

Impact of Early Adolescent Externalizing Problem Behaviors on Identity Development in Middle to Late Adolescence: A Prospective 7-Year Longitudinal Study

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Abstract Adolescents at-risk for problem behaviors can have more difficulties in developing a firm sense of personal identity. Hence the purpose of this prospective longitudinal study was to scrutinize how externalizing problems in early adolescence impact identity development in middle to late adolescence. Participants were 443 (43.12 % female) Dutch adolescents. Teachers rated their externalizing problem behaviors when participants were 11 or 12 years old and their identity formation was studied during five consecutive years (from 14 to 18 years of age). The sample was divided into four groups: boys and girls with a high versus a low-risk for externalizing problem behaviors. Participants completed a self-report measure of identity commitment, in-depth exploration, and reconsideration of commitment. Multi-group Latent Growth Curve and profile stability analyses were used to evaluate identity development across adolescence. Findings indicated that high-risk boys and girls reported a less structured identity, with lower levels of commitment and higher levels of reconsideration of commitment. Since externalizing problems behaviors and lack of a coherent sense of identity might reinforce each other, early intervention for high-risk adolescents might foster positive youth development.

Keywords Identity · Externalizing problem behaviors · Gender · Longitudinal

Introduction

Identity formation is the core developmental task of adolescence (Erikson 1950, 1968). Since post-modern societies are seemingly characterized by increasing uncertainty (Baumeister and Muraven 1996; Schwartz 2000), this task is particularly challenging because adolescents have to enact significant choices in multiple domains (e.g., Crocetti et al. 2012). Additionally, a number of factors can hamper adolescent identity formation. In particular, adolescents at a high-risk for problem behaviors may face more difficulties in defining a coherent and stable sense of identity.

Problem behaviors can be differentiated between externalizing and internalizing problems (Achenbach 1978). Specifically, *externalizing problem behaviors* refer to a cluster of behavior problems (e.g., aggressive and delinquent behaviors) that are manifested in individuals' outward behavior and reflect the youth negatively acting-out on their external environment (Achenbach and Edelbrock 1978). *Internalizing problem behaviors* (e.g., anxiety and depressive symptoms) refer to the individual's internal psychological environment rather than their external environment (Achenbach and Edelbrock 1978). Consistent evidence has revealed straightforward gender differences, with boys more likely to exhibit externalizing problem behaviors and girls more affected by internalizing problem behaviors (e.g., Achenbach 1966; Rescorla et al. 2007).

Up until now, researchers (e.g., Crocetti et al. 2009a) have demonstrated that adolescents at-risk for internalizing problem behaviors have difficulties in developing their

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identity, whereas there is a dearth of studies examining identity formation in adolescents at risk for externalizing problem behaviors. Therefore, the purpose of this longitudinal study was to gain insight into this latter issue by longitudinally analyzing adolescent identity development of boys and girls that had been classified as either at a high-risk or low-risk for externalizing problem behaviors and were compared to one another.

Identity

Marcia's Identity Status Paradigm

Erikson's lifespan theory of psychosocial development (1950, 1968) was a pioneering contribution to the field of identity studies. The most important empirical elaboration of Erikson's views on identity formation is Marcia's (1966) identity status paradigm. Marcia distinguishes two identity dimensions: *exploration* (i.e., actively questioning and weighing of various identity alternatives before making decisions about the values, beliefs, and goals that one will pursue) and *commitment* (i.e., making a relatively firm choice about an identity domain and engaging in significant activities geared toward the implementation of that choice). Using these dimensions, individuals can be classified in one out of four identity statuses: the *achievement* status, individuals have made a commitment following a period of active exploration; the *foreclosure* status, adolescents have made a commitment with little or no prior exploration; the *moratorium* status, adolescents are actively exploring various alternatives and have not yet made a commitment; finally, the *diffusion* status, adolescents have not engaged in a proactive process of exploration of different alternatives, nor have they made a commitment. Thus, the identity statuses represent distinct ways of dealing with the identity task described by Erikson (1950).

Recent Extensions of the Identity Status Paradigm: The Three-Factor Identity Model

In the last several decades, various extensions of Marcia's model have been proposed (e.g., Schwartz, 2001). In particular, Meeus, Crocetti, and colleagues (Crocetti et al. 2008b; Meeus et al. 2010), building upon previous studies by Meeus (Meeus 1996; Meeus et al. 1999, 2002), have extended the identity status paradigm by proposing a three factor identity model aimed at capturing the dynamics by which identity is formed and adapted over time. This model takes into account three pivotal identity dimensions. The first identity dimension, *commitment*, represents enduring choices that individuals have made with regard to various developmental domains and to the self-confidence they derive from these choices; this dimension serves as an

indicator of identity consolidation and of successful identity development. The second identity dimension, *in-depth exploration*, represents the extent to which individuals think actively about the commitments they have enacted (e.g., reflecting on their choices, searching for additional information, talking with others about their commitments). The third and final identity dimension, *reconsideration of commitment*, represents the comparison of present commitments with possible alternative commitments because the current ones are no longer satisfactory.

This model includes a dual-cycle process (Luyckx et al. 2006; Meeus 2011). In other words, adolescents explore their commitments in-depth and decide whether they provide a good fit with one's overall talents and potentials (which is the identity formation and maintenance cycle). If one's current commitments are not satisfying or do not provide a good fit (any longer), they may be reconsidered in favor of other commitments (which is the identity revision cycle). Crocetti et al. (2008a) found that combining levels of adolescent commitment, in-depth exploration, and reconsideration of commitment (by using empirically-based methods of deriving identity statuses) it was possible to identify not only all four of Marcia's original identity statuses [achievement, foreclosure (re-labeled as "closure" or "early closure" by Meeus et al. 2010), moratorium, and diffusion], but also an additional variant of the moratorium status, labeled searching moratorium. This latter status was characterized by the attempt to revise commitments that have been already enacted.

