increase of behavioral autonomy, indicating that older adolescents make a greater effort to regulate their own daily activities than younger adolescents. Furthermore, the growth of functional autonomy was found in an increase of the perception of control (Greenberger, 1984) and an increase in the perception of functional timetables (Bosma *et al.*, 1996; Jackson *et al.*, 1997).

In summary, empirical support has been found for an age-related increase in attitudinal and functional autonomy. The empirical evidence for an age-related increase in emotional autonomy has been inconclusive. In the present study, the 3 dimensions are considered as developmental tasks. Therefore, it is hypothesized here that a linear increase of attitudinal, emotional, and functional autonomy occurs during adolescence.

A final issue that is relevant to research on adolescent autonomy is the issue of sex differences. Judgments about one's autonomy may be different for boys and girls. In the literature, no clear picture of sex differences emerges. Frank *et al.* (1988) tested the hypothesis that girls would differ from boys in their experience of independence. The results showed that girls felt less emotional autonomy in relation to their parents than did boys. This finding has been supported by Ryan and Lynch (1989). Bandura, *et al.* (1996) did not find any sex differences with respect to academic, social, and self-regulatory efficacy. In the present study exploratory analyses will be performed to examine sex differences.

STEP 1: A CONCEPTUAL ANALYSIS

The purpose of the first step was to construct 3 self-report scales that represent attitudinal, emotional, and functional autonomy. For that purpose an item

pool of 50 items was created by selecting the items of an adult autonomy questionnaire (Bekker, 1991), about their ability to exercise control over their life. This questionnaire was selected because all 3 theoretical dimensions are represented in this item pool. However, the questionnaire is originally used for adults and many of the items are not relevant for adolescents. Moreover, the labels of the original scales (self-awareness, sensitivity to others, and the capacity for managing new situations) do not suffice for the 3 dimensions proposed in the present study.

Subsequently, the wording of the items was adapted to make them suitable for adolescents (Noom, 1999). The adolescents were asked to indicate their degree of agreement with each statement on a 5-point scale ranging from *this is a very bad description of me* to *this is a very good description of me*. Half the items were worded such that a positive response would indicate greater autonomy, the remaining items were worded in the opposite direction.

The conceptual analysis was conducted by 2 independent researchers. Both researchers evaluated each of the 50 items and decided whether the item was an indication of attitudinal, emotional, or functional autonomy according to the definitions of our theoretical model. As can be seen in Table II, there was agreement on 8 items referring to attitudinal autonomy, 21 items referring to emotional autonomy, and 7 items referring to functional autonomy.

There was also agreement on 6 items, which were not considered to be referring to any of the 3 aspects of adolescent autonomy and were subsequently dropped. There was disagreement on 8 items, which were also subsequently dropped. Cohen's kappa was computed and reached 0.77. In conclusion, a conceptual analysis resulted in a first selection of 36 items.

The most important conclusion to be drawn here is that at least in theory it is possible to make a distinction between cognitive, emotional, and behavioral elements of autonomy. Obviously there is a clear conceptual difference in the operationalization of these constructs. Further, we go on to conclude that the proposed model of attitudinal, emotional, and functional autonomy can function properly as an integrative model of the different theoretical perspectives. The next step was to test this hypothetical model in an empirical study.

Table II. Results of the Conceptual Analysis by Two Researchers

	Researcher 1				
	Attitudinal autonomy	Emotional autonomy	Functional autonomy	Other	Total
Researcher 2					
Attitudinal autonomy	8	1	—	—	9
Emotional autonomy	1	21	—	—	22
Functional autonomy	—	1	7	—	8
Other	1	2	2	6	11
Total	10	25	9	6	50

STEP 2: PILOT STUDY

Method

Subjects

Subjects were 58 adolescents (age 12 to 15 years, mean age = 13.9 years, SD = 0.92) in a pilot study. All subjects were pupils from 4 secondary schools (32 boys and 26 girls). All adolescents were visited at home, where they filled in a number of questionnaires on psychosocial development.

Measure

The 36 selected items of the Adolescent Autonomy Questionnaire (Noom, 1999) were used in this study. Information about this measure is provided in Step 1.

