Anxiety Trajectories and Identity Development in Adolescence: A Five-wave Longitudinal Study

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Abstract The aim of this five-wave longitudinal study was to investigate the relationship between anxiety and adolescent identity development. Participants were 1,313 adolescents who annually completed measures of anxiety and identity. Growth Mixture Modeling (GMM) analyses demonstrated that the adolescent population was best typified by two latent growth trajectory classes: a *low anxiety class* ($n = 1,199$) characterized by a low initial level of anxiety that decreased over time and a *high anxiety class* ($n = 114$) characterized by a higher initial level of anxiety that increased over time. To answer our research question, we tested a model in which the anxiety classes predicted initial levels and rates of change of three identity dimensions: commitment, in-depth exploration, and reconsideration of commitment. Findings indicated that the high anxiety adolescents displayed a more troublesome identity development than their low anxiety peers, since their commitments became weaker with age, and they reconsidered them intensively.

Introduction

The development of a coherent and organized sense of identity (Erikson 1950) is a key task in adolescence. Individuals may evaluate various alternatives before making firm identity commitments. This process has a positive and a negative side: on the one hand it is exhilarating because it corresponds to the human need to search for and to find a personal identity, but on the other hand it is often painful, since choosing requires the adolescent to give-up other possibilities that also might be attractive (Palmonari et al. 1992). Thus, adolescents might oscillate between the wish to become committed to relevant life domains, and the fear to make wrong choices. Furthermore, this uncertainty may be enhanced when the adolescent also suffers from psychosocial problem behaviors, such as anxiety symptoms, that can compound uncertainty.

In this study, we will examine whether individuals with various levels of anxiety manage the identity formation task in different ways. In particular, we will address two issues: first, we will study the relationship between anxiety and identity longitudinally, in order to examine whether and how anxiety affects identity development over a five-year period. Second, we will adopt an identity process framework since identity is a dynamic process. As adolescents may continuously change their commitments when they are confronted with new alternatives (Bosma 1985), process-oriented models are needed to adequately study

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identity formation. Specifically, we will employ a recent three-factor identity process model, comprising commitment, in-depth exploration and reconsideration of commitment (Crocetti et al. 2008), that mainly focuses on the dynamics by which adolescents form, evaluate, and revise their identity over time.

Identity Models

Inspired by the seminal contribution of Erikson (1950), Marcia (1966) identified two core variables of the identity formation process: *exploration* (actively questioning and weighting up various identity alternatives before making a decision about values, beliefs, and goals to pursue); and *commitment* (making a relatively firm choice in an identity domain and engaging in significant activities toward the implementation of that choice). Marcia (1966) described four identity statuses, based on the extent to which individuals explore and make a specific commitment in an identity domain. Adolescents in the *achievement* status have formed identity commitment after a period of active exploration. Individuals in the *foreclosure* status have chosen their commitments without having explored other possible alternatives. Adolescents in *moratorium* are actively exploring different alternatives without having strong current commitments. Individuals in the *diffusion* status do not actively explore different identity alternatives and lack strong identity commitments. Consistent findings pointed out that adolescents in the various identity statuses were found to be clearly differentiated in terms of personality characteristics, psychosocial problems and well-being, cognitive processes, and interpersonal behaviors (for a review, see Kroger 2003).

The identity status paradigm has inspired a large number of studies (Berzonsky and Adams 1999). Nevertheless, since the end of the 1980's, the identity status model has also received much criticism. A major criticism is that the identity status approach is focused on possible outcomes of identity development (i.e., the various identity statuses), but does not explain how identity is formed and changed over time (Bosma 1985). This critique to Marcia's model has been constructive, since it gave a new impulse to the field of identity research. Grotevant (1987), Stephen et al. (1992) and Marcia (1993) himself recognized the importance of studying the process of identity formation rather than focusing exclusively on its outcomes. Thus, various scholars have taken up this challenge by proposing process models of identity formation (Bosma 1985; Kerpelman et al. 1997; Luyckx et al. 2006; Meeus 1996; Meeus et al. 1999).

Within this line of research, Crocetti et al. (2008) expanded Marcia's paradigm and developed a process model of identity formation, building upon previous work by Meeus (1996). Specifically, they took into account commitment, in-depth exploration, and reconsideration of commitment as pivotal identity processes. *Commitment* refers to strong choices that adolescents have made with regard to various developmental domains and self-confidence they derive from these choices. *In-depth exploration* represents the extent to which adolescents explore current commitments actively, reflect on their choices, look for information, and talk with others about them. *Reconsideration of commitment* refers to the comparison of present commitments with possible alternative commitments because the current ones are no longer satisfactory.

This conceptualization of the process of identity formation implies a two-pronged evaluation of present commitments. In other words, in-depth exploration indicates whether or not adolescents explore their present commitments in an active manner, while reconsideration of commitment indicates whether adolescents consider changing their present commitments in favor of new ones. Reconsideration of commitment is quite similar to Marcia's concept of exploration since both reconsideration and exploration refer to searching for new commitments. It does differ from Marcia since reconsideration of commitments assumes that new commitments will replace the older ones, whereas Marcia's concept of exploration only describes the searching and finding of new commitments.