Identity and Problem Behaviors

Internalizing Problem Behaviors

Marcia's identity status paradigm has inspired a large amount of studies (for a review, see: Kroger and Marcia 2011), several of which have focused on associations between identity statuses and problem behaviors. However, most of these studies only have examined internalizing problem behaviors, and consistently have demonstrated that adolescents in the high commitment statuses (i.e., achievement and foreclosure) report low levels of anxiety and depression whereas the moratorium status is associated with the highest levels of anxiety and depression (for a review, see: Meeus et al. 1999). Thus, the identity statuses are consistently associated with different levels of internalizing problems.

Similarly, the three identity dimensions of the extended model have been found to be associated meaningfully with various correlates (Crocetti et al. 2008a, b, 2010), and consistent evidence has shed light on interconnections between internalizing problems (i.e., depressive and anxiety symptoms) and identity. Specifically, commitment has

been found to be associated negatively with internalizing problems, while in-depth exploration and reconsideration of commitment were linked positively to them (Crocetti et al. 2008b, 2010). Analogously, adolescents in the high commitment statuses were characterized by lower levels of internalizing behaviors than adolescents in the moratorium status (Crocetti et al. 2008a). Interestingly, Crocetti et al. (2009a) monitored identity dimensions, across five consecutive years, in adolescents with low versus high anxiety trajectories and found that adolescents with high anxiety levels had more difficulties in dealing with the identity formation task (i.e., their commitment became weaker over time and their uncertainty about commitments was initially higher and even increased during adolescence) than adolescents with low anxiety levels. Overall, this set of evidence suggests that identity and internalizing problem behaviors are interrelated phenomena, with high levels of problems hampering identity formation and identity instability associated with increasing problem behaviors.

Externalizing Problem Behaviors

Less research has been conducted on the association between identity and externalizing problem behaviors. Furthermore, available studies differ in their focus, with some research focusing on the broad concept of externalizing problem behaviors (e.g., Pace and Zappulla 2011) and other investigations examining specific types of externalizing problem behaviors, such as aggression, delinquency, and substance use (e.g., Schwartz et al. 2010). This heterogeneity across studies makes it difficult to summarize a conclusive pattern of findings.

More specifically, the few studies that have focused on both identity dimensions (i.e., commitment and exploration) and externalizing problem behaviors within Marcia's identity status paradigm have yielded somewhat divergent findings. For instance, Pace and Zappulla (2011) did not find significant correlations between commitment and externalizing problem behaviors in Italian high school students, whereas Schwartz et al. (2010) reported that commitment was related negatively to some externalizing problem behaviors (e.g., illicit drug use), and not others (e.g., unrelated to binge drinking and unsafe sex behavior) in American college students. Similarly, a limited number of studies have addressed associations among identity statuses and substance use. In this respect, studies involving high-school or first-year college students have documented significant differences in substance use among individuals in the various identity statuses (Bishop et al. 1997; Jones and Hartmann 1988; Jones et al. 1989), but they did not report a consistent pattern of differences. Conversely, studies on young adults did not report significant associations between identity statuses and substance

use (Frank et al. 1990; Nelson et al. 2010). In sum, research on identity statuses and externalizing problem behaviors is limited and has not revealed a clear pattern. Further, the aforementioned studies were all cross-sectional, arguing for the need for further clarifying studies conducted with a longitudinal approach (Schwartz 2005).

Research conducted with the three-factor identity model (Crocetti et al. 2008b; Meeus et al. 2010) has provided some evidence useful to unravel interconnections between identity and externalizing problem behaviors in early and middle adolescence. In particular, cross-sectional studies have shown that only reconsideration of commitment was related significantly and positively to delinquency (Crocetti et al. 2008b) and adolescents in the moratorium status reported levels of direct aggression higher than those displayed by their peers in any other identity status (Crocetti et al. 2008a). Furthermore, Klimstra et al. (2011) examined identity formation in juvenile delinquent boys residing in a penitentiary youth institution. They found that these boys differed significantly in identity processes (i.e., juvenile delinquents reported lower commitment and higher reconsideration of commitment) and statuses (i.e., juvenile delinquents were underrepresented in the achievement status, and often displayed the negative side of moratorium, as they were overrepresented in the maladaptive moratorium status) from both male clinically referred youth and male adolescents from the general population. Finally, in a longitudinal study, Meeus et al. (2012) found that early and middle adolescents in the moratorium and diffusion statuses reported higher levels of delinquency than their counterparts in the achievement and early closure statuses. Taken together, this set of evidence suggests that a condition of low commitment and high reconsideration of commitment is intertwined with externalizing problem behaviors.

The Present Study

In the current longitudinal study we sought to shed light on an issue that has remained uncovered in the extant literature. That is, to what extent might early adolescent externalizing problem behaviors hamper identity formation in middle to late adolescence? In order to address this question, we examined whether teacher rated risk for externalizing problems at the ages of 11 or 12 predicted adolescent identity formation between the ages of 14–18. In light of the limited literature on identity and externalizing problem behaviors, in this study we focused on externalizing problem behaviors as a whole (Achenbach and Edelbrock 1978). Furthermore, given that boys consistently show more externalizing problem behaviors than girls (e.g., Bongers et al. 2003; Rescorla et al. 2007), possible gender differences also were taken into account.

It is well established that an early history of externalizing behaviors predicts later disruptive behaviors, mood and anxiety problems, and substance use and abuse (e.g., Broidy et al. 2003; Odgers et al. 2008; Reef et al. 2011; Simonoff et al. 2004; Zoccolillo 1992). Interestingly, in a longitudinal study on developmental trajectories of boys' and girls' externalizing problem behaviors and their association with later outcomes Miller et al. (2010) found that although differences were evident in the proportion of boys and girls in some developmental trajectories (i.e., girls were more represented than boys in the no problem group whereas boys were overrepresented in the chronic problem group) gender did not moderate the effect of trajectory membership. Thus, the risks on subsequent depression, partner violence, and risky sexual behavior resulting from the delinquency trajectories were the same for both boys and girls.