Results

Means, standard deviations, skewness, kurtosis, and corrected item-total correlations are presented in Table III. First, it was decided to remove the items with a skewness greater than 1 or less than -1 , to remove the items with a kurtosis of greater than 1 or less than -1 , and to remove the items with a corrected item-total correlation of less than .30. These steps resulted in a selection of 5 items for attitudinal autonomy, 8 items for emotional autonomy, and 4 items for functional autonomy (Stevens, 1986). To reduce overlap 4 items for emotional autonomy were dropped (AL19, AL23, AL40, and AL45). Item AL27 was not removed for reasons concerning the content of the item. For functional autonomy item AL31 was dropped and item AL10 was not removed. Finally, this resulted in 3 subscales consisting each of 5 items.

This step was aimed at selecting the best items for each dimension, based on both empirical and theoretical assumptions. For each dimension 5 items are selected. The primary aim of the next step was to test this model in a confirmatory factor analysis.

STEP 3: CONFIRMATORY FACTOR ANALYSIS

Method

Subjects

The sample consisted of 400 Dutch adolescents: 199 boys and 201 girls who ranged in age from 12 to 18 years (mean age = 15.0 years, SD = 1.85).

Table III. Descriptive Statistics of the 36 Selected Items

	<i>N</i>	Mean	Standard deviation	Skewness	Kurtosis	Corrected item-total correlation
Attitudinal						
<i>AL01</i>	58	3.98	1.01	−0.73	−0.64	0.45
<i>AL08</i>	58	3.04	1.06	−0.09	−0.42	0.54
<i>AL11</i>	58	3.84	1.25	−0.84	−0.28	0.31
<i>AL17</i>	58	4.35	0.73	−1.10	0.53	0.62
<i>AL26</i>	58	3.23	1.00	−0.01	−0.23	0.52
<i>AL38</i>	58	3.23	1.03	0.53	−0.58	0.42
<i>AL43</i>	58	3.65	0.99	−0.10	−1.06	0.60
<i>AL50</i>	58	3.78	1.01	−0.44	−0.54	0.29
Emotional						
<i>AL03</i>	58	2.56	1.12	0.50	−0.74	0.16
<i>AL04</i>	58	3.39	1.27	−0.41	−0.78	0.50
<i>AL06</i>	56	2.86	1.28	0.20	−0.78	0.10
<i>AL09</i>	58	2.97	1.55	0.03	−1.53	0.42
<i>AL14</i>	56	3.36	1.37	−0.21	−1.34	0.53
<i>AL15</i>	58	3.97	1.05	−1.03	0.85	−0.08
<i>AL16</i>	58	3.28	1.07	0.06	−0.58	0.53
<i>AL18</i>	56	4.44	0.99	−0.98	0.40	0.44
<i>AL19</i>	56	3.17	1.21	−0.10	−0.99	0.66
<i>AL22</i>	58	3.46	1.13	−0.27	−0.58	−0.18
<i>AL23</i>	58	3.27	1.12	0.07	−0.83	0.54
<i>AL24</i>	58	2.12	1.00	0.76	−0.21	0.08
<i>AL27</i>	58	3.74	1.08	−0.35	−1.04	0.29
<i>AL32</i>	58	2.88	1.24	0.17	−0.76	0.19
<i>AL34</i>	58	2.49	1.03	0.04	−1.05	0.24
<i>AL35</i>	58	3.23	1.23	0.26	−1.29	0.52
<i>AL36</i>	58	3.46	1.13	−0.10	−0.94	0.53
<i>AL40</i>	58	3.28	1.10	−0.28	−0.49	0.52
<i>AL41</i>	56	2.09	1.11	1.30	1.17	0.19
<i>AL45</i>	58	2.91	1.03	−0.09	−0.19	0.58
<i>AL48</i>	58	3.04	0.89	0.61	0.67	0.24
Functional						
<i>AL02</i>	58	3.71	0.94	−0.63	0.46	0.31
<i>AL10</i>	58	3.17	1.34	−0.16	−1.23	0.30
<i>AL21</i>	58	3.23	0.99	0.35	−0.92	0.49
<i>AL31</i>	58	3.54	1.26	−0.73	−0.40	0.40
<i>AL39</i>	58	4.03	0.92	−0.43	−0.99	0.22
<i>AL46</i>	58	3.49	1.06	−0.53	−0.46	0.66
<i>AL49</i>	58	3.31	1.19	−0.17	−0.66	0.19

