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Dark Shadows of Rumination:

Finnish Young Adults' Identity Profiles, Personal Goals and Concerns

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Abstract

Young adults actively construct their identity by exploring and committing to opportunities through the setting of personal goals. Typically personal goal contents are related to young adults' developmental tasks but sometimes goals are self-focused. This longitudinal study explored personal goal and concern contents in relation to identity profiles among young Finns (N = 577) followed from age 23 to 25. Applying the Dimensions of Identity Development Scale, identity formation was measured at age 23. Latent Profile Analysis yielded five profiles: moderate achievement, moderate diffusion, achievement, diffused diffusion, and reconsidering achievement. Two "dark side" identity profiles, characterized by low commitment and high ruminative exploration, were identified: moderate diffusion and diffused diffusion. The moderate diffusion profile seemed to have developmental task-related personal goals and concerns. In the diffused diffusion profile, self-focused personal goals and concerns were typical and personal goals and concerns towards relationships atypical. These findings persisted over the two-year follow-up.

Keywords: personal goals, concerns, content analysis, identity status, person orientation

Dark Shadows of Rumination:

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Young people in transition to adulthood take an active and goal-oriented role in their own development (e.g., Heckhausen, Wrosch, & Schulz, 2010; Salmela-Aro, 2009). The identity formation process of finding out "who I am, and what are my goals" (Schwartz, 2001), is closely tied to the construction of personal goals that optimize young people's ability to handle their upcoming lifespan development (Baltes, 1997; Salmela-Aro, et al., 2012). This requires young people to compare their individual motivation and needs with the opportunities, challenges, and constraints typical of the life situation at hand (e.g., Heckhausen et al., 2010; Nurmi, 1992; Salmela-Aro, Aunola, & Nurmi, 2007; Salmela-Aro, 2009). The transition to adulthood poses a number of demands called developmental tasks, which, if met by a young person, are thought to lead to adaptive development (e.g., Havighurst, 1948). Developmental tasks in young adulthood include the completion of education, engaging in one's future career, finding and committing to an intimate relationship, and starting a family. While scholars have theorized about the links between identity development and the construction of personal goals, empirical research involving both kinds of engagement with the transition to adulthood is still missing (Seiffke-Krenke, & Gelhaar, 2008; Dietrich, Parker, & Salmela-Aro, 2012). This however, would complete our understanding which kinds of personal goals and identity processes can be considered adaptive or maladaptive. Therefore, this study aims to shed light on the intertwined processes of young adults' identity formation, operationalized as identity profiles, and the contents of their personal goals and concerns, examined as the extent to which these

are related to developmental tasks or not. Specifically, we examine to what extent there is a "dark side" to certain identity profiles, where individuals not only experience poor well-being, but also differ from individuals in other identity profiles in the kinds of personal goals they set and the concerns they struggle with.

Identity Processes, Statuses, and Profiles

Much research has been conducted on the topic of identity statuses, and dimensions (for a review, see e.g., Crocetti, Sica, Schwartz, Serafini, & Meeus, 2013; Schwartz, 2001). The process-oriented dual-cycle model of identity (Luyckx, Goossens, Soenens, & Beyers, 2006) describes identity development within the cycles of commitment formation and commitment evaluation. Both cycles include, first, an exploration of possible future states, and, second, commitment to particular choices. More specifically, first the individual explores alternatives (*exploration in breath*), and chooses and commits to particular choices (*commitment making*) (Luyckx et al., 2006; Luyckx, Teppers, Klimstra, & Rassart, 2014; Marcia, 1966). Second, the individual goes through her current commitments (*exploration in depth*), and unites these into the sense of self (*identification with commitment*) (Luyckx et al., 2006, 2014). A recent study by Zimmermann, Lannegrand-Willems, Safont-Mottay, & Cannard (2015) demonstrated that exploration in depth could have two sides: exploration leading to better understanding and a firming up of commitments already made, and a "darker side" where exploration leads to a re-evaluation of commitments. Luyckx et al. (2008) have further identified a fifth process (*ruminative exploration*), where the individual gets stuck in the exploration process and ruminates on life without direction.

Several studies have identified identity statuses on the basis of empirically measured profiles of identity processes, and these have often been drawn from cluster

analysis (Crocetti et al., 2008; Crocetti, Schwartz, Fermani, Klimstra, & Meeus, 2012; Luyckx et al., 2008; Luyckx, Duriez, Klimstra, & De Witte, 2010; Schwartz et al., 2011; Zimmermann, et al., 2015), and latent class analysis (Meeus, Van De Schoot, Keijsers, Schwartz, & Branje, 2010). These studies have found some of the profiles proposed by Marcia (1966): *achievement* (moderate or high exploration of alternatives, without ruminative exploration, and then clear commitment)*, foreclosure* (very clear commitments without exploring alternatives), and many refined statuses, including *ruminative moratorium* (weak commitments, high exploration, and, in particular, ruminative exploration)*, searching moratorium* (strong and clear commitments, but returning to consider these with high exploration of new alternatives)*, and diffused diffusion* (weak exploration, weak definite commitments, and elevated ruminative exploration) (Crocetti et al., 2008; Kroger & Marcia, 2011; Luyckx et al., 2008; Schwartz et al., 2011; Zimmermann, et al., 2015). Ruminative moratorium and diffused diffusion have been found to be associated with problems in general psychological functioning, such as heightened depressive symptoms (Crocetti et al., 2008; Luyckx et al., 2008; Schwartz et al., 2011), and lowered satisfaction with life (Schwartz et al., 2015), and in domain-specific functioning, such as academic burnout, and low career engagement (Luyckx et al., 2010), lower intrinsic motivation, and feelings of incompetence (Waterman, 2004).

Personal Goals and Concerns during the Transition to Adulthood

Identity formation is closely related to goal pursuit (see Dietrich et al., 2012). Goals refer to future-oriented states, outcomes, or representations of what young adults are striving to achieve (see Austin & Vancouver, 1996). These can range from very explicit personal projects (Little, 2014) to current concerns (Klinger & Cox, 2011),

which refer to latent and implicit processes towards particular, yet explicitly unformulated, personal goals. Young people can mentally represent their personal goals in different ways, such as positive desired states ("I want to get job"), hereafter named personal goals, or negative, often more implicit worries ("my relationship won't last"), hereafter labeled personal concerns. Identity development and personal goal striving are cognitive processes, as both include efforts to construct goals and identity commitments, efforts made to pursue goals and express identity commitments, and efforts made to renegotiate these, for example, in light of difficulties (Dietrich et al., 2012).