In this study, we first examined whether the negative impact of early adolescent externalizing problem behaviors also applied to identity formation. We examined identity development trajectories with the three-dimensional model proposed by Meeus, Crocetti, and collaborators (e.g., Crocetti et al. 2008b; Meeus et al. 2010). We focused on overall identity obtained from the combination of one ideological domain (education) and one interpersonal domain (friendship). We selected these domains because the literature indicates that, for adolescents, education and friendships are among the most important identity domains (e.g., Bosma 1985). When unraveling developmental patterns, it is necessary to examine both inter-individual and intra-individual change (e.g., Block and Robins 1993). Specifically, inter-individual development can be assessed as *mean-level change*, that is, analyzing whether mean scores of populations or subgroups within populations are different in level and rate of change (e.g., Duncan et al. 1999). Intra-individual change may be captured by *profile stability*, that is, the stability of a person's configuration of identity dimensions over time (e.g., Roberts et al. 2001). High levels of profile stability indicate that an adolescent's identity profile is well-organized and hence is an indicator of maturation. Given the specific information that both types of change (i.e., mean-level change and profile stability) provide, their integration is meaningful for a better understanding of adolescent development (e.g., Klimstra et al. 2009).

We hypothesized that early adolescents at high-risk for externalizing problem behaviors might have more difficulties in enacting a firm sense of identity later on. Our hypothesis was based on the assumption that an early history of problem behaviors can “attract” a constellation of negative experiences that reduce opportunities of identity formation and consolidation. In particular, externalizing problem behaviors are associated with negative

interactions with parents, siblings, and peers (e.g., Buist et al. 2004, 2013; Dodge et al. 2003; Kim et al. 1999; Sturaro et al. 2011) and school underachievement (e.g., Hinshaw 1992). The lack of warm relationships and positive school experiences might strongly limit adolescents' opportunities for identity exploration and commitment in the educational and interpersonal domains (Oyserman and Destin 2010), which represent two key identity domains in this developmental period (Bosma 1985; Crocetti et al. 2012).

More specifically, building on these considerations and in light of previous research conducted with the three-dimensional identity model (Crocetti et al. 2008a, b; Klimstra et al. 2011; Meeus et al. 2012), we expected, in terms of mean levels, that adolescents who run a high-risk for externalizing behaviors in early adolescence to have lower levels of commitment and higher levels of reconsideration when compared to adolescents who run a low-risk for externalizing problem behaviors in middle adolescence. We also expected that identity difficulties would exacerbate over middle-to-late adolescence in youth at high-risk for externalizing problem behaviors, which would be reflected by a decrease in levels of commitment and an increase in levels of reconsideration of commitment across time. Regarding intra-individual change, the problem of establishing a firm sense of identity for high-risk adolescents also might be reflected by a relatively unstable identity profile. That is, we expected high-risk adolescents to exhibit lower levels of intra-individual stability (i.e., profile stability of the three identity dimensions). We explored whether the expected pattern of findings applied to the same extent to boys and girls, in order to clarify the possible moderating role of gender.

Method

Participants

Data were drawn from the ongoing longitudinal RADAR study (Research on Adolescent Development and Relationships). The RADAR study is a population-based prospective cohort study conducted in the Netherlands aimed at examining normal and abnormal behavioral adolescent development. Because of a specific focus on normal and abnormal development, a dual selection procedure was used to oversample adolescents at high-risk for externalizing problem behaviors. In a first step, teacher ratings of behavior problems were collected through the Teacher's Report Form (TRF; Achenbach 1991). For this purpose, 5,150 early adolescents were assessed when they were 11 or 12 years old. According to the TRF scores, adolescents were assigned to a high-risk or low-risk group. In a second

step, early adolescents that fit with the project inclusion criteria (e.g., possibility to include the full family, fluency in the Dutch language reported by each family member) were further selected and invited to participate in the study. The object of this second step was to obtain a study sample of approximately 300 low-risk and 200 high-risk participants. Detailed information on the overall sampling are reported in van Lier et al. (2008).

Participants for the current study were 443 Dutch adolescents. The sample was divided into four groups: high-risk for externalizing problem behaviors boys ($n = 99$); low-risk boys ($n = 153$); high-risk girls ($n = 76$); and low-risk girls ($n = 115$). All participants were Dutch and attended high-school. Most ($n = 396$; 89.4 %) of the adolescents reported their families to have a medium or high socio-economic status. Teachers rated children's externalizing problem behaviors at ages 11 or 12, and identity formation was studied during five consecutive years from age 14 ($SD_{age} = 0.45$) until age 18.

Missing value analyses indicated that 27.3 % of the participants did not reported on some items. The range of missing items varied from 1.5 to 40 % across the waves. Missing item values were estimated in SPSS using the EM-procedure. Little's (1988) Missing Completely at Random (MCAR) test produced a statistically non-significant value of $\chi^2/df = 0.98$ ($p = .77$), which reveals a very good fit between sample scores with and without imputations, suggesting that data were likely missing at-random.

Procedure

Before the start of the study, adolescents and their parents received written information about the study and parents provided written informed consent. Within each year of the study, trained research assistants made appointments for annual home visits. During these visits, participants completed a battery of questionnaires. Research assistants provided verbal instructions in addition to the written instructions that accompanied the questionnaires. The RADAR study has been approved by the Medical Ethical Committee of Utrecht University Medical Centre (the Netherlands), and all participants and their parents provided informed consent.

Measure

Identity

Identity commitment, in-depth exploration, and reconsideration of commitment were measured using the *Utrecht-Management of Identity Commitments Scale* (U-MICS; Crocetti et al. 2008b). The U-MICS consists of 26 items with a response scale ranging from 1 (*completely untrue*) to

5 (*completely true*). Thirteen items index the target processes in one ideological domain (education), and 13 items index the target processes in one interpersonal domain (friendship). Sample items include: "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 the U-MICS assesses identity in different domains, the instrument can be employed to measure overall identity, summing responses across the two domains. Indeed, by means of confirmatory factor analyses, Crocetti et al. (2008b, 2010) demonstrated the internal validity of the three-dimensional model across domains in different gender, age, and ethnic groups. In the present study Cronbach's alphas of the U-MICS subscales ranged across waves from .89 to .91 for commitment, from .84 to .85 for in-depth exploration, and from .81 to .84 for reconsideration of commitment, respectively.