All subjects were pupils at a secondary school. They were predominantly white and from a broad range of socioeconomic backgrounds. Socioeconomic status (SES) was based on parental occupation and parental education, and treated as a 3-level variable with 28% of the families classified as blue-collar (unskilled labor, skilled labor, and lower-grade civil servants), 63% as white-collar (tradesmen, office workers, and higher-grade civil servants), and 9% as professional (managers, academic, and technical occupations). No significant differences occurred for age and SES between boys and girls. Furthermore, no significant

differences occurred for sex and SES between younger adolescents and older adolescents.

Procedure

The data were collected via a questionnaire battery administered to the adolescents during a home visit. The questionnaires were administered individually as part of a larger national program of research on family relations and child development.

Measures

The concept of *adolescent autonomy* was measured using the 15 selected items of the Adolescent Autonomy Questionnaire (Noom, 1999). More information about this measure is provided in Study 1. The following concepts were measured to determine the construct validity of the adolescent autonomy questionnaire.

Institutional goals were measured using a subscale of a Developmental Task Questionnaire (Palmonari, *et al.*, 1990). This subscale consists of 4 items referring to socioinstitutional tasks. Subjects were asked to indicate on a 5-point scale ranging from “difficult” to “easy” to what extent they found it easy to identify their individual goals. A high score reflects a clear view on one’s personal goals. The participants’ ratings were averaged to yield an overall score. Cronbach’s alpha reached 0.69.

Locus of control concerns an individual’s perception of the impact of internal and external influences on one’s own behavior. Locus of control was measured using the IE-18 Locus of Control Scale (Andriessen and Cadsand, 1983; Rotter, 1966). The IE-scale is an 18-item questionnaire consisting of 2 subscales: internal and external locus of control. These 18 items are assessed on a 6-point scale, ranging from *definitely not true* to *definitely true*. An average score of these 18 items was computed, recoded so that a higher score represents a higher internal locus of control. Cronbach’s alpha for the entire scale was 0.73.

Coping refers to one’s personal way of dealing with everyday problems. In the present study, the strategy of active coping was measured by 6 items (Schreurs *et al.*, 1988). The items were rated on a 4-point scale ranging from *seldom* to *very often*. Cronbach’s alpha reached 0.77. All scores were computed by calculating the mean score of the items.

Results

Five aspects were examined to test the empirical validity of this questionnaire: a confirmatory test of the 3 dimensions of autonomy, the relationship between the

Table IV. Means and Standard Deviations of the 15 Selected Autonomy Items

Item description	Mean	SD	Sk.	Krt.	CIRC
Attitudinal autonomy					
A1. Finding it difficult to decide (–)	3.70	1.05	–0.36	–0.67	0.51
A2. Making a choice easily	3.29	1.03	–0.17	–0.44	0.48
A3. Not knowing what to think (–)	3.64	0.99	–0.29	–0.60	0.41
A4. When asked, knowing what you want	3.30	0.92	–0.07	0.02	0.41
A5. Often being in doubt about what to do (–)	3.09	1.03	0.07	–0.50	0.54
Subscale	3.41	0.68			
Emotional autonomy					
E1. Getting nervous when imposing will on others (–)	3.58	1.02	–0.15	–0.93	0.33
E2. Having the tendency to adapt to others (–)	3.08	1.03	0.18	–0.50	0.28
E3. When disagreeing with somebody, expressing this	3.88	0.90	–0.39	–0.44	0.29
E4. Easily giving in to others, even when not sure (–)	3.48	0.89	–0.14	0.03	0.42
E5. Changing one's mind, when listening to others (–)	3.48	0.93	–0.17	–0.16	0.43
Subscale	3.50	0.59			
Functional autonomy					
F1. Going for a goal	3.53	0.97	–0.43	0.03	0.39
F2. Finding it difficult to start a new activity alone (–)	3.22	1.14	–0.10	–0.90	0.34
F3. Easily stepping up to something new	3.11	1.03	0.06	–0.47	0.55
F4. Being very adventurous	3.54	1.08	–0.42	–0.44	0.32
F5. Feeling at ease in new situations	3.29	0.96	–0.21	–0.15	0.32
Subscale	3.34	0.67			

Note. Item values vary from 1 (*not at all descriptive of me*) to 5 (*very descriptive of me*). All negatively formulated items are recoded. Sk.: skewness; Krt.: kurtosis; CIRC: corrected item-total correlation.

dimensions of autonomy, the relationship between autonomy and other indices of independence, age-related trends in the development of autonomy, and sex differences in the development of autonomy.