Scholars in developmental psychology have stressed that the kinds of personal goals and concerns people set (i.e. goal and concern contents) are bound to developmental tasks arising at different points in their lives (e.g. Heckhausen et al., 2010; Nurmi, 1992; Salmela-Aro, 2009). In the process of personal goal formulation, the individual compares and explores her motivation in relation to current opportunities and challenges, and makes commitments to personal goals. Thus, if young people's personal goals reflect the developmental tasks at the transition to adulthood, this has been shown to benefit their well-being (Salmela-Aro, et al., 2007, Salmela-Aro, et al., 2012), lower their stress (Dietrich, Jokisaari, & Nurmi, 2012), and promote domain-specific attainment (Ranta, Dietrich, & Salmela-Aro, 2014). However, young adults also have personal goals and concerns that are self-focused (Salmela-Aro & Nurmi, 1997; Salmela-Aro et al., 2001). The contents of these self-focused personal goals and concerns reflect active striving to work out the meaning of one's life, or changing or improving the sense of self, identity, and one's own life-style, or coping and adjustment (Marttinen & Salmela-Aro, 2012; Salmela-Aro, et al., 2012). Thus, self-focused

personal goals are different from personal goals related to developmental tasks. Optimal

identity development has been described to include exploration of self-related issues

(Erikson, 1968), and self-focusing has been found to be self-reflective, and thus related

to positive outcomes (Burwell & Shirk, 2007; Nolen-Hoeksema, Parker, & Larson,

1994; Salmela-Aro & Nurmi, 1997; Salmela-Aro, et al., 2012). However, in turn, self-

focused attention is reported to be associated with negative thinking and rumination

(Mor & Winquist, 2002), and self-focused personal goals are found to be associated

with low well-being (Luyckx, et al., 2008; Salmela-Aro, 1992). Thus, ruminative self-

focused personal goals and concerns may give rise to ruminative worrying, which has

been found to be related to depressive symptoms (Salmela-Aro, et al., 2012), low self-

esteem, mental health problems (Salmela-Aro, et al., 2001), exhaustion (Marttinen &

Salmela-Aro, 2012), and even suicide (Li, Chau, Yip & Wong, 2013).

Study Aims

To shed light on the "dark side" of identity development and personal goal

construction, we aimed, first, to identify identity formation profiles among Finnish

young adults. We expected to find identity formation profiles similar to those reported

earlier (Hypothesis 1) (e.g., Luyckx et al., 2008; Schwartz et al., 2011; Zimmermann et

al., 2015). To validate the profiles yielded by the analysis, we examined whether these

differed in subjective well-being, as found in previous studies. We hypothesized that

those with "dark side" profiles, i.e. diffused diffusion and ruminative moratorium,

would have poorer well-being (Hypothesis 2a) (Luyckx et al., 2008; Schwartz et al.,

2015). For further purposes of validation, we compared career goal appraisals in the

identity formation profiles that we found. We hypothesized that "dark side" profiles

would be related to poorer motivational outcomes (Hypothesis 2b) (Waterman, 2004).

We also examined the differences in background characteristics between the identity profiles.

Our second aim was to examine longitudinally the extent to which the content of young adults' personal goals and concerns differed according to their identity profiles. More specifically, we hypothesized that the "dark side" profiles would reflect maladaptation, manifesting in personal goals that are less optimal for the life phase of the transition to adulthood (Dietrich, et al., 2012; Salmela-Aro, et al., 2012). In particular, the personal goals and concerns related to the developmental tasks of forming and maintaining good relationships with one's family, dating, and friends were expected to be rarer (Hypothesis 3a) (Ranta, et al., 2014; Salmela-Aro, et al., 2012). Rather, the "dark-side" profiles were expected to relate to ruminative and lifestyle self-focused personal goals and concerns (Hypothesis 3b) (Luyckx, et al. 2008; Salmela-Aro, et al., 2012).

Methods

Participants and procedure

The study is part of the ongoing Finnish Educational Transitions (FinEdu) longitudinal study. The study began in 2004 and sampled all the 15-year-old students living in a mid-sized (population circa 97 000 inhabitants) city in Central Finland in the last year of their comprehensive school. The sample can thus be considered representative of young Finns born in 1988. For this report, we used two waves, when the participants were at age 23 (2011; $N = 577$; participation rate 85%; 322 female, 255 male), and 25 (2013/2014; $N = 482$; participation rate 86%; 286 female, 196 male). The participants gave their informed consent separately for each wave. At age 23 they reported their life situation as follows: 28% were at university, 24% were in a

polytechnic, 10% were in a vocational school, and 8% were studying for a further

education entrance examination. In Finland, university and polytechnic entrance

examinations are considered tough, and one year after taking their high-school

matriculation examination more than 60% of students are not in tertiary-level education

(Official Statistics of Finland, 2013). Unsurprisingly, 31% of the sample were studying

and working at the same time. Working alongside university or college studies is quite

common in Finland. 21% of the participants were working full time, and had thus

completed the transition to working life, 8% were unemployed, 3% were at home with

children, and 9% were doing something else. The highest socioeconomic status of the

childhood family was blue-collar (13%), lower white-collar (48%), and upper white-

collar (39%). The participants were mainly Caucasian. They reported their marital status

as single (39%), dating (20%), common-law marriage (35%), married (5%), divorced

(1%). Those who dropped out ($n = 95$) during the study were more likely to be men

($\chi^2(1) = 10.25$, $p = .001$, contingency coefficient .142), and to have scored lower on the

identity dimension exploration in breadth ($F(1) = 5.03$, $p = .025$, $\eta^2 = .010$), at age 23

compared to those who remained in the study. In the validation measures, dropouts

scored lower on all three career goal appraisals (intrinsic motivation $F(1) = 12.58$, $p =$

.000, $\eta^2 = .025$; progress $F(1) = 10.76$, $p = .001$, $\eta^2 = .021$; attainability $F(1) = 19.61$, p

$= .000$, $\eta^2 = .042$), and had lower satisfaction with life ($F(1) = 4.59$, $p = .033$, $\eta^2 = .009$)

at age 23 compared to those who remained in the study. In the baseline examination,

one participant was found to be an outlier, and to have answered the questionnaire

without giving it any thought. In person-oriented approaches, such as the latent profile

analysis used in our analysis, outliers tend to skew the results (Bergman, Magnusson, &

El-Khouri, 2002). The participant was thus excluded from the analysis.

Measures

At age 23, we assessed identity formation, personal goal and concern contents, career

goal appraisals, and well-being. At age 25, we measured personal goal and concern

contents.

Identity Formation

A short version of the Dimensions of Identity Development Scale (DIDS;

Luyckx et al., 2008) was utilized for the first time in the Finnish context. The procedure

for shortening the original scale, and the items included in the questionnaire are

presented in Appendix A. Participants evaluated their identity formation on 11 items:

commitment making (CM, two items), *identification with commitment* (IC, two items),

exploration in breadth (EB, two items), *exploration in depth with reconsideration* (ED-

R, two items), and r*uminative exploration* (RE, three items). The items were rated using

a 5-point Likert-scale ranging from 1 *(completely disagree)* to 5 *(completely agree).*

Cronbach alphas for the sub-scales were .89, .89, .74, .89, and .82, respectively.