Externalizing Problem Behaviors

Externalizing problems were evaluated by means of the Teacher's Report Form Externalizing behavior scale (TRF/6-18; Achenbach 1991; for the Dutch version see Verhulst et al. 1997). Items refer to externalizing problems that include aggressive and delinquent behaviors. Sample items comprise: "This child attacks people", "This child destroys others' things", and "This child breaks rules". Teachers responded to each item using a 3-point Likert scale: 0 (*never*), 1 (*sometimes*), and 2 (*frequently applicable*), and referring to the previous 2 months. Verhulst et al. (1997) have demonstrated good reliability and validity of the Dutch version of the TRF (see Ivanova et al. 2007, for a test of TRF factorial validity in 20 societies). Participants were classified as either having a score at or above (i.e., high-risk group) the borderline clinical range of TRF externalizing or having a score below the cut-off (i.e., low-risk group).

Data Analysis Strategy

In order to reach the goals of this study we examined two indices of identity development (i.e., mean-level change and profile stability).

Mean-Level Change

To model longitudinal variations in identity dimensions we conducted Latent Growth Curve analyses (LGC; e.g., Duncan et al. 1999) in *Mplus* 4.0 (Muthén and Muthén 2006) with Maximum Likelihood Robust estimation

(MLR; Satorra and Bentler 1994). LGC provides mean levels (i.e., intercepts) and mean change rates (i.e., slopes) that are based on individual growth trajectories of all participants.

To determine what shape of growth characterized our data best, we first tested various types of latent growth curves, that is: no growth, linear growth, and quadratic growth. The model fit was examined relying on various indices (Kline 2011): the ratio of the Chi square statistic to the degrees of freedom (χ^2/df) which should be less than 3, the Goodness of Fit Index (GFI) and the Tucker-Lewis Index (TLI) which should exceed .95 (Hu and Bentler 1999), and the Root Mean Square Error of Approximation (RMSEA) which should be less than .08, with values less than .05 representing a good fit (Browne and Cudeck 1993). In order to determine significant differences between models at least two out of these three criteria had to be matched: $\Delta\chi^2$ significant at $p < .05$ (Satorra and Bentler 2001), $\Delta CFI > .01$ (Cheung and Rensvold 2002), and $\Delta TLI > .02$ (Vandenberg and Lance 2000).

We then used the unconstrained models to determine growth in the various groups (i.e., high-risk versus low-risk boys and girls). Next, we examined whether there were significant differences in growth estimates (i.e., means of intercepts and slopes) in these groups. For this purpose, we compared the fit of unconstrained models (i.e., models in which these growth estimates were freely estimated) to the fit of constrained models (i.e., models in which these growth estimates were constrained to be equal for the different groups). If a model in which a specific growth estimate was constrained to be equal for two groups (i.e., a constrained model) yielded a significantly worse fit than a model in which the same growth estimate was freely estimated for two groups (i.e., an unconstrained model), we concluded that there was a significant difference in that specific growth estimate.

Profile Stability

Profile stability was assessed with q -correlations (e.g., Block 1971). A q -correlation was calculated for each individual separately, by correlating a rank-ordered set of identity dimensions at one measurement occasion (e.g., T1) with a rank-ordered set of the same identity dimensions at the subsequent measurement occasion (e.g., T2). The higher the q -correlation, the more stable a constellation of identity dimensions within a person is (e.g., Roberts et al. 2001). To test whether the four groups showed different levels of profile stability over time we conducted a Repeated Measures Analysis of Variance in which profile stability across waves was the within-subjects factor and classification in the four groups was the between-subjects factor.

Results

Mean-Level Change

Means and standard deviations for identity dimensions computed across waves in the total sample and for the four groups separately are reported in Table 1. Results of LGC analyses performed for the total sample indicated that curvilinear growth (i.e., a combination of linear and curvilinear slopes) was the best fitting and more parsimonious model for each identity dimension (see Table 2).

After this we proceeded to multi-group models with four groups (i.e., high-risk versus low-risk boys and girls). For commitment, the unconstrained model ($\chi^2 = 38.88$, $df = 30$; $\chi^2/df = 1.30$; CFI = .98; TLI = .98; RMSEA = .05) in which all parameters were free to vary across groups was significantly different ($\Delta\chi^2(9) = 19.72$, $p = .02$; $\Delta CFI = .01$; $\Delta TLI = .02$) from the constrained model ($\chi^2 = 57.10$, $df = 39$; $\chi^2/df = 1.46$; CFI = .97; TLI = .96; RMSEA = .07) in which all the parameters were fixed across groups. Similar results applied also to in-depth exploration (unconstrained model: $\chi^2 = 58.59$, $df = 30$; $\chi^2/df = 1.95$; CFI = .94; TLI = .92; RMSEA = .09; constrained model: $\chi^2 = 89.82$, $df = 39$; $\chi^2/df = 2.30$; CFI = .89; TLI = .89; RMSEA = .11; model comparisons: $\Delta\chi^2(9) = 22.69$, $p < .01$; $\Delta CFI = .05$; $\Delta TLI = .03$) and reconsideration of commitment (unconstrained model: $\chi^2 = 42.75$, $df = 30$; $\chi^2/df = 1.43$; CFI = .96; TLI = .95; RMSEA = .06; constrained model: $\chi^2 = 62.27$, $df = 39$; $\chi^2/df = 1.60$; CFI = .93; TLI = .93; RMSEA = .07; model comparisons: $\Delta\chi^2(9) = 19.72$, $p < .05$; $\Delta CFI = .03$; $\Delta TLI = .02$). Thus, we performed pairwise comparisons in order to test which specific growth factors differed across groups for each identity dimension. These comparisons are reported in Table 3 and estimated growth curves for each identity dimensions across groups are presented in Fig. 1.