Crocetti et al.'s (2008) three factor model is strongly rooted in Erikson's (1968) theory. In fact, by including reconsideration of commitment, Erikson's dynamic of "identity achievement versus and identity confusion", as originally proposed in his epigenetic chart, can be studied. The epigenetic chart indexes key concerns and conflict in various phases of life. Identity development is the key concern in adolescence, and identity development moves between a positive and negative resolution, namely identity achievement versus identity confusion. Commitment and reconsideration are regarded as two opposing forces in this process: whereas commitment covers the tendency to find security in life (identity), reconsideration stands for the opposing force that questions this security (identity confusion). So, the inclusion of both processes in this model serves the purpose of capturing the insecurity/security issue that Erikson considers to be typical for identity formation during the adolescent years.

This three-factor model of identity, comprising commitment, in-depth exploration, and reconsideration of commitment, was demonstrated in a study by Crocetti et al. (2008) to be better than alternative one- and two-factor models. Crocetti et al. did so by means of confirmatory factor analysis. Furthermore, the three-factor model not only applied to a general sample but also to boys and girls, early and middle adolescent age groups and different ethnic adolescent groups. Thus, the three-factor model can be a

useful theoretical tool to investigate identity formation in various groups.

The Effect of Anxiety

It is particularly interesting to study the relationship between anxiety and identity, since anxiety is one of the most prevalent psychosocial problems among youth from the general population in Western societies (Ollendick et al. 2002). On the one hand, anxiety can have a positive function, by stimulating individuals to explore/re-examine their identity commitments (Erikson 1950) in order to avoid foreclosed commitments. However, on the other hand, high levels of anxiety can become dysfunctional. In several studies, it has been shown that high levels of internalizing symptoms, such as anxiety, make adolescents more vulnerable to developing an overcontrolling personality type. This overcontrolling personality type is resistant to making decisions that would lead to changes in their lives; changes required in exploring decision possibilities during adolescent identity formation (Akse et al. 2004, 2007; Robins et al. 1996; Van Aken and Dubas 2004). Therefore, this research suggests that it is particularly important to pay attention to the ways by which high levels of anxiety can negatively affect adolescent development.

Anxiety and Identity

The aforementioned studies indicate that anxiety can interfere with adolescent decision-making processes. Identity status literature also confirms the existence of a strong link between anxiety and identity. In fact, a series of studies has highlighted that individuals in the various Marcia's identity statuses differed in anxiety levels (Adams et al. 1985; Dellas and Jernigan 1990; Marcia 1967; Marcia and Friedman 1970; Oshman and Manosevitz 1974; Rotheram-Borus 1989; Schenkel and Marcia 1972). Therefore, it is worth considering which identity statuses are characterized by low anxiety and which, in contrast, are characterized by high anxiety.

Specifically, Marcia (1967) found that male late adolescents in the achievement and foreclosure statuses reported lower anxiety levels than their counterparts in the diffusion and moratorium statuses. These findings were replicated in samples of female college students (Marcia and Friedman 1970; Schenkel and Marcia 1972). Rotheram-Borus (1989) found that adolescents in the achievement, foreclosure and diffusion statuses were less anxious than their peers in the moratorium statuses. In this study, diffusion was characterized by low anxiety levels and contradicts previous findings from Marcia and his collaborators; namely that diffusion is similar to moratorium in terms of high anxiety levels (Marcia 1967; Marcia

and Friedman 1970; Schenkel and Marcia 1972). Additionally, Dellas and Jernigan (1990) reported individuals in the foreclosure status to be less anxious than their peers in any other status.

Taken together, the above studies highlight that there is a significant relationship between identity formation and anxiety. However, while most of the cited identity status studies report inter-status differences in anxiety levels, they unfortunately do not study the direct associations between commitment and exploration to adolescent anxiety. However, such direct associations of these studies can be explored by comparing levels of anxiety in both statuses with high commitment (i.e, achievement and foreclosure), and low commitment (i.e., moratorium and diffusion) as well as in statuses with high exploration (i.e., achievement and moratorium), and low exploration (i.e., foreclosure and diffusion). A comparison of the aforementioned studies demonstrates that high commitment statuses are associated with lower levels of anxiety than low commitment statuses. Comparisons between high and low exploration statuses do not produce a straightforward conclusion, but the moratorium status (high exploration and low commitment status) is associated with the highest levels of adolescent anxiety.

These sorts of comparisons of high and low exploration and commitment have recently been confirmed by Crocetti et al. (2008) who studied specific associations between these identity processes and adolescent anxiety. Specifically, the authors found that commitment, in-depth exploration and reconsideration were differentially related to anxiety: whereas commitment was negatively related to adolescent anxiety, in-depth exploration and reconsideration of commitment were positively related to adolescent anxiety. These findings were consistent across the adolescent gender, age and ethnic sub-samples, and suggest that adolescent anxiety goes hand-in-hand with low levels of commitment and high levels of exploration/reconsideration.