Personal Goals and Concerns

Participants filled in the Revised Personal Project Analysis Inventory to

measure personal goals (Salmela-Aro, 2001) at both age 23 and 25. On numbered lines,

participants were asked to write down four of their *current personal goals*. They were

briefed that people usually have personal goals or projects that relate to different areas

of life, such as studies, relationships, work, health, money, self, and hobbies.

Next, the participants were informed that people might have different

kinds of concerns or worries, and they were asked to write down on numbed lines two

of their *current personal concerns* (Cox & Klinger, 2011a). The content of the personal

goals and concerns were coded into categories by two independent assessors, and their

percentage rate of agreement, i.e., content analysis reliabilities, were for personal goals

93.8% at age 23 and 91.7% at age 25, and for concerns 90.4% at age 23 and 91.3% at

age 25. The nine most frequent categories of personal goals and seven most frequent

categories of concerns were selected for further analysis. Selected categories, their

frequencies, and examples of the contents are presented in Table 1.

Validation Measures of Career Goal Appraisals and Well-being

After reporting their personal goals, the participants were asked to produce

one *career-related personal goal* and to appraise it with respect to eight items covering

intrinsic motivation (four items, e.g., "Because I really believe this is an important

goal"), *progress* (two items, e.g., "How capable are you of realizing your goal?"),

attainability (two items, e.g., "How probable do you regard the fulfillment of your

goal?"). Items were rated on a 7-point Likert scale ranging from 1 (*very little*) to 7 (*very

much*). Cronbach's alphas for the sub-scales were .78, .78, and .85, respectively.

Life satisfaction was self-rated with the Satisfaction with Life Scale

(Diener, Emmons, Larsen and Griffins, 1985). The scale comprises five items (e.g. "On

the whole, I am satisfied with myself") rated on a 7-point Likert scale ranging from 1

(*totally disagree)* to 7 (*totally agree*). Cronbach's alpha for the scale was .89.

Depressive symptoms were assessed using the 9-item Finnish Depression

Scale (DEPS; Salokangas, Stengård, & Poutanen, 1994; e.g., "During the last month, I

felt that all joy had disappeared from my life"). Items were rated on a 4-point scale

ranging from 0 (*not at all*) to 3 (*extremely*). The depression indicator was calculated by

summing the scores for all the items. A sum score of nine points was the limit of

clinically significant depression (Salokangas et al., 1994). Cronbach's alpha for the scale was .91.

Engagement in the academic context was measured with the Work and study engagement inventory (Salmela-Aro & Upadyaya, 2012). Participants evaluated their engagement with nine items (e.g., "At work or at school I am bursting with energy") on a 7-point Likert scale ranging from 0 (*Never*) to 6 (*Daily*). Cronbach's alpha for the scale was .94.

Academic burnout (Salmela-Aro, Kiuru, Leskinen, & Nurmi, 2009) was measured with a 10-item inventory (e.g., "I feel that I am drowning in my studies or work"). Participants evaluated their burnout on a 6-point Likert scale ranging from 1 (*Totally disagree*) to 6 (*Totally agree*). Cronbach's alpha for the scale was .88.

Data Analysis

Confirmatory factor analysis (CFA) was used to analyze the factor structure of the DIDS. Next, we used latent profile analysis (LPA) to reveal identity formation profiles at age 23. LPA is a model-based modification of cluster analysis (Vermunt & Magidson, 2002), and one of its advantages to cluster analysis is that it provides fit indices. To validate the identified solution, we used analysis of variance (ANOVA) to compare the identity profiles (obtained by LPA) in career goal appraisals and well-being at age 23. Missing values in ANOVA were handled with list-wise deletion. Finally, we employed configural frequency analysis (CONFA; Stemmler, 2014; von Eye, 1990) to examine how the identified identity profiles differed in the frequencies of the contents of personal goals and concerns at age 23 and age 25. CONFA is a non-parametric method that identifies over-frequent observations occurring

more often than expected (type) in cells of cross tabulation or more complex

configurations, and under-frequent observations occurring less often than expected

(antitype) (Stemmler, 2014). CONFA allows to analyze far more complex patterns than

e.g. chi square-test. With CONFA, we identified the more common and rarer personal

goals and concerns within the different identity profiles. The CFA and LPA analyses

were conducted with Mplus 7.11 (Muthén & Muthén, 1998-2012). The CONFA

analyses were conducted with R version 3.0.3 (R Core Team, 2014) using the confreq

package (Heine, Alexandrowicz, & Stemmler, 2014). ANOVAs were conducted with

IBM SPSS Statistics Version 19.

Preliminary analysis

The shortened form of the DIDS was utilized for the first time, and DIDS

for the first time in the Finnish context. Correlations among the study variables, overall

means and standard deviations are presented in Table 2. Exploration in depth correlated

only with ruminative exploration but not with exploration in breadth. The short form of

the DIDS captured the reconsideration type of exploration in depth, as described by

Zimmermann et al. (2015). For explicitness, this dimension was rephrased as

exploration in depth with reconsideration (ED-R). A CFA for the dimensional structure

of the DIDS was conducted. Table 3 summarizes the fit indices for the different factor

solutions. As expected, the five-factor model fitted the data best.

Results

Identity Formation Profiles

To identify identity profiles, we conducted LPA with unstandardized

values. The information criteria for the different profile solutions are presented in Table

4. The five latent profile solution was selected for further analysis showing both

significant likelihood ratio test p-values and a high entropy value, indicating good fit of

the model. However, we found the smallest BIC value and likelihood ratio test p-values

and the highest entropy value in the seven-profile solution. Therefore, we also examined

the seven-profile solution, and found that two profiles were in fact divided into halves,

indicating that the differences between those profiles were only differences of level.

Moreover, overall interpretability decreased. According to Johnson (2015), in deciding

on the best LPA solution, equal weight should be given to theoretical considerations and

interpretability, and to statistical indices. In light of these considerations, we chose the

more parsimonious solution with five profiles. The mean scores, standard deviations,

and differences between the profiles are presented in Table 5. To facilitate

interpretability of the identity profiles and comparability with earlier research findings,

we calculated the *z*-scores for the five-profile solution (Figure 1).

The largest profile (*n* = 251, 43.5%), high in CM, IC, and EB, but with no

extreme scores on any scale, was named *moderate achievement*. The second largest

profile, with scores on all dimensions in the middle of the scale, and somewhat elevated

ED-R and RE, was named *moderate diffusion* (*n* = 175, 30.3%). Third, a profile high in

both commitment dimensions and in EB, and very low in ED-R and in RE, was named

achievement (*n* = 79, 13.7%). Fourth, a profile low in CM and IC, with moderate EB,

high ED-R and the highest score for RE, was named *diffused diffusion* (*n* = 54, 9.4%).