With regard to commitment, high-risk boys reported significantly lower initial levels of commitment than low-risk girls, while significant differences in growth factors (i.e., linear and quadratic slopes) appeared between low-risk boys and high-risk girls. As displayed in Fig. 1, low-risk boys tend to have higher levels of commitment throughout adolescence, whereas high-risk girls report decreasing levels of commitment.

Regarding in-depth exploration, low-risk boys reported the lowest initial levels of in-depth exploration, whereas high-risk girls reported the highest level, and high-risk boys and low-risk girls scored intermediately. Differences on growth factors were less pronounced, with only a significant difference on the quadratic slope between high-risk boys and low-risk girls. Specifically, both groups reported a decrease in in-depth exploration from T1 to T3 that was

Table 1 Observed means and standard deviations of identity dimensions

	T1		T2		T3		T4		T5	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Total sample										
Commitment	3.66	.62	3.62	.64	3.61	.64	3.63	.68	3.57	.70
In-depth exploration	3.24	.62	3.24	.63	3.18	.64	3.25	.64	3.21	.63
Reconsideration of commitment	1.86	.74	1.83	.70	1.90	.72	1.89	.75	2.01	.74
High-risk boys										
Commitment	3.54	.63	3.49	.71	3.48	.76	3.54	.68	3.53	.76
In-depth exploration	3.22	.68	3.19	.68	3.08	.79	3.26	.75	3.32	.74
Reconsideration of commitment	2.02	.79	1.99	.81	2.09	.82	1.94	.81	2.10	.80
Low-risk boys										
Commitment	3.66	.58	3.66	.59	3.66	.58	3.73	.54	3.64	.59
In-depth exploration	3.13	.57	3.12	.58	3.15	.61	3.16	.65	3.10	.60
Reconsideration of commitment	1.82	.72	1.82	.69	1.86	.71	1.87	.71	1.98	.65
High-risk girls										
Commitment	3.68	.64	3.67	.69	3.51	.65	3.50	.79	3.54	.67
In-depth exploration	3.43	.59	3.45	.63	3.31	.55	3.34	.61	3.38	.53
Reconsideration of commitment	2.01	.87	1.81	.66	1.85	.64	2.05	.79	2.11	.82
Low-risk girls										
Commitment	3.75	.64	3.67	.60	3.70	.59	3.66	.73	3.55	.78
In-depth exploration	3.27	.64	3.32	.60	3.23	.58	3.29	.53	3.15	.60
Reconsideration of commitment	1.68	.60	1.70	.63	1.82	.66	1.78	.73	1.91	.73

Table 2 Model comparisons

	Linear model					Quadratic model					Model difference		
	χ^2	<i>df</i>	<i>CFI</i>	<i>TLI</i>	<i>RMSEA</i>	χ^2	<i>df</i>	<i>CFI</i>	<i>TLI</i>	<i>RMSEA</i>	$\Delta\chi^2$ (Δdf)	ΔCFI	ΔTLI
Commitment	19.849	10	.977	.977	.047	6.552	6	.999	.998	.014	13.297 (4), $p < .05$.022	.021
In-depth exploration	39.976	10	.928	.928	.082	9.080	6	.993	.988	.034	30.896 (4), $p < .001$.065	.060
Reconsideration of commitment	24.890	10	.949	.949	.058	10.001	6	.986	.977	.039	14.889 (4), $p < .05$.037	.028

χ^2 Chi square, *df* degrees of freedom, *CFI* Comparative Fit Index, *TLI* Tucker-Lewis Index, *RMSEA* root mean square

followed by an increase in exploration, however this latter increase was sharper for boys.

Regarding reconsideration of commitment, low-risk girls reported the lowest initial level, whereas high-risk boys scored the highest and the other two groups reported intermediate scores. Significant variations in growth factors (detected both in linear and in quadratic slopes) differed between low versus high-risk girls. As shown in Fig. 1, low-risk girls showed very low initial levels of reconsideration that increased linearly throughout adolescence, while high-risk girls exhibited higher initial levels of reconsideration that remained higher throughout the entire course of adolescence but were characterized by more

variation, with a decrease between T1 and T2, followed by an increase, that was particularly sharp between T3 and T5.

Profile Stability

Profile stability was computed for the total sample as well as for the four groups (see Table 4). Results of the repeated-measures analysis of variance indicated significant differences among the four groups in profile stability over time ($F(3, 423) = 9.06, p < .001, \eta^2 = .06$). Pairwise comparisons (see Table 4) revealed that high-risk boys reported the lowest level whereas low-risk girls reported the highest level of profile stability across time (estimated