The Present Study

In brief, the findings of the aforementioned studies (that have used identity status classifications) and the recent findings obtained with the three-factor model of identity processes proposed by Crocetti et al. (2008) show a clear relationship between anxiety and identity formation. Nevertheless, the main limitation of all these studies is that their evidence has been gathered only by means of cross-sectional data. Thus, we cannot determine from the findings of these studies whether anxiety affects identity formation, or, alternatively, identity dynamics influence anxiety incidence.

Even though it is reasonable to assume that the relationship between anxiety and identity is bidirectional (i.e., anxiety levels interfere with the identity formation process

which in turn may influence anxiety), the purpose of the present longitudinal study was to examine whether anxiety can be a risk factor for adolescent identity formation. We decided to focus on this side of the plausible bidirectional process for the potential clinical implications it might hold. While identity formation, and all its related shifts, is stressful and is related to increases in anxiety (Meeus et al. 1999), this stress and temporary increases in anxiety are a normative experience for most adolescents (Arnett 1999). However, for adolescents who already suffer from high anxiety levels, this identity formation process can be quite stressful and, as a consequence, hamper these adolescents in successfully dealing with the identity formation process. Thus, it is conceivable that adolescents who suffer from high anxiety levels may require clinical attention not only for their anxiety but also for identity formation process related issues. It is on the basis of this reasoning that we will test the hypothesis that high anxiety levels may be predictive of non-adaptive identity development, by preventing adolescents in their making of firm choices (commitments) and prolonging the period of considering and reconsidering identity commitments (exploration/reconsideration).

In order to test this hypothesis, we first examined adolescent anxiety and identity growth curves. We then explored adolescents' individual anxiety-level trajectory classes. With this knowledge we then tested if varying anxiety-level trajectory classes predict identity growth factors, when controlling for age and gender of the adolescent.

Method

Participants

This study was conducted as a part of the broader COnflict And Management Of RElationships project (CONAMORE; Meeus et al., 2006, Codebook of the research project conflict and management of relationships (CONAMORE), Utrech University, The Netherlands. "Unpublished manuscript"). This is a five-wave longitudinal study aimed at the examination of different aspects involved in adolescent development, such as identity formation, personal adjustment and interpersonal relationships. The sample consisted of 1,313 participants (637 boys and 676 girls) who attended various junior high and high schools located in the province of Utrecht in The Netherlands. Participants were asked to complete a questionnaire five times, with an interval of one year between each assessment.

In this study two cohorts were employed: an early adolescent cohort ($n = 923$; 468 boys and 455 girls) with ages ranging between 10 and 15 years ($M = 12.42$, $SD = 0.59$) at the first wave, and a middle adolescent cohort ($n = 390$; 169 boys and 221 girls) with ages ranging between 16 and 20 years ($M = 16.68$, $SD = 0.80$) at the first wave.

Approximately 60% of the participants were in pre-university education or preparatory higher professional education and about 40% were in preparatory secondary and tertiary vocational education. Sample attrition was 1.2% across waves: in subsequent waves the number of participants was 1,313, 1,313, 1,293, 1,292 and 1,275, respectively. Missing values were estimated in SPSS, using the EM-procedure.

Procedure

Participants were recruited from various randomly selected junior high and high schools located in the province of Utrecht in The Netherlands. Participants and their parents received an invitation letter describing the purposes and goals of the research project and explaining the possibility to decline from participation. More than 99% of the approached high school students decided to participate. All participants signed the informed consent form. The self-report questionnaires were completed at the participants' own high school, during annual assessments. Confidentiality of responses was guaranteed. Verbal and written instructions were offered. The adolescents received €10 (approximately US $15) as a reward for every wave they participated in.

Measures

Anxiety

The Screen for Child Anxiety Related Emotional Disorders (SCARED; Birmaher et al. 1997; Hale et al. 2005) was employed. This is a 38-item questionnaire measuring five anxiety symptoms: generalized anxiety, panic, school anxiety, separation anxiety, and social anxiety symptoms. Occurrence of these symptoms was rated on a three-point scale: 0 (almost never), 1 (sometimes), and 2 (often). This scale is one of the two better multidimensional questionnaires to rate anxiety symptoms (Myers and Winters 2002). A main advantage of this tool is its impressive discriminant validity. Additionally, it functions well not only in clinical samples but also in adolescents from the general Dutch population (Hale et al. 2005). In this study, the scores of all five scales were summed together to create an overall anxiety score for the adolescents. A sample item is: "I worry too much". Cronbach's alphas were found to be high across waves, with values ranging from .92 to .95. Psychometric validity data for the Dutch version of the SCARED are provided in Hale et al. (2005).