Finally, a small profile (*n* = 18, 3.1%) with very high in CM, IC, EB and ED-R, and

moderate RE, was named *reconsidering achievement.* The found identity profiles were

only partly similar to those reported earlier (Hypothesis 1).

The proportions of the background variables in each of the identity

profiles (Table 6) showed that working alongside studying was more common in the

achievement profile and less common in the moderate diffusion profile. In contrast, full-time work and unemployment were more usual in the moderate diffusion profile and rarer in the achievement profile. Studying for entrance examination was more usual in the reconsidering achievement profile. To validate the identity profile solution, we examined the mean differences in career goal appraisals and subjective well-being (Table 7). In the light of these measures, the achievement and moderate achievement profiles were the best adjusted: high life satisfaction, academic engagement, intrinsic motivation in career goal pursuit, and low depressive symptoms and academic burnout. The reconsidering achievement profile was found to be better adjusted than the diffused diffusion profile, but it did not differ from any other profiles. In line with our Hypothesis 2a, the diffused diffusion profile was found to have a clinically significant number of depressive symptoms, and their satisfaction with life was the lowest. Further, the moderate diffusion profile was found to have low satisfaction with life and an elevated number of depressive symptoms. Both profiles reported low academic engagement, and high academic burnout. In line with Hypothesis 2b, we found that those in the diffused diffusion and the moderate diffusion profiles had the lowest intrinsic motivation towards their career goal, and more doubt in progressing in and attaining it. In view of these validation outcomes, we consider the diffused diffusion and moderate diffusion profiles to represent the "dark side" of identity development.

Contents of Personal Goals and Concerns

The aim of our final analysis was to identify the more common (type), and rarer (antitype) contents of personal goals and concerns associated with the different identity profiles cross-sectionally at age 23 and longitudinally at age 25. Table 8 shows a summary of the results, including statistically significant and close to significant

contents (full result Tables are given in Appendix B). For young adults with the

achievement and moderate achievement profiles it was unusual to have self-focused

personal goals and concerns, and relationship related contents emerged to be typical at

age 25. The reconsidering achievement profile had education related but not work

related concerns at age 23. Further at age 25, their personal goals developed more

towards leisure time and financial matters and less towards relationships. Those in the

moderate diffusion profile had only a few personal goals and concerns that were either

typical or atypical, meaning that their personal goals and concerns were mainly in line

with those of the overall sample. However at age 23, they more commonly had

monetary- and material possessions-related personal goals, which come into the

category of developmental task-related goals. They more rarely reported education- and

personal health-related concerns. The background information showed that the moderate

diffusion profile was more likely to be already in full-time employment, which explains

their typical finance-related personal goals and the lack of educational concerns. The

moderate diffusion profile seemed to have developmental task-related personal goals

and concerns that can be regarded as normative in light of their life situation.

In line with hypothesis 3a, the diffused diffusion profile had fewer

relationship-related personal goals and concerns at age 23 and 25. Also in line with

hypothesis 3b, at age 23, the diffused diffusion profile had more commonly self-focused

lifestyle concerns and close to significantly ruminative self-focused personal goals and

concerns. This profile also had more commonly leisure time personal goals, the contents

of which were self-focused hobbies and spare time activities. All in all, the diffused

diffusion profile had fewer developmental task-related personal goals and concerns, and

more self-focused personal goals and concerns at age 23. The elevated number of self-

focused personal goals and concerns and rarer relationship-related concerns characteristic of this profile persisted over the two-year period. This result shows it is hard for those in the diffused diffusion profile to initiate an adequate active role in setting developmental task-related personal goals, and their personal goals and concerns reflect that the process of finding one's identity is a persisting struggle.

Discussion

This study examined active attempts at perceiving the different domains of life as meaningful and manageable among Finnish young adults by identifying their identity profiles and validating theses according to well-being and motivational outcomes. The study also examined the extent to which different identity profiles related to the kinds of personal goals and concerns young people set at the transition to adulthood.

Overall, we found only partly similar identity formation profiles among our sample of Finnish young adults as have been reported earlier (e.g. Luyckx et al., 2008; Schwartz et al., 2011; Zimmermann et al., 2015). Given that our exploration in-depth scale focused more on the reconsideration than the strengthening of commitments, this study adds a particularly refined "dark side" aspect to the profiles found previously. We identified two profiles reflecting a "dark side" of identity formation, both with fairly poor commitment processes and elevated ruminative exploration. Compared against earlier findings and validation measures, these profiles were labeled moderate diffusion and diffused diffusion. Young adults in the diffused diffusion profile had a clinically significant number of depressive symptoms and poor satisfaction with life, and in line with our hypotheses they were striving towards self-focused personal goals and concerns, which continued to persist at the two-year follow-

up. Moreover, the young adults in this profile pursued fewer relationship-related

personal goals and concerns, both at age 23 and two years later. In line with this, earlier

studies have found an association between diffused diffusion and heightened

internalizing problems, such as anxiety, depression, and burnout (Luyckx et al., 2010;

Schwartz et al., 2011; Schwartz et al., 2015). Here participants who had internalizing

types of personal goals and concerns had also depressive symptoms and burnout.

Moreover, we found that while the young adults in the moderate diffusion

profile were striving towards the same personal goals and concerns as would be

expected across the whole sample, they had more personal goals related to monetary

and material possessions. These results might be explained by the fact that more of the

young adults with this profile were either already working full-time or were

unemployed. Overall, the results indicate that developmental task-related personal goals

and concerns were not necessarily rarer among those with a moderate diffusion profile

and they seem to be better adjusted than the diffused diffusion profile. These findings

were not in line with our hypotheses, although, the validation analyses revealed an

elevated number of depressive symptoms and burnout in this profile, along with lower

satisfaction with life and lower intrinsic career goal motivation.

In this study, we also found a small profile labeled reconsidering

achievement. Earlier studies have often labeled a somewhat similar profile as a

searching moratorium, describing young people who seem to be willing to change their

current commitments regardless of whether they still have these commitments or have

already given up on them (Schwartz et al., 2011; Meeus et al., 2010). In this study,

however, we found this type of profile among young adults who are more typically

studying for the entrance examination at age 23, having education related concerns, and

emerging non-developmental task related personal goals. We suggest that these results show reconsideration of the commitments and a step back in the identity formation process. Thus it is possible that the reconsidering achievement is a developmentally different phase than the searching moratorium.