Table IV presents the means and standard deviations of the final selection of 15 items. The means indicate that there was a slight tendency among adolescent boys than girls to have a more positive judgment about their autonomy. The intercorrelations of the 15 items are given in Table V.

Confirmatory factor analyses were performed using structural equation modeling (LISREL8, Jöreskog and Sörbom, 1993). The aim of this step was to test whether the proposed model of 15 items was the best representation of the theoretical constructs and provided the best fit for the structural equation model. In the structural model, the 15 items were assumed to be related to 3 latent constructs. The empirical value of the theoretical model was tested by comparing the fit of a 3-factor model with the fit of the 1-factor model.

Table VI presents the goodness of fit indices for the 2 models. Four indices of fit were employed here to evaluate the models: a goodness of fit index (GFI), the adjusted goodness of fit index (AGFI), the root mean square residual (RMSR), and the descriptive ratio of chi square to degrees of freedom, with an acceptable ratio varying between 2 and 3 for large samples (Loehlin, 1992). The fit of the model with 3 factors was superior to that with 1 factor. An RMSR of 0.05, a GFI of 0.93, and an

Table V. Correlation Matrix of the 15 Selected Autonomy Items

	A1	A2	A3	A4	A5	E1	E2	E3	E4	E5	F1	F2	F3	F4	F5
A1	1.00														
A2	0.33**	1.00													
A3	0.40**	0.21**	1.00												
A4	0.29**	0.38**	0.21**	1.00											
A5	0.39**	0.44**	0.34**	0.30**	1.00										
E1	0.29**	0.17**	0.24**	0.20**	0.26**	1.00									
E2	0.25**	0.02	0.27**	0.10	0.29**	0.16**	1.00								
E3	0.26**	0.27**	0.25**	0.26**	0.17**	0.21**	0.10	1.00							
E4	0.14**	0.15**	0.23**	0.10	0.20**	0.25**	0.24**	0.21**	1.00						
E5	0.25**	0.14**	0.26	0.17**	0.29**	0.24**	0.25**	0.25**	0.36**	1.00					
F1	0.25**	0.37**	0.16**	0.29**	0.17**	0.11	0.11	0.29**	0.13**	0.14	1.00				
F2	0.34**	0.23**	0.35**	0.22**	0.33**	0.21**	0.22**	0.21**	0.20**	0.20**	0.20**	1.00			
F3	0.20**	0.32**	0.11	0.30**	0.25**	0.15**	0.19**	0.26**	0.12**	0.11	0.36**	0.43**	1.00		
F4	0.01	0.15**	0.03	0.11	0.06	0.03	0.09	0.19**	-0.01	0.04	0.24**	0.11	0.27**	1.00	
F5	0.18**	0.29**	0.10	0.22**	0.18**	0.19**	0.14**	0.19**	0.10	0.07	0.28**	0.21**	0.35**	0.28**	1.00

Note. All negatively formulated items are recoded.
** $p < 0.01$

Table VI. Fit Indices for the 1-Factor Model and the 3-Factor Model

Model description	χ^2	df	χ^2/df	RMSR	GFI	AGFI
1-factor model	339.0	90	3.8	0.07	0.88	0.85
3-factor model	260.0	87	2.8	0.05	0.93	0.90
$\chi^2{}^a$	79.0					

Note. RMSR: root mean square of the residuals; GFI: goodness of fit index; AGFI: adjusted goodness of fit index.

^aDifference of Model 1 vs. Model 2 ($p < 0.001$).