Identity

The Utrecht-Management of Identity Commitments Scale, designed by Meeus (U-MICS; Crocetti et al. 2008) was used to assess identity dimensions. The U-MICS consists of 13 items with a response format from 1 (completely untrue) to 5 (completely true). Specifically, 5 items measure commitment, 5 items assess in-depth exploration, and 3 items tap reconsideration of commitment. These items can be used to assess identity dimensions in different domains. In the current study, we assessed ideological and interpersonal domains since they are the domains adolescents consider most important (Bosma 1985), so we repeated the 13 U-MICS items twice, for a total of 26 items. Sample items are: "My education/best friend gives me certainty in life" (commitment; 10 items), "I think a lot about my education/best friend" (in-depth exploration; 10 items), and "I often think it would be better to try to find a different education/best friend" (reconsideration of commitment; 6 items). Although U-MICS allows for the identity dimensions to be measured in different content domains, we focused on identity factors at a global level, following the scale construction rules as outlined by Crocetti et al. (2008). Therefore, we calculated general scores of commitment (by calculating the mean of the 10-commitment items), in-depth exploration (by calculating the mean of the 10-exploration items), and reconsideration (by calculating the mean of the 10-reconsideration items). Cronbach's alphas were found to be high across waves, with values ranging from .86 to .90 for commitment, from .82 to .86 for in-depth exploration, and from .85 to .87 for reconsideration of commitment. Construct and convergent validity data for the Dutch version of the U-MICS are provided in Crocetti et al. (2008).

Data Analysis

First, we conducted four separate univariate latent growth curve models (LGM; Duncan et al. 1999) on the five annual waves of anxiety and three identity dimensions in M*plus* (Muthén and Muthén 1998–2007), by using the Maximum Likelihood (ML) estimation. Good model fit is indicated by a non-significant χ^2, Comparative Fit Indices (CFI) and Tucker and Lewis's Indices (TLI) above .95 (Hu and Bentler 1999), and a Root Mean Square Error of Approximation (RMSEA) below .08 (Browne and Cudeck 1993). LGM expresses growth in a variable as an intercept (i.e., initial level) and slope (i.e., rate of change) for each individual. Subsequently, the mean intercept and slope, as well as the variance around these growth factors, are estimated for the sample.

Second, we conducted Growth Mixture Modeling (GMM; Muthén and Muthén 2000) on the five waves of anxiety. Because we found that individuals varied significantly in the initial level and rate of change in anxiety, we tried to find more homogeneous subgroups of individuals that followed more or less the same level and change in anxiety. GMM aims to find the smallest number of classes that captures most variance among individuals in terms of initial levels and development of the variable under examination. We considered various criteria to decide about the optimal number of latent classes of anxiety (Muthén and Muthén 2000). We used the Sample Size Adjusted Bayesian Information Criterium (SSA-BIC; Schwartz 1978) and the adjusted Lo-Mendell-Rubin Likelihood Ration Test (LMR-LRT; Lo et al. 2001). The optimal model has the lowest SSA-BIC and adding an extra trajectory does not significantly improve the model according to the LMR-LRT. Moreover, we assessed entropy, which is an index of classification accuracy to assign individuals to trajectory classes: values above .80 are considered to represent good classification. Finally, we evaluated the content and theoretical meaningfulness of the classes in the various solutions. If an additional class in a solution with *k* classes was found to be a slight variation of a class already found in a solution with *k*-1 classes, we chose the most parsimonious solution (Muthén and Muthén 2000).

Third, we tested if membership of anxiety classes predicted initial levels and change in each identity dimension, correcting for the age and gender of the adolescents. Specifically, we tested a model in which anxiety classes predicted the latent growth factors of identity, that is, intercepts and slopes of commitment, in-depth exploration, and reconsideration of commitment. We included gender (1 = boys and 2 = girls) and age (1 = early adolescents and 2 = middle adolescents) as control variables. These control variables were regressed on the latent variable anxiety class membership and also on the intercepts and slopes of the identity dimensions. To evaluate the fit of the model we considered various indices (i.e., χ^2; *df*; TLI; CFI; RMSEA) (Kline 1998).

Results

Development of Anxiety

Univariate growth models

The linear model for anxiety fit the data adequately (see Table 1 for descriptive statistics and Table 2 for fit indices). The negative slope indicated that anxiety decreased over time for the whole sample. Moreover, variances of both intercept and slope were found to be significant,

Table 1 Descriptive statistics of anxiety and identity dimensions

	T1		T2		T3		T4		T5	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Anxiety	1.32	0.27	1.32	0.27	1.29	0.26	1.27	0.25	1.25	0.24
Identity										
Commitment	3.65	0.69	3.73	0.58	3.71	0.58	3.72	0.58	3.75	0.53
In-depth Exploration	3.22	0.70	3.24	0.62	3.27	0.60	3.24	0.59	3.24	0.57
Reconsideration of commitment	2.02	0.85	1.99	0.81	2.04	0.81	1.92	0.76	1.84	0.67