In general, young adults with "dark side" identity profiles can be expected to face difficulties during the transition to adulthood (Schwartz et al., 2015), although to a lesser extent among those with the moderate diffusion than diffused diffusion profile. It has been suggested in both the identity and personal goal literature that young people act adaptively when they intentionally engage in behaviors, such as goal pursuit and identity negotiations, which are appropriate to meeting the demands posed by a developmental transition (Dietrich, et al., 2012). Accordingly, the diffused diffusion profile, with multiple self-focused personal goals and concerns and lack of relationship related personal goals and concerns, can be considered maladaptive and not in line with societal demands and expectations. These individuals seem to be willing to explore the possibilities of the transition to adulthood but for possibly different reasons, they seem to focus their attention on themselves in the process, and engage in rumination. It has been suggested that processes of this kind could lead to difficulties in forming a solid self-definition and to persistent worry about the future (Luyckx et al., 2014). It has also been suggested that sometimes it may be necessary to live through and experience the moratorium phase, and await the eventual arrival of commitments (Luyckx et al., 2010). However, among the present sample in this "dark side" category, the contents of personal goals and concerns did not change over the two-year study period, showing that the diffused diffusion profile did not beginning to formulate developmental task-related contents during the follow-up.

Limitations

As a first limitation, we were only able to use a short form of the DIDS, and the questionnaire used captured only the reconsideration type of exploration in depth introduced by Zimmermann, et al. (2015), and not the type of exploration in depth that leads to better understanding. Second, the LPA yielded two possible latent profile solutions, and hence some uncertainty remains over our choice of a solution. Third, only individuals' personal goals and concerns were assessed longitudinally, and thus changes in the identity formation profiles could not be examined. Fourth, 95 participants dropped out during the study, and those who remained appraised their career goal as more progressing, it was also more intrinsically motivated, and attainable. Those who remained had also higher satisfaction in life. It is also important to address that some of the findings might be due to the Finnish cultural context and this might affect the generalizability of the findings. Finally, we are concerned for the difficulties associated with standardization in person-oriented research, i.e. causing changes for original answers, and lowering comparability across samples (Moeller, 2015). For this reason we provide the raw scores so that future studies can compare their findings.

Clinical Implications and Conclusion

Despite these limitations, our results contribute novel important information to the existing knowledge needed for clinical work with young adults. The results draw attention to self-focused and lifestyle personal goals and concerns, as well as to the lack of relationship-related personal goals and concerns, as warning signs of troubled identity development. Earlier research has pointed to the need for interventions utilizing goal pursuit assessment methods and motivational change strategies to support "dark side" identity formation processes (Luyckx et al., 2008; Schwartz, 2005;

Schwartz et al., 2011). For example, a systematic motivational counseling (SMC) intervention has been developed to influence the maladaptive ways people have of committing themselves to the pursuit of their goals or their inability to make commitments (Cox & Klinger, 2011b). Goal pursuit assessments and SMC offer concrete interventions for assessing, supporting, and changing an individual's personal goals, concerns and motivation.

Finally, we suggest that in supporting the identity formation process evidence based interventions and evaluation of these interventions are needed. More research is also needed on the conceptual overlap between identity and personal goal processes in relation to the transition to adulthood.

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Table 1

Personal goal and concern categories, examples, and frequencies at age 23 and age 25

Category	Example	Personal goal frequency		Concern frequency	
		age 23	age 25	age 23	age 25
work: profession, occupation, unemployment, be successful at work	"get a permanent job" *"I won't get a job with my field of education"*	500 (.87)	468 (.97)	134 (.23)	118 (.24)
education: studying, finishing a degree, future education	"succeed in university studies" *"my studies are not progressing as I would have liked"*	395 (.68)	143 (.30)	88 (.15)	45 (.09)
relationships: romantic relationships, own current family and children, childhood family and siblings or friends	"happy relationship" "get married" "have children" "hold close people near" *"my relationship won't last" "well-being of my loved one"*	372 (.64)	414 (.86)	163 (.28)	178 (.37)
finance and material possessions: standard of living, depths, property, car	"save money" *"money"*	122 (.21)	110 (.23)	213 (.37)	152 (.32)
leisure time: hobbies, traveling	"read more" "play music" "run a marathon" "meditate"	216 (.37)	181 (.38)	<40	<40
own apartment / house and moving: owning a house or department, furnishing	"buy my own home "	150 (.26)	161 (.33)	<40	<40
own health: physical health and taking care of it	*"health related" "I'm in bad shape" "that I'll get sick"*	212 (.37)	186 (.39)	78 (.14)	95 (.20)
lifestyle: good and bad life, success in life, adaptation, happy life, future, choices, experiences	"happiness" "live in the moment" *"time management" "own future" "I won't get enough done"*	102 (.18)	79 (.16)	87 (.15)	63 (.13)
self: ruminative self-related, personal growth and development, independence, own feelings, loneliness, stress, freedom, burnout, self-esteem	"develop to be a better person" "stress less" "I want to understand myself better" *"I'm not good enough" "I won't have enough strength" "I'm lonely"*	65 (.11)	43 (.09)	105 (.18)	55 (.11)

Note. Concerns are in italic; Frequency of personal goals and concerns per participant are in parentheses.

Table 2

Correlations and descriptive statistics for all continuous variables

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	*M*	*SD*
Identity formation													
1. Commitment making	–											3.62	.91
2. Identification with commitment	0.65**	–										3.45	.95
3. Exploration in breadth	0.53**	0.48**	–									3.79	.81
4. Exploration in depth with reconsideration	–.34**	–.25**	–0.05	–								2.87	1.09
5. Ruminative exploration	–.58**	–.48**	–.19**	0.63**	–							2.74	1.01
Validation measures													
Career goal appraisals													
6. Intrinsic motivation	0.43**	0.40**	0.35**	–.12**	–.26**	–						6.03	.89
7. Progress	0.44**	0.38**	0.32**	–.23**	–.40**	0.53**	–					5.87	1.05
8. Attainability	0.37**	0.37**	0.29**	–.24**	–.36**	0.35**	0.54**	–				5.59	1.32
Well–being													
9. Satisfaction with life	0.45**	0.47**	0.35**	–.32**	–.48**	0.30**	0.45**	0.42**	–			4.86	1.26
10. Depressive symptoms	–.39**	–.39**	–.31**	0.31**	0.49**	–.27**	–.40**	–.33**	–.62**	–		5.29	5.22
11. Work/study engagement	0.35**	0.34**	0.18**	–.24**	–.33**	0.35**	0.36**	0.24**	0.43**	–.37**	–	4.33	1.16
12. Work/study burnout	–.33**	–.27**	–0.10*	0.35**	0.49**	–.17**	–.34**	–.22**	–.46**	0.56**	–.50**	2.60	.95

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

Table 3

Fit indices for different confirmatory factor analytic measurement models.