AGFI of 0.90 all indicated an acceptable fit of the 3-factor model. In particular, the improvement in chi square of 79.0 was large and significant. These findings support the hypothesis that adolescent autonomy can be conceptualized as a construct with 3 dimensions. Multigroup analyses were performed and revealed no significant differences between boys and girls, or between younger and older adolescents. Standardized structural coefficients and standard errors for all items are presented in Fig. 1. Next, internal consistency alphas were computed to determine the coherence of the items. The alphas were moderate, but satisfactory: 0.71 for attitudinal autonomy, 0.60 for emotional autonomy, and 0.64 for functional autonomy.

The relationship between the dimensions of autonomy was examined by computing their intercorrelations. The intercorrelations between the dimensions indicated a moderate positive relationship between attitudinal, emotional, and functional autonomy, as expected. Attitudinal autonomy showed a positive correlation with emotional autonomy ($r = 0.50, p < 0.01$) and functional autonomy ($r = 0.48, p < 0.01$). Additionally, emotional autonomy showed a positive correlation with functional autonomy ($r = 0.38, p < 0.01$). This can be interpreted as further evidence for the assumption that attitudinal, emotional, and functional autonomy are related but separate aspects of adolescent autonomy.

The relationship between autonomy and other indices of independence can give an indication of the convergent and divergent validity of this concept (see Table VII). For attitudinal autonomy the highest correlation was found with perception of institutional goals ($r = 0.24, p < 0.01$), confirming the cognitive nature of this aspect of autonomy. For emotional autonomy the highest correlation was found with locus of control ($r = 0.25, p < 0.01$), referring to a feeling of self-confidence and trust. For functional autonomy the highest correlation was found

Table VII. Correlations Between Dimensions of Autonomy and Other Indices of Independence

	Attitudinal autonomy	Emotional autonomy	Functional autonomy
Institutional goals	0.24**	0.10**	0.12**
Internal locus of control	0.20**	0.25**	0.10
Active coping	0.16**	0.17**	0.26**

** $p < 0.01$

Fig. 1. Confirmatory factor model of adolescent autonomy (Parameter estimates are standardized and all coefficients are significant with $p < 0.01$).

with active coping ($r = 0.26$, $p < 0.01$). The positive relationship with active coping demonstrated the regulatory nature of functional autonomy. However, it must be kept in mind that all 3 dimensions of autonomy refer to perceptual processes: the perception of goals, the perception of self-confidence, and the perception of strategies. Taken together, these results provide some support for the validity of the dimensions of autonomy.

Age-related trends in the development of autonomy were examined by a 2 (Sex) $\times$ 2 (Age) analysis of variance (ANOVA) on attitudinal, emotional, and functional autonomy. Age was recoded in early adolescence (12 to 14 years) and middle adolescence (15 to 18 years). A significant main effect for age was found in attitudinal autonomy, $F(1, 400) = 3.75$, $p < 0.05$, and emotional autonomy, $F(1, 400) = 6.53$, $p < 0.01$. Cohen's⁴ d was computed to determine the effect

⁴Cohen (1997) has defined a population effect size as $d = (\mu_1 - \mu_2)/\sigma$, where σ is the assumed common population standard deviation. Cohen has suggested as a rough rule of thumb that an effect size around 0.20 is small, an effect size around 0.50 is medium, and an effect size >0.80 is large.

size. For both dimensions small effects were found ($d = 0.19$ for attitudinal autonomy, $d = 0.29$ for emotional autonomy). There appeared to be a linear increase from early to middle adolescence in the ability to define one's goals and the ability to become emotionally independent from others. The regulatory domain appeared to be relatively stable and may begin to increase in late adolescence or young adulthood.

In 2 of the 3 dimensions of autonomy a significant main effect for gender was found. Boys perceive themselves as more autonomous than girls in the attitudinal domain, $F(1, 400) = 9.29$, $p < 0.01$, Cohen's $d = 0.31$, and in the functional domain, $F(1, 400) = 13.70$, $p < 0.01$, Cohen's $d = 0.35$.