Note: *M* = Mean; *SD* = Standard Deviation

Table 2 Fit indices and growth factor estimates for the univariate growth curve models of anxiety and identity dimensions

|	Model Fit Indices					Growth Factors				
	χ^2	*df*	TLI	CFI	RMSEA	*M* Intercept	Δ Intercept	*M* Slope	Δ Slope	*r* (I, S)
Anxiety	105.18	10	.96	.96	.08	1.32***	.04***	−.02***	.00***	−.32***
Identity										
Commitment	72.35	10	.95	.95	.07	3.68***	.04***	.02***	.01***	−.47***
In-depth exploration	41.50	10	.98	.98	.05	3.24***	.19***	.00	.01***	−.47***
Reconsideration of commitment	81.35	10	.95	.95	.07	2.05***	.34***	−.05***	.01***	−.62***

Note: χ^2 = Chi-Square; *df* = degrees of freedom; TLI = Tucker Lewis Index; CFI = Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation; *M* = Mean; Δ = Variance; *r* (I, S) = correlation between intercept and slope; *** $p < .001$

indicating inter-individual differences in initial levels and change rates of anxiety.[1]

Latent growth trajectories of anxiety

In order to identify adolescent groups with different anxiety trajectories we modeled latent classes of anxiety over five measurement waves by using GMM. Our findings indicated that the two-class solution was better than the single class solution (LMR-LRT was significant at $p < .01$). Adding a third class did not have a theoretical surplus value since the third class was found to be a variation of one of the classes of the two-class solution. So, the two-class solution was selected as the final one (Entropy = .93).

The two latent classes are represented in Fig. 1. As can be seen, the first class, comprising of 1,199 (91.3%) adolescents, was characterized by a low initial level of anxiety (*M* intercept = 1.31, $p < .001$), that decreased over time (*M* slope = −.03, $p < .001$). The second class, which consisted of 114 (8.7%) adolescents, was characterized by a higher initial level of anxiety (*M* intercept = 1.51, $p < .001$), that increased over time (*M* slope = .07,
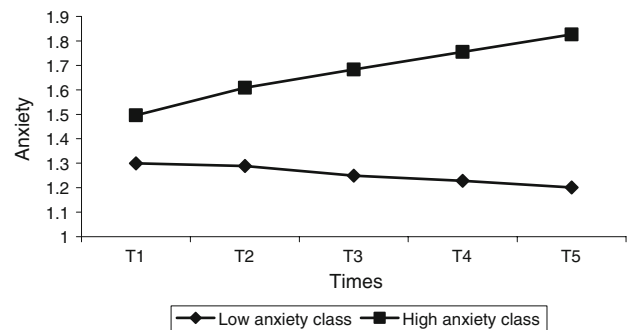

Fig. 1 Observed values for the anxiety trajectory classes; *Note*: T1 = Time 1; T2 = Time 2; T3 = Time 3; T4 = Time 4; T5 = Time 5

$p < .001$). We labeled the former latent class *low anxiety class* and the latter *high anxiety class*.

Furthermore, we examined if there were age and gender differences in the distribution of the participants between the two classes. Findings revealed no age differences (χ^2 (1, 1313) = 1.17, *ns*), but clear gender differences (χ^2 (1, 1313) = 17.46, $p < .001$). Specifically, boys and girls had even chances to belong to the low anxiety group (50.3% boys vs. 49.7% girls), whereas girls were more likely to belong to the high anxiety group (29.8% boys vs. 70.2% girls). This gender distribution was found both in early (χ^2 (1, 1313) = 11.49, $p < .001$) and in middle adolescence (χ^2 (1, 1313) = 5.46, $p < .05$).

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[1] In order to test age differences on anxiety we conducted multigroup analyses with cohort as grouping variable. Constraining mean intercepts and slopes across both cohorts did not yield significant decrease in model fit ($\Delta\chi^2 = 2.73$, $\Delta df = 2$, *ns*), which indicated no age differences.