Measurement models	BIC	df	χ^2	RMSEA < .05	CFI > .95	SRMR < .05
1 factor	16728.597	44	1217.600	0.213	0.565	0.143
2 factors (CM + IC & EB + ED-R + RE)	16296.260	43	945.097	0.189	0.666	0.143
3 factors (CM + IC & EB & ED-R + RE)	15830.199	41	547.149	0.145	0.812	0.070
4 factors (IC & CM & EB & ED-R + RE)	15562.192	38	342.888	0.117	0.887	0.063
5 factors (IC & CM & EB & ED-R & RE)	*15281.894*	*34*	*93.924*	*0.055*	*0.978*	*0.030*

Note. CM = commitment making; IC = identification with commitment; EB = exploration in breadth; ED-R = exploration in depth with reconsideration; RE = ruminative exploration; BIC = Bayesian information criterion; RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index; SRMR = Standardized Root Mean Square Residual; Best fitting solution is in italics.

Table 4

Information criteria values for different profiles solutions

Number of profile groups	BIC	p_{VLMR}	p_{LMR}	Entropy	Size of the most likely latent profile group
1	8050.437				587
2	7482.083	0.0000	0.0000	0.765	226 361
3	7314.291	0.0242	0.0264	0.768	63 281 243
4	7175.489	0.0000	0.0000	0.915	56 98 173 260
5	*7137.801*	*0.0142*	*0.0157*	*0.914*	*79 56 177 257 18*
6	7098.095	0.4639	0.4739	0.870	90 91 255 57 20 74
7	6961.078	0.0149	0.0165	0.970	18 38 85 203 17 138 88
8	7000.286	0.8736	0.8682	0.872	61 44 76 13 80 97 194 22

Note. BIC = Bayesian information criterion; p_{VLMR} = Vuong-Lo-Mendell-Rubin likelihood ratio test; p_{LMR} = Lo-Mendell-Rubin adjusted likelihood ratio test. Selected model is in italics.

Table 5

Mean differences between identity formation groups in identity formation dimensions

Identity status group	Moderate achievement	Moderate diffusion	Achievement	Diffused diffusion	Reconsidering achievement	*F*	η^2
Commitment making	3.92[a] (.23)	3.04[b] (.30)	4.93[c] (.17)	1.75[d] (.42)	4.97[c] (.12)	1524.07***	.91
Identification with commitment	3.64[a] (.67)	2.99[b] (.72)	4.48[c] (.70)	2.17[d] (.80)	4.39[c] (.65)	119.12***	.45
Exploration in breadth	3.92[a] (.65)	3.54[b] (.67)	4.41[c] (.78)	2.89[d] (.83)	4.58[c] (.60)	52.64***	.27
Exploration in depth with reconsideration	2.61[a] (.96)	3.31[b] (.92)	1.89[c] (.76)	3.63[b] (.94)	4.44[d] (.80)	60.40***	.30
Ruminative exploration	2.35[a] (.72)	3.28[b] (.79)	1.76[c] (.64)	4.10[d] (.80)	3.31[bd] (1.08)	121.13***	.46

Note. Means within a row with the different superscripts are statistically significantly different at the p < .05 level (Games-Howell correction); Standard deviations is in parentheses.

*** *p* < .001

Table 6
Proportions of sample characteristics in the identity formation groups.

Identity status group	Moderate achievement	Moderate diffusion	Achievement	Diffused diffusion	Reconsidering achievement	Group difference
Gender: male (%)	43.8	45.7	40.5	40.7	61.1	*ns*
Life situation:						
Study in university (%)	30.2	23.3	38.0	21.4	27.8	*ns*
Study in polytechnic (%)	26.7	19.3	26.4	23.2	16.7	*ns*
Study in vocational school (%)	10.2	9.7	10.1	17.9	-	*ns*
Study for entrance examination (%)	8.2	5.7	11.4	7.1	27.8*	*(.14)
Study and work at same time (%)	32.5	22.2*	46.8*	32.1	38.9	**(.17)
Fulltime work (%)	23.7	29.9*	8.9*	17.9	16.7	** (.16)
Unemployed (%)	5.9	11.9*	2.5*	14.3	11.1	* (.14)
Home with children (%)	1.6	4.0	3.8	1.8	-	*ns*
Family socio-economic status:						
Blue-collar (%)	12.2	15.1	7.7	13.0	25,0	*ns*
Lower white-collar (%)	48.3	48.2	46.2	47.8	41.6	*ns*
Higher white-collar (%)	39.5	36.7	46.2	39.1	33.3	*ns*
Relationship status:						
Single (%)	34.9	40.9	39.2	44.6	33.3	*ns*
Dating (%)	21.6	17.6	16.5	28.6	27.8	*ns*
Common-law marriage (%)	39.2	34.1	35.4	21.4	27.8	*ns*
Marriage (%)	3.5	6.3	8.9	5.4	11.1	*ns*
Divorced (%)	0.8	1.1	-	-	-	*ns*

Note. Group differences tested with χ^2. Contingency coefficients are in parentheses. Column proportions difference tested with z-test with Bonferroni adjustment.
* $p < .05$ ** $p < .01$

Table 7

Mean differences between identity formation groups according to validation measures of career goal appraisals, and well-being

	Moderate achievement	Moderate diffusion	Achievement	Diffused diffusion	Reconsidering achievement	F	η^2
Career goal appraisal							
Intrinsic motivation	6.19[a] (.71)	5.80[b] (.83)	6.66[c] (.46)	5.40[b] (.91)	6.44[ac] (.57)	29.30***	.19
Progress	6.16[a] (.74)	5.65[b] (.95)	6.42[a] (.73)	4.86[c] (1.26)	5.97[ab] (.99)	31.59***	.20
Attainability	5.90[a] (1.09)	5.21[b] (1.26)	6.18[a] (1.13)	4.46[c] (1.67)	5.78[ab] (1.05)	22.30***	.15
Well-being							
Satisfaction with life	5.14[a] (.99)	4.59[b] (1.05)	5.75[c] (1.08)	3.70[d] (1.38)	5.39[abc] (1.07)	31.46***	.21
Depressive symptoms	3.81[a] (3.71)	6.09[b] (5.14)	2.91[a] (2.82)	10.27[c] (6.62)	4.07[ab] (4.30)	26.19***	.18
Academic engagement	4.49[ab] (.95)	4.20[b] (1.20)	4.86[a] (.97)	3.06[c] (1.41)	4.15[abc] (1.42)	21.15***	.15
Academic burnout	2.42[a] (.85)	2.79[b] (.82)	2.07[c] (.76)	3.58[d] (1.01)	3.04[abcd] (1.13)	26.23***	.18

Note. Means within a row with the different superscripts are statistically significantly different at the p < .05 level (Games-Howell correction); Standard deviations is in parentheses.

*** *p*<.001

Table 8

Typical and atypical personal goal and concern contents in different identity statuses according to configural frequency analysis at age 23 and age 25.