GENERAL DISCUSSION

Adolescent autonomy is a concept with a very diverse theoretical background. Several theories within different psychological perspectives describe the process of gradual separation from parental influences. The aim of this study was to search for a general model that encompasses the elements of most of these theories. A general model was developed in which adolescent autonomy was defined as consisting of 3 sets of abilities: attitudinal, emotional, and functional autonomy. Attitudinal autonomy refers to the cognitive process of listing one's possibilities and making a choice about which option to choose: attitudinal autonomy is achieved when adolescents are able to define their goals. This dimension of autonomy is resembling Dworkin's conceptualization: reflection upon preferences, wishes, and desires (Dworkin, 1988). In general it refers to the ability to think before acting.

Emotional autonomy refers to the affective process of becoming emotionally independent from parents and peers: emotional autonomy is achieved when adolescents feel the confidence to define their goals independent of the wishes of parents and peers. Emotional autonomy has evoked a lively debate on the meaning and operationalization of the concept. Initially the concept was defined by Steinberg and his colleagues as independence from parents and peers (Steinberg, 1985; Steinberg and Silverberg, 1986). However, Ryan and Lynch (1989) found that emotional autonomy was *negatively* related to other indices of psychosocial development during adolescence. They challenged Steinberg's operationalization and suggested that it should be labeled as *detachment*, with the implication that a high score on this measure signified a negative form of breaking away from parents (cf. Silverberg and Gondoli, 1996). In the present study a positive definition and operationalization of emotional autonomy are proposed, as a general feeling of confidence and trust in one's own choices. This definition and operationalization have been confirmed by the empirical results of this study, manifested in the positive correlations between attitudinal, emotional, and functional autonomy (cf. Noom and Deković, 1998; Noom *et al.*, 1999).

Functional autonomy refers to the regulatory process of developing a strategy to achieve one's aims: functional autonomy is achieved when adolescents are able to develop their way in how to reach their goals. Functional autonomy has a close resemblance with the approach of developmental timetables (e.g., Deković *et al.*, 1997). Both concepts refer to the process of taking control over activities. However, most research on developmental timetables is concentrated on finding age-appropriate occurrences of specific tasks. The present study was an attempt to focus on general abilities concerning regulating one's own behavior.

In the past two decades a number of researchers have described distinctive elements of adolescent independence (for a recent review, see Silverberg and Gondoli, 1996). These theories have brought about relatively separate lines of research, with an accent on Steinberg's concept of emotional autonomy. Only a few studies have examined and tested a constellation of cognitive, emotional, and behavioral elements of adolescent autonomy (Frank *et al.*, 1988; Grotevant and Cooper, 1985, 1986; Hoffman, 1984). Bekker (1991) is the only study in which an attempt was made to capture each of the 3 domains in one questionnaire. However, this questionnaire was developed for the measurement of *adult* autonomy. Our aim was to combine the cognitive, emotional, and behavioral concepts and to integrate them with theories on adolescent autonomy. This conceptual model was empirically tested and confirmed in a structural equation model, indicating that adolescent autonomy can be conceptualized as a construct with these 3 dimensions. Furthermore, the moderate correlations among the 3 concepts point out that the 3 concepts are separate entities but do refer to a general concept of autonomy.

The relationship between autonomy and other indices of independence also indicates that the 3 dimensions refer to 3 distinctive domains of behavior. However, the differences are small, which demonstrates that there is also a considerable overlap among the 3 dimensions. These results confirm the general pattern that emerged in the confirmatory factor analysis: 3 distinct domains of autonomous behavior can be distinguished, which show strong connections with each other.

Attitudinal and emotional autonomy appear to show a small but significant increase with age. From early to middle adolescence there seems to be an increase in the ability to define one's goals and to define these personal aims independent of the desires of significant others. There is no age-related increase in functional autonomy. An explanation for this result could be that functional autonomy has a different developmental schedule and increases during late adolescence. The ability to determine one's own goals may be a developmental prerequisite for the ability to achieve these goals.

Boys appear to have a more positive perception of their attitudinal and functional autonomy than do girls. An explanation for this result is that boys are encouraged more than girls to think about their future and to take steps to achieve their goals. A few researchers have argued that boys are socialized toward more autonomy, and girls toward more communion or connectedness (Block, 1983; Gilligan, 1982). It could also be that girls do consider these questions, but later than boys.

An alternative explanation could be that boys overall are more positive about their abilities than are girls. In other words, they may differ in their perception but not in their behavior.