Fig. 2 Standardized coefficients for the model with anxiety classes predicting identity development, with age and gender as control variables; *Note*: ** $p < .01$; *** $p < .001$
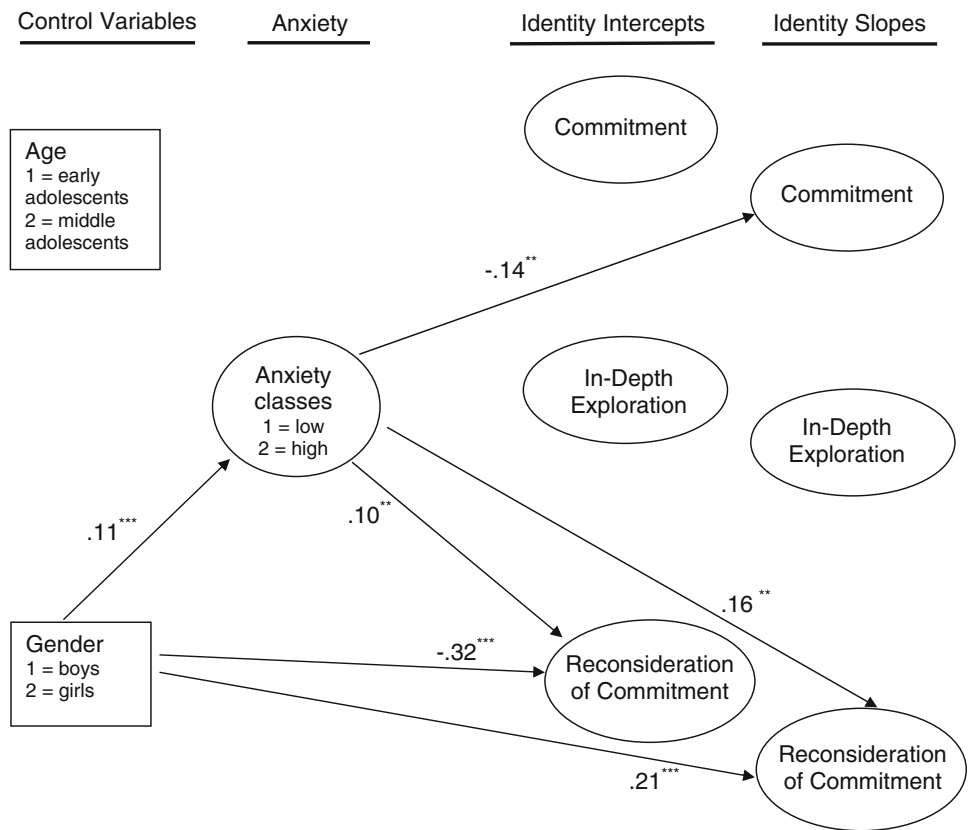
Development of Identity

Univariate Growth Models

We found univariate linear growth models of each identity dimension (i.e., commitment, exploration and reconsideration of commitment) to fit the data adequately (see Tables 1 and 2). Variances of all the intercepts revealed significant inter-individual differences in initial levels of each identity dimensions. Furthermore, mean slopes were found to be significant for commitment and reconsideration of commitment, but not for in-depth exploration. While levels of commitment increased and reconsideration decreased over time, levels of in-depth exploration were found to be stable. Significant slope variances on all identity dimensions indicated inter-individual variations in the rates of change. Finally, all correlations between intercepts and slopes were found to be significant and negative, indicating that higher initial levels were associated with lower rates of change.[2]

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[2] In order to test age differences on identity dimensions we conducted multi-group analyses with cohort as grouping variable. Constraining intercept and slope across both cohorts did not yield significant decrease in model fit on commitment ($\Delta\chi^2 = 0.96$, $\Delta df = 2$, *ns*) and on in-depth exploration ($\Delta\chi^2 = 3.38$, $\Delta df = 2$, *ns*). Significant differences were found on reconsideration of commitment ($\Delta\chi^2 = 15.63$, $\Delta df = 2$, $p < .01$), however they were limited to wave 2, in which older adolescents reported a slight decrease in reconsideration while their younger counterparts remained stable.

Anxiety Trajectories and Identity Development

Finally, we investigated whether anxiety trajectories predicted identity development over time by testing if anxiety classes predicted initial levels and change in each identity dimension, controlling for adolescent age and gender. Findings revealed an excellent fit of this model, ($\chi^2 = 286.09$, $df = 105$; CFI $= .97$; TLI $= .96$; RMSEA $= .04$). Significant paths are reported in Fig. 2. The most important findings were that anxiety classes negatively predicted the slope of commitment, and positively the intercept and slope of reconsideration. Thus, the high anxiety class was characterized by a decrease in commitment over time, a higher initial level of reconsideration as well as increase in reconsideration over time. Their low anxiety peers displayed increasing commitment over time, and low initial levels and decreases in reconsideration (see Fig. 3). As for control variables, we found only significant effects for gender, as girls were more likely than boys to belong to the high anxiety group. Furthermore, gender had a direct effect on intercept and slope of reconsideration of commitment: compared to boys, girls reported lower initial level of reconsideration, but a higher rate of change.

Discussion

The main developmental task in adolescence is the formation of a stable and coherent identity. Since societal
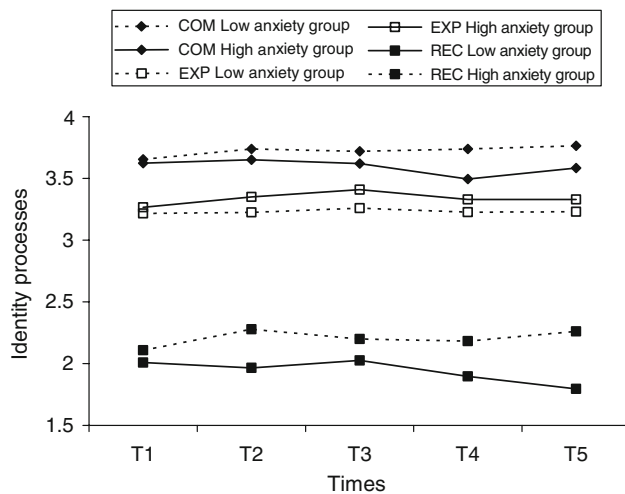
Fig. 3 Identity development by anxiety trajectory classes (observed values); *Note*: COM = Commitment. EXP = In-Depth Exploration; REC = Reconsideration of Commitment. T1 = Time 1; T2 = Time 2; T3 = Time 3; T4 = Time 4; T5 = Time 5