Table 3 Growth factors for latent growth curve models of identity dimensions

	Total sample	Group comparisons			
	<i>M</i> (σ^2)	High-risk boys <i>M</i> (σ^2)	Low-risk boys <i>M</i> (σ^2)	High-risk girls <i>M</i> (σ^2)	Low-risk girls <i>M</i> (σ^2)
Commitment					
Intercept	3.65 (0.21)***	3.53 (0.12)*** ^a	3.64 (0.17)*** ^{.ab}	3.70 (0.29)*** ^{.ab}	3.73 (0.30)*** ^{.b}
Linear Slope	−0.01 (0.07)	−0.02 (0.01) ^{ab}	0.05 (0.06) ^b	−0.12 (0.18) ^a	−0.02 (0.02) ^{ab}
Quadratic Slope	0.00 (0.01)	0.01 (0.00) ^{ab}	−0.01 (0.01) ^a	0.02 (0.01) ^b	−0.01 (0.00) ^{ab}
In-Depth Exploration					
Intercept	3.24 (0.27)***	3.23 (0.21)*** ^{.ab}	3.12 (0.18)*** ^{.a}	3.43 (0.32)*** ^{.c}	3.27 (0.20)*** ^{.bc}
Linear Slope	−0.01 (0.15)	−0.09 (0.01) ^a	0.03 (0.13) ^a	−0.08 (0.32) ^a	0.06 (0.01) ^a
Quadratic Slope	0.00 (0.01)	0.03 (0.00) ^b	−0.01 (0.01) ^{ab}	0.02 (0.01) ^{ab}	−0.02 (0.00) ^a
Reconsideration					
Intercept	1.86 (0.29)***	2.02 (0.44)*** ^{.c}	1.83 (0.20)*** ^{.ab}	1.96 (0.18)*** ^{.bc}	1.68 (0.28)*** ^{.a}
Linear Slope	−0.03 (0.15)	−0.02 (0.24) ^{ab}	−0.02 (0.05) ^{ab}	−0.14 (0.11) ^a	0.04 (0.15) ^b
Quadratic Slope	0.02 (0.01) [*]	0.01 (0.01) ^{.a,b}	0.01 (0.01) ^{.a,b}	0.05 (0.00) ^{*,b}	0.01 (0.01) ^a

M Mean, σ^2 Variance; Within each row, different superscripts indicate significant ($p < .05$) Tukey post hoc differences among the high versus the low-risk boys and girls

* $p < .05$; ** $p < .01$; *** $p < .001$

marginal means were .64 and .85, respectively). Further, within each gender, high-risk adolescents reported significant lower profile stability than their low-risk counterparts (i.e., high-risk boys exhibited lower profile stability than low-risk boys and high-risk girls displayed lower profile stability than low-risk girls).

Discussion

Identity formation is the most important developmental task of adolescence and the extent to which young people endorse meaningful commitments in relevant domains impact their capacities of properly facing adult developmental tasks (Erikson 1950, 1968). Thus, resolving the identity formation task represents a great challenge. Therefore, a major priority in the scientific agenda of social scientists is to improve the understanding of which conditions can facilitate or, on the contrary, obstruct adolescents' pursuit of a clear sense of themselves.

In this study, we focused on the potential detrimental role that problem behaviors can have on identity development. In particular, we sought to shed light on identity paths of both boy and girl early adolescents with either a low-risk or high-risk for externalizing problem behaviors. The distinction of the low-risk and high-risk groups was based on teacher reports provided when the respondents were 11 or 12 years old. Then, youth were followed over the course of adolescence from 14 to 18 years old, with a five-wave longitudinal design with annual assessments, to monitor their identity development. Findings regarding

both inter-individual and intra-individual changes revealed an interesting pattern of differences among boys and girls with a low versus a high-risk for externalizing problem behaviors.

Early Adolescent Externalizing Problem Behaviors Predicting Identity Formation at Age 14

First, we found that early adolescents who had been rated as a low-risk versus a high-risk for externalizing problem behaviors by their teachers reported significant differences in identity at age 14. Specifically, high-risk boys exhibited the most disorganized identity: they displayed a combination of low commitment, medium in-depth exploration, and high reconsideration of commitment that is typical of the moratorium status. This finding is consistent with previous research conducted with the three-factor identity dimensional model that has indicated that reconsideration of commitment was related to delinquency (Crocetti et al. 2008b) and that adolescents in the moratorium status reported more direct aggression (Crocetti et al. 2008a, b) and delinquency (Meeus et al. 2012) than their peers in the high commitment statuses. Similarly, Klimstra et al. (2011) found that juvenile delinquent boys residing in a youth penitentiary institution reported lower commitment and higher reconsideration of commitment than both clinically referred male youth and male adolescents from the general population.

Thus, at age 14, at-risk boys were behind their peers in terms of identity formation. This could be due both to the negative impact of problem behaviors and to gender differences in identity. Indeed, girls seem to be ahead of boys

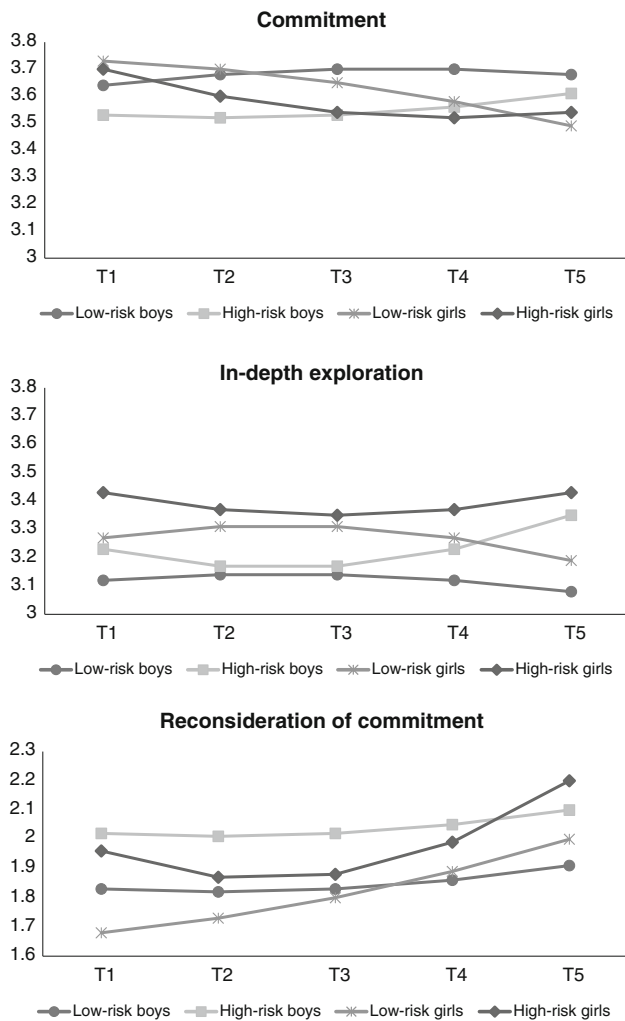


Fig. 1 Estimated growth of identity dimensions in boys and girls with a low- versus a high-risk of externalizing problem behaviors