In this study some preliminary evidence is presented about the latent dimensions of adolescent autonomy. The value of the presented model is threefold. First, it is an attempt to integrate several theories with a conceptual overlap. Second, it can be a useful instrument to compare different empirical studies. Third, it can generate new research on the empirical validity of this model.

REFERENCES

- Allen, J. P., Hauser, S. T., Bell, K. L., and O'Connor, T. (1994). Longitudinal assessment of autonomy and relatedness in adolescent-family interactions as predictors of adolescent ego development and self-esteem. *Child Dev.* 65: 179–194.
- Andriessen, J. H. T. H., and Cadsand, J. P. van (1983). Een analyse van de Nederlandse IE-schaal [An analysis of the Dutch IE-scale]. *Nederlands Tijdschrift voor de Psychologie*, 27: 173–198.
- Bandura, A. (1977). Self-efficacy: Toward a unified theory of behavioral change. *Psychol. Rev.* 84: 191–215.
- Bandura, A., Barbaranelli, C., Caprara, G. V., and Pastorelli, C. (1996). Multifaceted impact of self-efficacy beliefs on academic functioning. *Child Dev.* 67: 1206–1222.
- Bekker, M. H. J. (1991). *De Bewegelijke Grenzen Van Het Vrouwelijk Ego [The movable boundaries of the female ego]*. Eburon, Delft.
- Berndt, T. J. (1979). Developmental changes in conformity to peers and parents. *Dev. Psychol.* 15: 608–616.
- Block, J. H. (1983). Differential premises arising from differential socialization of the sexes: Some conjectures. *Child Dev.* 54: 1335–1354.
- Bosma, H. A., Jackson, S. E., Zijlsing, D. H., Zani, B., Cicognani, E., Xerri, M. L., Honess, T. M., and Charman, L. (1996). Who has the final say? Decisions on adolescent behaviour within the family. *J. Adolesc.* 19: 277–291.
- Cohen, J. (1977). *Statistical Power Analysis for the Behavioral Sciences*. Academic Press, New York.
- Deci, E. L. (1980). *The Psychology of Self-Determination*. Lexington Books, Lexington, MA.
- Deci, E. L., and Ryan, R. M. (1987). The support of autonomy and the control of behavior. *J. Pers. Soc. Psychol.* 53: 1024–1037.
- Deković, M., Noom, M. J., and Meeus, W. (1997). Expectations regarding development during adolescence: Parental and adolescent perceptions. *J. Youth Adolesc.* 26: 253–272.
- Douvan, E., and Gold, M. (1966). Modal patterns in American adolescence. In Hoffman, L. W., and Hoffman, M. L. (eds.), *Review of child development research* (Vol. 2). Russell Sage Foundation, New York, pp. 469–528.
- Dworkin, G. (1988). *The Theory and Practice of Autonomy*. Cambridge University Press, Cambridge.
- Enright, R. D., Lapsley, D. K., Drivas, A. E., and Fehr, L. A. (1980). Parental influences on the development of adolescent autonomy and identity. *J. Youth Adolesc.* 9: 529–545.
- Flammer, A. (1991). Self-regulation. In Lerner, R. M., Petersen, A. C., and Brooks-Gunn, J. (eds.), *Encyclopedia of Adolescence* (Vol. 2). Garland Publishing, New York, pp. 1001–1003.
- Frank, S. J., Avery, C. B., and Laman, M. S. (1988). Young adults' perceptions of their relationships with their parents: Individual differences in connectedness, competence, and emotional autonomy. *Dev. Psychol.* 24: 729–737.
- Gilligan, C. (1982). New maps of development: New visions of maturity. *Am. J. Orthopsychiatry*, 52: 199–212.
- Greenberger, E. (1984). Defining psychosocial maturity in adolescence. In Karoly, P., and Steffen, J. J. (eds.), *Adolescent Behavior Disorders: Foundations and Contemporary Concerns* (Vol. 3.). Lexington Books, Lexington, MA, pp. 3–37.
- Greenberger, E., Josselson, R., Knerr, C., and Knerr, B. (1975). The measurement and structure of psychosocial maturity. *J. Youth Adolesc.* 4: 127–143.