guidelines (as meaningful framework of reference) in this process have diminished in modern Western societies (Baumeister and Muraven 1996), adolescents are left with an enormous range of available opportunities. This complicates rather than simplifies identity formation, and is likely to increase indecisiveness. Hence, the enormous wide range of opportunities can be described as the *tyranny of freedom* (Schwartz 2000).

Anxiety is one of the most prevalent internalizing problems in adolescence (Ollendick et al. 2002), and a broad range of studies indicate that it is strongly associated with identity formation (Adams et al. 1985; Crocetti et al. 2008; Dellas and Jernigan 1990; Marcia 1967; Marcia and Friedman 1970; Oshman and Manosevitz 1974; Rotheram-Borus 1989; Schenkel and Marcia 1972). High levels of anxiety might hinder identity commitment, as anxiety may instigate adolescents to continue considering and reconsidering identity alternatives without being able to make any firm choices. While previous studies on the association between anxiety and identity only employed cross-sectional data, in this study we tested whether anxiety is a risk factor for identity development by using a five-wave longitudinal design.

Development of Anxiety and Anxiety Trajectories

First, we investigated development of anxiety in adolescence. In epidemiological studies it has been noted that approximately 5 to 17% of children and adolescents suffer from an anxiety disorder (Bernstein et al. 1996), however it has also been demonstrated that anxiety disorder symptoms in adolescents from the general population tend to decrease over time (Hale et al. 2008). We had similar findings, as a

Latent Growth Curve indicated that anxiety decreases linearly over the five-year period of this study. In addition, using Growth Mixture Models (GMM), we demonstrated that developmental trajectories of anxiety were not the same for all adolescents, as we found two distinguishable classes. The first class comprised 1,199 (91.3% of the sample) individuals who exhibited low initial levels of anxiety that decreased over time, whereas the second class consisted of 114 (8.7%) adolescents who displayed higher initial levels of anxiety that increased over time. Thus, in our general adolescent sample, a *low* and a *high anxiety class* could be clearly distinguished.

Membership to the two anxiety classes was not affected by age, but was strongly influenced by gender: girls were more likely to belong to the high anxiety group than boys, and this finding was consistent in the two age groups (i.e., early and middle adolescents). These results are in line with previous studies of adolescent anxiety, both in clinical samples (e.g., Birmaher et al. 1997; Muris and Steerneman 2001) as well as in the general adolescent population (e.g., Hale et al. 2005; Hale et al. 2008).

Development of Identity

We examined identity development in adolescence by investigating change in the three identity dimensions (i.e., commitment, in-depth exploration, and reconsideration of commitment) distinguished in Crocetti et al.'s model (2008). Latent Growth Curve Models indicated that commitment increased and reconsideration of commitment decreased over time, while levels of in-depth exploration were found to be stable. These findings highlight that adolescents feel more and more certain about their commitments and that the urge to revise them decreases with age. These findings also demonstrate that adolescent identity formation becomes more stable and organized during adolescence.

Nevertheless, changes in commitment and reconsideration (indicated by their slopes), even though significant, were found to be rather small. These findings are consistent with the high level of stability in identity status documented in the literature. In fact, in overview studies, Meeus (1996) and Van Hoof (1999) reported that most studies pointed out that adolescents remained in the same identity status over the course of adolescence.

Identity Development of Adolescents with Different Anxiety Trajectories

The main objective of this study was to test whether membership to different anxiety trajectory classes predicted different paths of identity development over time. In order to reach this goal, we tested a model with anxiety

classes predicting initial levels and change of each identity dimension, with age and gender as control variables. Findings revealed an excellent fit for this model and highlighted the key role of anxiety classes in influencing identity formation.

Specifically, we found that adolescents with high anxiety levels had more difficulties in dealing with the identity formation task than adolescents with low anxiety levels. Specifically, commitments of adolescents with high anxiety levels became weaker over time. Furthermore, their uncertainty about commitments was initially higher (as indicated by higher intercept of reconsideration) as compared to uncertainty of their low anxiety peers, and even increased over time (as indicated by a positive slope). In contrast, adolescents with low anxiety levels achieved stronger commitment over time and became more certain of these commitments, since the tendency to reconsider their commitments decreased over time. Finally, we found that gender was associated with anxiety class membership (i.e., girls were more likely to belong to the high anxiety class) and predicted the intercept and slope of the reconsideration of commitment. In particular, girls exhibited a lower initial level of reconsideration, but a higher rate of change.