Identity profile	Age 23		Age 25	
	Goals T or A	Concerns T or A	Goals T or A	Concerns T or A
Moderate achievement	No significant T or A	Lifestyle (A)†	Leisure time (A)†	Relationships (T)* Ruminative self (A)† Lifestyle (A)†
Moderate diffusion	Finance and material possession (T)*	Relationships (T)† Education (A)* Own health (A) †	Own apartment /house, moving (A)†	Ruminative self (A)†
Achievement	Lifestyle (A)** Ruminative self (A)†	No significant T or A	Relationships (T)* Leisure time (A)** Finance and material possessions (A)**	Relationships (T)†
Diffused diffusion	Leisure time (T)** Ruminative self (T)† Relationship (A)**	Lifestyle (T)*** Work (T)* Ruminative self (T)† Relationships (A)*** Finance/material possessions (A)*	Lifestyle (T)*** Relationships (A)† Finance and material possessions (A)†	Ruminative self (T)*** Work (T)† Relationships (A)***
Reconsidering achievement	Lifestyle (T)* Education (T)† Relationship (T)† Ruminative self (T)† Leisure time (A)** Finance and material possessions (A)*	Education (T)*** Finance/material possessions (T)† Work (A)*** Ruminative self (A)*	Leisure time (T)*** Finance and material possessions (T)*** Relationships (A)** Own health (A)** Lifestyle (A)***	No significant T or A

Note. T = type, more observed goals or concerns than expected; A = antitype, less observed goals or concerns than expected.
†$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$

Acknowledgements

Appendix A

Questionnaire and items selected for this study using shortened form of Dimensions of Identity Development Scale (DIDS). The items were selected for the short form of the questionnaire based on confirmatory factor analysis pattern coefficients published by Lyuckx et al. (2008).

We selected the two items with highest pattern coefficient for commitment making, identification with commitment, and exploration in breadth dimensions. For exploration in depth dimension we selected the items with highest and third highest pattern coefficients, because the item with second highest pattern coefficient was almost the same wording with the highest one. With ruminative exploration dimension we selected the three items with the highest pattern coefficients.

The participants received the questionnaire in Finnish. English version of questions presented here have been adapted from Luyckx et al. (2008).

Commitment making (CM)

- Decided on the direction I want to follow in life

- Know what I want to do with my future

Identification with commitment (IC)

- Future plans give me self-confidence

- Because of the path of life I have mapped out, I feel certain about myself

Exploration in breadth (EB)

IDENTITY PROFILES AND PERSONAL GOAL CONTENTS

- Think about the direction I want to take in my life

- Think a lot about how I see my future

Exploration in depth with reconsideration (ED-R)

- Work out for myself if the goals I put forward in life really suit me

- Think a lot about the future plans I strive for

Ruminative exploration (RE)

- Doubtful about what I really want to achieve in life

- Keep wondering which direction my life has to take

- Worry about what I want to do with my future

Appendix B.

All results of the configural frequency analysis (CONFA) on personal goal and

concern contents within different identity profiles groups at age 23 and age 25. Observed (obs.)

number of personal goals and concerns was calculated for per person (e.g. number of mentioned

content divided by profile group size) multiplied by 100.

Table B1
Key for interpreting the identity profile group and personal goal number in Tables B3 and B5

Identity profile group number

1 Achievement
2 Diffused diffusion
3 Moderate diffusion
4 Moderate achievement
5 Reconsidering achievement

Personal goal number

1 work
2 education
3 relationships
4 leisure time
5 own health
   own apartment / house,
6 moving
   finance and material
7 possessions
8 lifestyle
9 ruminative self

Table B2

Results of global tests of CONFA for personal goals at age 23.

	Chi	df	pChi	alpha
Pearson Chi-square test	58.46869	32	0.002903596	0.05
Likelihood ratio test	61.0383	32	0.001478311	0.05

Note. Infromation criteria: loglik = -150.31; AIC = 326.62; BIC = 350.11

Table B3

Result of local test of CONFA for personal goals at age 23.

Group no.	Goal no.	obs.	exp.	z.Chi	z.pChi
1	1	94	86.956	0.755	0.225
1	2	71	74.778	-0.437	0.331
1	3	77	67.728	1.127	0.130
1	4	38	37.816	0.030	0.488
1	5	41	37.175	0.627	0.265
1	6	28	25.852	0.422	0.336
1	7	18	20.297	-0.510	0.305
1	8	9	20.511	-2.542	0.006
1	9	9	13.887	-1.311	0.095
2	1	71	79.277	-0.930	0.176
2	2	71	68.174	0.342	0.366
2	3	43	61.746	-2.386	0.009
2	4	50	34.477	2.644	0.004
2	5	34	33.892	0.018	0.493
2	6	20	23.569	-0.735	0.231
2	7	21	18.504	0.580	0.281
2	8	23	18.699	0.995	0.160
2	9	18	12.661	1.500	0.067
3	1	81	79.729	0.142	0.443
3	2	61	68.563	-0.913	0.181
3	3	60	62.098	-0.266	0.395
3	4	38	34.673	0.565	0.286
3	5	34	34.085	-0.015	0.494
3	6	24	23.703	0.061	0.476
3	7	26	18.610	1.713	0.043
3	8	19	18.806	0.045	0.482
3	9	10	12.733	-0.766	0.222
4	1	89	83.117	0.645	0.259
4	2	69	71.476	-0.293	0.385
4	3	65	64.737	0.033	0.487
4	4	34	36.147	-0.357	0.361
4	5	37	35.534	0.246	0.403
4	6	27	24.710	0.461	0.323
4	7	19	19.401	-0.091	0.464
4	8	17	19.605	-0.588	0.278
4	9	11	13.274	-0.624	0.266
5	1	72	77.922	-0.671	0.251
5	2	78	67.009	1.343	0.090
5	3	72	60.691	1.452	0.073
5	4	17	33.887	-2.901	0.002
5	5	28	33.313	-0.921	0.179
5	6	22	23.166	-0.242	0.404

Table B3 continues

Group no.	Goal no.	obs.	exp.	z.Chi	z.pChi
5	7	11	18.188	-1.685	0.046
5	8	28	18.380	2.244	0.012
5	9	17	12.445	1.291	0.098

Note. z.pChi ; Bonferoni adj. alpha: 0.001111111.

Table B4

Results of global tests of CONFA for personal goals at age 25.

	Chi	df	pChi	alpha
Pearson Chi-square test	50.82645	24	0.001110112	0.05
Likelihood ratio test	52.7191	24	0.0006299004	0.05

Note. Infromation criteria: loglik = -108.88; AIC = 239.76; BIC = 256.87

Table B5

Result of local test of CONFA for personal goals at age 25.