Table 4 Profile stability of identity dimensions

	T1–T2	T2–T3	T3–T4	T4–T5	Estimated marginal means
Total sample	.77	.79	.77	.78	
Group comparisons					
High-risk boys	.66	.64	.65	.63	.64 ^a
Low-risk boys	.78	.86	.81	.83	.82 ^{cd}
High-risk girls	.73	.78	.77	.76	.76 ^{bc}
Low-risk girls	.89	.87	.82	.84	.85 ^d

In the last column, different superscripts indicate significant ($p < .05$) differences among estimated marginal means computed for the four groups

in identity formation in early to middle adolescence, with boys catching up again in middle to late adolescence (Klimstra et al. 2010). In line with this gender difference, we found that at age 14 low-risk girls were more

committed and less engaged in reconsideration of commitment, revealing a condition of higher identity certainty. Low-risk boys and high-risk girls reported an intermediate profile, suggesting that both a low risk of problem behaviors and a being a female played a protective role.

Early Adolescent Externalizing Problem Behavior Predicting Identity Formation in Middle to Late Adolescence

By means of a five-wave longitudinal design, we also documented specific identity paths over the course of adolescence. We found that identity development was captured by curvilinear growth models (i.e., a combination of linear and quadratic slopes; see Table 1). We also detected significant subgroup differences in identity growth indices. In particular, the main differences occurred in commitment slopes of low-risk boys and high-risk girls and in reconsideration of commitment slopes of the low versus the high-risk girls. Results indicated that, over the course of adolescence, high-risk girls displayed a decrease in commitment, particularly sharp at the beginning of adolescence, which was combined with an increase in reconsideration that was the most pronounced toward the end of adolescence.

These differences between the low-risk and the high-risk boy and girl adolescents reflect inter-individual patterns (Duncan et al. 1999). Analysis of intra-individual change may provide further insight into the phenomenon under investigation. Findings on profile stability, which indicates the stability of the rank order of identity dimensions within each person (Block 1971; Roberts et al. 2001), indicated that high-risk boys reported the lowest stability, whereas low-risk girls the highest. This finding suggests that, for high-risk boys, identity is less consistently organized. Therefore, they may experience more identity distress than low-risk girls. Furthermore, within each gender, high-risk adolescents reported significantly lower profile stability than their low-risk counterparts.

Taken together, these findings highlight that, over the course of adolescence, identity formation is particularly challenging for high-risk boys and girls. Since externalizing problem behaviors are more common among boys than among girls (e.g., Bongers et al. 2003; Moffitt 1993; Rescorla et al. 2007), some further considerations about what happens in high-risk girls are worthy of attention. High-risk girls may perceive themselves to deviate from what is expected to be typical of the feminine role. Therefore, girls with a high-risk of externalizing problems could perceive themselves to be less socially accepted. This might hamper their identity formation, limiting chances of in-depth exploration of identity alternatives and fostering a not adaptive, ruminative form of exploration,

characterized by a tendency to mull over possible choices without being able to fully commit to any of them. Indeed, after a slight decrease in reconsideration of commitment from 14 to 15 years old, high-risk girls displayed a steep increase in reconsideration from 15 to 18 years old. It is suggested that reconsideration of commitment originates from a condition of dissatisfaction with current commitments and may stimulate identity change toward achievement of greater maturity. However, when reconsideration remains high, it is more likely to represent a maladaptive thinking and rethinking about the current situation that does not imply any true progress toward greater identity stability. This dark side of reconsideration of commitment has been captured in previous research revealing that reconsideration is associated with a diffuse identity style (Crocetti et al. 2009b), that is a style characterized by a tendency to procrastinate and delay dealing with identity issues as long as possible (Berzonsky 1989). This diffuse style also has been found to be related to several types of problem behaviors, including drug and alcohol problems (cf. Berzonsky 2004).

Finally, in our study, the differentiation between adolescents who run a low-risk versus a high-risk for externalizing problem behavior adolescents was based on teacher reports at early adolescence. We can draw two conclusions from this. First, teacher reports effectively predicted difficulties in identity formation over the course of middle to late adolescence. Second, we can exclude the possibility that differences in identity are due to a sort of Pygmalion effect (Rosenthal and Jacobson 1992), according to which students would be influenced by their teachers' expectations. Indeed, the students were evaluated by their teachers before transitioning to secondary school with new teachers. This transition provided students with the opportunity to start anew and reinvent themselves in a new context, without the potential burden of previous teachers' expectations. Nonetheless, we cannot completely exclude the possibility that students with a longer history of externalizing problem behaviors performed in the school-system had internalized a set of teacher expectations that might continue to influence them even in a new different school environment. This is a potential shortcoming that needs to be addressed in future studies.

Strengths and Limitations of this Study and Suggestions for Future Research

This study should be considered both in light of its strengths and shortcomings that might suggest future lines of research. First, in respect to the strengths of this study, this investigation utilized a five-wave longitudinal design that covered ages 14 until 18. As widely advocated (e.g., Schwartz 2005), longitudinal designs are necessary to

capture adolescent identity trajectories. However, a potential shortcoming is the one-year interval between assessments. It might be that longitudinal designs that use multiple waves with shorter intervals among them (e.g., monthly intervals) could unravel in more detail the identity trajectories of adolescents with different risks of externalizing problem behaviors.

Second, we predicted identity formation in middle and late adolescence from early adolescence risk status based on teacher-rated externalizing problems. Although teachers' ratings can be affected by various biases related to teachers' expectations and/or student reputation, a wide corpus of evidence has revealed that the TRF is reliable tool for assessing externalizing problem behaviors (see Ivanova et al. 2007, for a test of TRF validity in 20 societies). In addition, Verhulst et al. (1994) found that the teachers' reports were strong predictors of following adolescents' development. Teachers' reports predicted poor outcomes equally well or even somewhat better than parents' reports, leading Verhulst et al. (1994; p. 543) to conclude that "it is therefore important to include teacher information in the diagnostic assessment of children". Findings of the current study further support this consideration, showing that teachers' reports of externalizing problems predicted later differences in adolescent identity development.