Evidence collected in this study shows that a high level of anxiety is a risk factor for identity development. The main issue of identity formation is the search for commitment in a world that for adolescents is becoming more and more chaotic and devoid of meaningful references as compared to the world that their parents were brought-up in (Baumeister and Muraven 1996). In the seminal work of Erikson (1968), identity has been conceptualized as a dynamic in which the two opposites poles are identity achievement and identity confusion. The differentiation between these poles concerns the presence and absence of secure commitments. In fact, while adolescents who have achieved an identity exhibit secure commitments that give meaning and direction to their lives; individuals who lack relevant secure commitments find themselves in a state of indecision. Crocetti et al. (2008) attempted to go deeper into this dynamic of security-insecurity in identity formation by taking the oscillation between commitment and reconsideration of commitment into account. In fact, whereas commitment covers the tendency to find security in life, reconsideration stands for the opposing force that questions this security. In this study, we have demonstrated that adolescents with high anxiety levels are likely to remain on the insecure side of identity formation.

It also is worth considering that the combination of commitment, exploration, and reconsideration gives rise to two moratorium statuses (i.e., *moratorium* and *searching moratorium*) instead of the one moratorium status Marcia (1966) found (Crocetti, Rubini, Luyckx, and Meeus, in press). Specifically, adolescents in the *moratorium* status

exhibit low commitment, medium in-depth exploration, and high reconsideration of commitment, whereas those in the *searching moratorium* status display high commitment, high in-depth exploration, and also high reconsideration. The distinction between moratorium and searching moratorium sheds light on the two faces of the general moratorium status findings documented in the literature (Crocetti et al. in press).

In more specific terms, the *moratorium* status represents the dark side of moratorium: adolescents in this status are still looking for a commitment they have not yet found. They are experiencing an identity crisis, as demonstrated by the fact that the moratorium status has been found to be the most troubled identity status (even more troubled than the searching moratorium one), since it is characterized by high internalizing as well as externalizing problem behaviors. Conversely, the *searching moratorium* status represents the healthy side of moratorium: individuals in this status are revising their existing commitments because they are no longer satisfied with them. Their search is not as painful as that of their counterparts in the moratorium status, because, at least, they start seeking out from a secure base rooted in their accumulated identity commitments.

Relating this distinction between the two types of moratorium to the evidence collected in this study, we may advance that adolescents with high levels of anxiety are more likely to be in the moratorium status (as they progressively have lower commitment and higher reconsideration), rather than in the searching moratorium one. Thus, since these adolescents will probably stick in the dark side of moratorium, it is particularly important that clinicians draw their attention to them. Specifically, clinical psychologists should promote early screening of adolescent anxiety levels and interventions to reduce it. These interventions might be of utmost importance to promote healthy identity development.

Limitations of the Study and Suggestions for Future Research

In addition to the aforementioned findings, limitations of the present study should also be considered. A main limitation concerns the fact that we employed solely adolescent self-reports. Multi-informant approaches, such as anxiety ratings of the adolescent by their parents and peers, could provide additional information in our understanding of the association between anxiety and identity. However, self-report measures are essential in the collection of information of adolescent internal and subjective processes, such as those used in this study, because they are difficult for others to observe (Achenbach et al. 1987).

Some future directions of research should be considered. In particular, future studies could deepen the role of

contextual factors (Bosma and Kunnen 2008) that can affect the processes investigated in this contribution. It would be worthwhile to examine whether the influence on identity formation by anxiety classes is moderated by participant's school level. In more specific terms, it would be important to understand if the negative impact of anxiety on identity can be exacerbated by attendance of low-level schools or, conversely, could be attenuated by attendance of high-level schools. Clarifying the possible moderating role of the school level would be very important to planning interventions differentiated for the various school types.

Furthermore, future studies could deepen our understanding of the conditions associated with more or less healthy identity development by adopting further longitudinal designs (Schwartz 2005). With a specific reference to the association between psychosocial problems and identity formation, it should be relevant to point out that in our contribution we have considered the role of anxiety levels, that is an internalizing problem behavior particularly widespread among female adolescents (Birmaher et al. 1997; Muris and Steerneman 2001; Hale et al. 2005; Hale et al. 2008). It would be important to study if externalizing problem behaviors (such as aggression, substance use, delinquency), more prevalent among male than female adolescents (Akse et al. 2004; Overbeek et al. 2003, 2001), also interfere with the identity formation dynamics.

Conclusions

In this five-year longitudinal study we found clear evidence for our hypothesis that a high anxiety level is a risk factor for adolescent identity development. In fact, individuals with high levels of anxiety are characterized by a more troublesome identity formation than their less anxious peers. Specifically, as the anxious adolescents grows older they became less certain about their commitments and reconsidered them intensively, revealing their great difficulty in making relevant identity choices.

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