- Grotevant, H. D., and Cooper, C. R. (1985). Patterns of interaction in family relationships and the development of identity exploration in adolescence. *Child Dev.* 56: 415–428.
- Grotevant, H. D., and Cooper, C. R. (1986). Individuation in family relationships: A perspective on individual differences in the development of identity and role-taking skill in adolescence. *Human Dev.* 29: 82–100.
- Havighurst, R. (1948). *Developmental Tasks and Education*. McKay, New York.
- Hill, J. P., and Holmbeck, G. N. (1986). Attachment and autonomy during adolescence. *Ann. Child Dev.* 3: 145–189.
- Hoffman, J. A. (1984). Psychological separation of late adolescents from their parents. *J. Counsel. Psychol.* 31: 170–178.
- Jackson, S., Bosma, H., and Zijlsing, D. (1997). Beslissen jongeren zelf over alles? Grenzen voor ouders en opvoeders [Do adolescents make their own decisions? Limits for parents and educators]. In Gerris, J. R. M. (ed.), *Jongerenproblematiek: Hulpverlening en Gezinsonderzoek*. Van Gorcum, Assen, pp. 77–91.
- Jöreskog, K. G., and Sörbom, D. (1993). *LISREL 8: Structural Equation Modeling With the SIMPLIS Command Language*. Erlbaum, Hillsdale, NJ.
- Koestner, R., and Losier, G. F. (1996). Distinguishing reactive versus reflective autonomy. *J. Pers.* 64: 465–494.
- Loehlin, J. C. (1992). *Latent Variable Models: An Introduction to Factor, Path, and Structural Analysis* (2nd edn.). Erlbaum, Englewood Cliffs, NJ.
- Markus, H., and Wurf, E. (1987). The dynamic self-concept: A social psychological perspective. *Ann. Rev. Psychol.* 38: 299–337.
- Noom, M. J. (1999). *Adolescent Autonomy: Characteristics and Correlates*. Eburon, Delft, The Netherlands.
- Noom, M. J. and Deković, M. (1998). Family interaction as a context for the development of adolescent autonomy. In Hofer, M., Youniss, J., and Noack, P. (eds.), *Verbal Interaction and Development in Families With Adolescents*. Ablex, Greenwich, CT, pp. 109–125.
- Noom, M. J., Deković, M., and Meeus, W. (1999). Autonomy, attachment, and psychosocial adjustment during adolescence: A double-edged sword? *J. Adolesc.* 22: 771–783.
- Palmonari, A., Pombeni, M. L., and Kirchler, E. (1990). Adolescents and their peer groups: A study on the significance of peers, social categorization processes and coping with developmental tasks. *Soc. Behav.* 5: 33–48.
- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychol. Monogr.* 80: 1–28.
- Ryan, R. M., and Lynch, J. H. (1989). Emotional autonomy versus detachment: Revisiting the vicissitudes of adolescence and young adulthood. *Child Dev.* 60: 340–356.
- Schreurs, P. J. G., Van de Willige, G., Tellegen, B., and Brosschot, J. F. (1988). *Utrechtse Coping Lijst (UCL) [The Utrecht Coping Questionnaire]*. Utrecht University, Utrecht.
- Silverberg, S. B., and Gondoli, D. M. (1996). Autonomy in adolescence: A contextualized perspective. In Adams, G., Montemayor, R., and Gullotta, T. (eds.), *Psychosocial Development During Adolescence: Progress in Developmental Contextualism*. Sage, Thousand Oaks, CA, pp. 12–61.
- Skinner, E. A., Chapman, M., and Baltes, P. B. (1988). Beliefs about control, means-ends, and agency: A new conceptualization and its measurement during childhood. *J. Pers. Soc. Psychol.* 54: 117–133.
- Smollar, J., and Youniss, J. (1989). Transformations in adolescent's perceptions of parents. *Int. J. Behav. Dev.* 12: 71–84.
- Steinberg, L. (1985). *Adolescence*. Alfred A. Knopf, New York.
- Steinberg, L., and Silverberg, S. B. (1986). The vicissitudes of autonomy in early adolescence. *Child Dev.* 57: 841–851.
- Stevens, J. (1986). *Applied Multivariate Statistics for the Social Sciences*. Erlbaum, Hillsdale, NJ.