Group no.	Goal no.	obs.	exp.	z.Chi	z.pChi
1	1	103	94.925	0.829	0.204
1	2	26	28.772	-0.517	0.303
1	3	96	77.914	2.049	0.020
1	4	28	44.732	-2.502	0.006
1	5	36	35.702	0.050	0.480
1	6	39	33.392	0.971	0.166
1	7	11	24.991	-2.799	0.003
1	8	14	14.911	-0.236	0.407
1	9	12	9.661	0.753	0.226
2	1	80	90.504	-1.104	0.135
2	2	33	27.432	1.063	0.144
2	3	62	74.285	-1.425	0.077
2	4	44	42.649	0.207	0.418
2	5	40	34.039	1.022	0.153
2	6	33	31.837	0.206	0.418
2	7	16	23.827	-1.604	0.054
2	8	27	14.216	3.390	0.000
2	9	13	9.211	1.249	0.106
3	1	90	89.724	0.029	0.488
3	2	30	27.195	0.538	0.295
3	3	79	73.645	0.624	0.266
3	4	36	42.281	-0.966	0.167
3	5	37	33.746	0.560	0.288
3	6	24	31.562	-1.346	0.089
3	7	28	23.622	0.901	0.184

Table B5 continues

Group no.	Goal no.	obs.	exp.	z.Chi	z.pChi
3	8	14	14.094	-0.025	0.490
3	9	7	9.131	-0.705	0.240
4	1	93	91.544	0.152	0.440
4	2	27	27.747	-0.142	0.444
4	3	84	75.139	1.022	0.153
4	4	34	43.139	-1.391	0.082
4	5	36	34.430	0.267	0.395
4	6	34	32.203	0.317	0.376
4	7	21	24.101	-0.632	0.264
4	8	16	14.380	0.427	0.335
4	9	7	9.316	-0.759	0.224
5	1	86	85.303	0.076	0.470
5	2	21	25.855	-0.955	0.170
5	3	50	70.016	-2.392	0.008
5	4	71	40.198	4.858	0.000
5	5	21	32.083	-1.957	0.025
5	6	29	30.007	-0.184	0.427
5	7	43	22.458	4.335	0.000
5	8	0	13.399	-3.661	0.000
5	9	7	8.681	-0.571	0.284

Note. z.pChi ; Bonferoni adj. alpha: 0.001111111.

Table B6

Key for interpreting the identity profile group and concern numbers in Tables B8 and B10

Identity profile group number

1 Achievement
2 Diffused diffusion
3 Moderate diffusion
4 Moderate achievement
5 Reconsidering achievement

Concern number
   finance and material
1 possessions
2 work
3 ruminative self
4 education
5 lifestyle
6 own health
7 relationships

Table B7

Results of global tests of CONFA for concerns at age 23.

	Chi	df	pChi	alpha
Pearson Chi-square test	82.20033	24	2.703918e-08	0.05
Likelihood ratio test	85.76095	24	7.167199e-09	0.05

Note. Infromation criteria: loglik = -126.34; AIC = 274.68; BIC = 291.79

Table B8

Result of local test of CONFA for concerns at age 23.

Group	Concern	obs.	exp.	z.Chi	z.pChi
1	1	28	35.468	-1.254	0.105
1	2	28	22.816	1.085	0.139
1	3	15	16.801	-0.439	0.330
1	4	20	18.253	0.409	0.341
1	5	14	17.630	-0.865	0.194
1	6	16	14.727	0.332	0.370
1	7	30	25.305	0.933	0.175
2	1	25	35.468	-1.758	0.039
2	2	32	22.816	1.923	0.027
2	3	23	16.801	1.512	0.065
2	4	14	18.253	-0.995	0.160
2	5	34	17.630	3.899	0.000
2	6	14	14.727	-0.189	0.425
2	7	9	25.305	-3.241	0.001
3	1	41	36.173	0.803	0.211
3	2	23	23.269	-0.056	0.478
3	3	21	17.135	0.934	0.175
3	4	11	18.615	-1.765	0.039
3	5	15	17.981	-0.703	0.241
3	6	10	15.019	-1.295	0.098
3	7	33	25.808	1.416	0.078
4	1	38	33.589	0.761	0.223
4	2	21	21.607	-0.131	0.448
4	3	16	15.911	0.022	0.491
4	4	15	17.286	-0.550	0.291
4	5	11	16.696	-1.394	0.082
4	6	14	13.946	0.014	0.494
4	7	28	23.964	0.824	0.205
5	1	39	30.301	1.580	0.057
5	2	6	19.492	-3.056	0.001
5	3	6	14.353	-2.205	0.014
5	4	28	15.593	3.142	0.001
5	5	11	15.062	-1.047	0.148
5	6	17	12.581	1.246	0.106
5	7	22	21.618	0.082	0.467

Note. z.pChi ; Bonferoni adj. alpha: 0.001428571.

Table B9

Results of global tests of CONFA for concerns at age 25.

	Chi	df	pChi	alpha
Pearson Chi-square test	50.82645	24	0.001110112	0.05
Likelihood ratio test	52.7191	24	0.0006299004	0.05

Note. Infromation criteria: loglik = -108.88; AIC = 239.76; BIC = 256.87

Table B10

Result of local test of CONFA for concerns at age 25.

Group	Concern	obs.	exp.	z.Chi	z.pChi
1	1	24	29.615	-1.032	0.151
1	2	20	22.500	-0.527	0.299
1	3	11	13.654	-0.718	0.236
1	4	7	7.885	-0.315	0.376
1	5	15	13.462	0.419	0.337
1	6	20	18.654	0.312	0.378
1	7	38	29.231	1.622	0.052
2	1	31	31.809	-0.143	0.443
2	2	31	24.167	1.390	0.082
2	3	29	14.665	3.743	0.000
2	4	7	8.469	-0.505	0.307
2	5	16	14.459	0.405	0.343
2	6	20	20.036	-0.008	0.497
2	7	11	31.396	-3.640	0.000
3	1	37	31.590	0.963	0.168
3	2	20	24.000	-0.816	0.207
3	3	9	14.564	-1.458	0.072
3	4	10	8.410	0.548	0.292
3	5	17	14.359	0.697	0.243
3	6	16	19.897	-0.874	0.191
3	7	35	31.179	0.684	0.247
4	1	26	29.835	-0.702	0.241
4	2	25	22.667	0.490	0.312
4	3	8	13.755	-1.552	0.060
4	4	10	7.943	0.730	0.233
4	5	8	13.561	-1.510	0.066
4	6	20	18.792	0.279	0.390
4	7	39	29.447	1.760	0.039
5	1	36	31.151	0.869	0.192
5	2	21	23.667	-0.548	0.292
5	3	14	14.362	-0.095	0.462
5	4	7	8.293	-0.449	0.327
5	5	14	14.160	-0.042	0.483
5	6	21	19.621	0.311	0.378
5	7	29	30.746	-0.315	0.376

Note. z.pChi ; Bonferoni adj. alpha: 0.001428571.