Third, given the limited literature on identity and externalizing problem behaviors, it was important to focus on externalizing problem behaviors as a whole in the present study. Since this study has demonstrated that adolescents with different risks of externalizing problem behaviors also differ in their identity paths it would be meaningful to continue this line of research with problem behaviors that first occur in adolescence (e.g., binge drinking and substance use). In other words, it would be very interesting to uncover identity trajectories specific to various types of problem behaviors, in order to refine prevention interventions.

Fourth, a further strength of this study is that it examined for the first time identity development in adolescents who were classified to be at low-risk versus a high-risk for externalizing problem behaviors. However, we were not able to control for possible differences in early identity formation, as we had no assessments on identity at the age of 12. Since identity formation is an ongoing process, especially in middle and late adolescence, the impact of this omission is uncertain.

Fifth, an additional strength of the current study is its focus on gender effects. In fact, we analyzed identity trajectories in both boys and girls with a low-risk versus a high-risk for externalizing problems that uncovered some interesting gender specificities. However, in our study, ethnic differences were not taken into account, as we

focused exclusively on Dutch adolescents. Future research might improve our understanding of this topic by examining identity paths in adolescents from different ethnic groups with varying risk levels of externalizing problem behaviors.

Related to the previous point, there is also another issue that could be improved in future research. In the current study, we assessed global identity considering identity domains relevant to all adolescents (i.e., for the ideological domain we assessed educational identity and for the relational domain we focused on friendship). Future studies could expand this line of research by considering ethnic identity as well, even though this is not as salient for the majority group (e.g., Caucasian adolescents living in the USA) as it is for the minority groups (e.g., African-American or Hispanic adolescents living in the USA; Branch et al. 2000). Up to now, studies on ethnic identity and externalizing problem behaviors have yielded inconsistent findings, with some research reporting significant associations (e.g., McMahon and Watts 2002; Shrake and Rhee 2004), but not being confirmed by other investigations (e.g., Schwartz et al. 2007, 2009). Even within the same study, associations between externalizing problems and identity are sometimes found only for some ethnic groups, but not for others. For instance, Wissink et al. (2008) found that ethnic identity commitment was related significantly to externalizing problem behaviors only among Moroccan-Dutch adolescents, whereas this link was not found to be significant among either Turkish-Dutch nor native Dutch adolescents. Therefore, future research could shed more light on this issue by paying attention to group-specific ethno-cultural experiences (Gray-Little and Hafdahl 2000) and analysing different moderating factors that could account for the diverging findings reported in the literature.

Practical Implications

The present study has several practical implications. We have found that early adolescents with a high risk of externalizing problem behaviors have greater difficulties in developing a coherent sense of identity over the course of adolescence. Thus, early externalizing problem behaviors, just like internalizing problems (Crocetti et al. 2009a), might hamper identity formation. These results, together with those documenting that a condition of identity confusion is related to increasing problem behaviors (e.g., Meeus et al. 2012), point to the reciprocal relationships between externalizing problem behaviors and identity. In other words, adolescents who run a high-risk for problem behaviors find it difficult to achieve a stable identity and a lack of a firm sense of identity fosters higher rates of problem behaviors, contributing to the development of a negative spiral.

Therefore, it is of utmost importance to intervene promptly in order to prevent a negative spiral and reduce the probability that youth with problem behaviors become life-course persistent deviant adults (Moffitt 1993). In this respect, the results of this study highlight that teacher reports can be fruitful for identifying adolescents that run a high-risk of externalizing problem behaviors. Thus, teacher reports (Achenbach 1991) are a valuable tool for conducting early screenings aimed at identifying adolescents who could benefit from tailored interventions.

Interventions might be applied at different levels, focused both at reducing externalizing problem behaviors as well as supporting identity formation (Schwartz and Pantin 2006). A key ingredient of interventions could be the quality of family relationships. In fact, both the occurrence of externalizing problem behaviors (e.g., Williams et al. 2009) and the achievement of identity maturity (e.g., Kroger and Marcia 2011) are intertwined with family relationships. In regard to specific interventions, in a recent study by Wijsbroek et al. (2010), it was suggested that Parent Management Training may be one of the better interventions. This training is a well-documented and evaluated treatment for delinquency symptoms of early adolescents (e.g., Brestan and Eyberg 1998; Hipwell and Loeber 2006; Kazdin 2000) and also helps to improve the quality of positive parenting skills (Nock 2003). Specifically, Parent Management Training is a behavioral therapy that emphasizes social learning principles (Kazdin 2005). While it falls outside of the scope of the present study, it is conceivable that this training could be modified to address adolescent identity formation issues. Since the techniques applied in this training are based on behavioral theory (such as reinforcement principles), a modified version of the Parent Management Training that also addresses adolescent identity formation issues could be employed not only in individual or group therapies, but also as a school-based prevention programs. The findings of this study would suggest that exploring into such therapies and prevention programs merits future research attention.

Conclusion

The present study shed light on identity paths of early adolescents with a low-risk versus a high-risk of externalizing problem behaviors. We found that boys and girls with a high-risk of externalizing symptoms reported more difficulties in developing a firm sense of identity over middle to late adolescence. Because externalizing problems behaviors and an incoherent sense of identity might reinforce each other in a negative spiral, it seems necessary to intervene promptly on the high-risk adolescents in order to promote positive youth development.

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Author contributions EC and WM conceived the current study; EC performed the statistical analyses and wrote the manuscript; TK participated in the data analysis and interpretation of the results; WWH participated in the interpretation of the results and in the drafting of the article; HK and WM are the principal investigators of the RADAR project and are responsible for the data collection. All authors read and approved the final manuscript.

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