1.2   DEVELOPMENTAL BIG FIVE RESEARCH

The lexical approach to personality is the most prominent approach in today's personality psychology. It is a challenging task to test its applicability to all relevant fields of personality and applied psychology and to widen its range of validity.

1.2.1   The lexical approach to personality

There are several introductions available for readers to the Big Five approach to personality, so that here only a short overview of the main characteristics and the development of the model are provided (see De Raad, 2000; De Raad & Perugini, 2002; John & Srivastava, 1999).

The lexical approach to personality claims that the personality relevant characteristics of individuals become encoded into the language and so can be systematically analyzed and taxonomized. The basic elements of personality taxonomy are traits, though research has been extended to situations (Ten Berge & De Raad, 2002), to instincts (De Raad & Doddema, 1999) and to the nonverbal domain (Paunonen, Ashton & Jackson, 2001).

The most frequently cited definition of the lexical approach is conveyed in the lexical hypothesis by Goldberg (1982):

> Those individual differences that are the most significant in the daily transactions
> of persons with each other will eventually become encoded into their language.
> The more important such a difference is, the more people will notice it and wish to
> talk of it, with the result that eventually they will invent a word for it (p. 204).

Pioneers of the lexical research are Allport and Odbert (1936) who constructed an alphabetic list of traits with around 4500 stable personality characteristics. This list was ultimately reduced to 35 traits. Ratings on those traits were factor analyzed by Cattell (1943, 1945, 1947) who first arrived to as many factors as 9-12, according to different samples and methods. The researchers who reanalyzed his data, could not however replicate the number of factors, and reported only five robust personality factors instead (Borgotta 1964; Digman &

Takemoto-Chock, 1981; Fiske, 1949; Norman, 1963; Tupes & Christal, 1961). These five factors, Extraversion, Agreeableness, Conscientiousness, Emotional Stability and Intellect, were named the "Big Five" (Goldberg, 1990).

The lexical Big Five factors now look back on a long tradition, and are widely administered and researched. There is an ongoing discussion on their exact number (cf. Ashton et al. 2004; Peabody & De Raad, 2004) or on the exact meaning of the factors (Ashton & Lee, 2001; John & Srivastava, 1999; Peabody & De Raad, 2002), but a general consensus is reached about their fundamental importance in personality.

Together with the development of the factor analytic methods, the research of the lexical domain has been increased and extended. The research of the fundamental personality factors as observed in everyday language have become more and more popular in personality psychology and today it is one of the true leading approaches in personality and applied personality psychology.

1.2.2 The Big Five model in developmental research

The psycho-lexical approach to personality yielded the "Big Five" personality factors that are considered to represent the major domains of personality description and that are embraced by a growing number of researchers. The main interest in the lexically oriented personality investigations is focused on adult personality characteristics and on the stability and applicability of the five factors across languages, cultures, methods, and applied fields. Although the Big-Five dimensions have mainly been studied in adult samples, Big Five ratings have also been obtained in samples of children and young adolescents, though less extensively. Digman (1963), for example, started the first lexically oriented research with major interest in child personality structure through judgments of behavioral characteristics. His main goal was to test the complexity of personality in childhood and to search for the fundamental dimensions of personality at an early age. Digman's (1963, 1965, 1972) early work was inspired and influenced by Cattel's personality investigations. He was also looking

for parallels between his own and Cattel's adult data and used the advanced technology of computers as soon as they became available. Maybe because of his focus on complexity and his aim to search for the developmental antecedents of Cattell's personality dimensions, he first suggested, "seven or eight factors would be an expected value for the number of factors to be found in the domain of child behavior ratings" (Digman, 1972, p. 588).

Later, Digman and Takemoto-Chock (1981), Digman and Inouye (1986) and Digman (1989) did several lexically oriented studies in developmental personality using traits and behavioral characteristics, and finally reported five recurring factors, which they described as equivalents of the adult Big Five factors. Digman (1994) states, that whereas the five-factor model clearly reappears in child personality, more complex systems do not. Digman and Shmelyov (1996) extended the investigations to the Russian language and had 480 Russian school children rated by their teachers on three sources of scales (temperament, personality, and education). They found high similarities with the traditional Big Five structure. This supports the international validity of teacher-ratings and it provides information on the comprehensiveness of the Big-Five domains across culture and measures.

Digman (1997) reanalyzed fourteen Big Five studies, among them four with children and one with adolescents, and came to the conclusion that both in the developmental and adult samples, two higher order factors (metatraits) may be distinguished: Factor α and β (Digman, 1994). Factor α was interpreted as a socialization factor relying on the Big Five factors Agreeableness, Conscientiousness and Emotionality. He interpreted metatrait β in terms of personal growth versus personal construction. This higher order factor captured Extraversion and Intellect. He assumed that child, adolescent and adult studies do imply the presence of the higher order factors and "these constructs furnish links between the atheoretical Big Five model and traditional contemporary theories of personality" (Digman, 1997, p. 1253).

Later, Goldberg (2001) also reanalyzed "one of the world's richest collection of teachers descriptions of elementary-school children" (Goldberg, 2001, p. 699), namely

Digman's six data-pools from the years between 1959 and 1967. Goldberg (2001) concluded that in all six samples of children no other broad domains than the Big Five factors appear, and so provided significant evidence for the Big Five relevance of teacher based personality assessment in childhood.

Hampson et al. (2001) relied on the developmental data, and searched for former participants who - in the meantime - had already reached their late adulthood. They collected personality relevant data from as much as 60 percent of the original sample with the goal of establishing possible links between the child and adult personality.

The classification into the Big Five factors of teacher's assessment of traits in children aged 4-12 was described by Mervielde (1994) in his study on the relevance of the Big Five in childhood. In another research group, the validity of the Big Five factors on the basis of teachers' ratings of children's personality was studied (Mervielde, Buyst & De Fruyt, 1995). Both studies yielded a factor structure of personality characteristics fairly well corresponding to the Big Five factors, especially for the ages of 7-12 years. Mervielde and De Fruyt (2000) investigated the relevance of the Big Five model for the age group of 9 to 10 year olds. All of the five factors could not be fully recovered. Instead, their study revealed a clearly interpretable three factorial structure with an Intellect-Conscientiousness, Extraversion-Emotional Stability, and Agreeableness factor. They attributed the results to a lesser degree of differentiation at younger ages that relies on the limited cognitive abilities of children on one hand, and to highly evaluative judgments typical for the age group, on the other.

John, Caspi, Robins, Moffitt and Stouthamer-Loeber (1994) searched for the Big Five in young adolescent boys (aged 12 and 13 years old) and used ratings by the mothers. They developed Big Five relevant scales on the basis of the 100 items of the California Child Q-set (CCQ; Block & Bock, 1980). Using a set of scales largely based on the CCQ items, they concluded on seven factors, a 'Little-Five' structure, fairly equivalent to the adult Big

Five factors, plus two other factors, respectively labeled Irritability (i.e., "He whines and pouts often") and Positive Activity (for example: "He is physically active"). They argued, that the two additional factors are "relatively independent personality dimensions in early adolescence and that they may eventually merge with Extraversion and Neuroticism, respectively, to form a single super ordinate dimension in adulthood" (John et al, 1994, p.173).

It is interesting to note, that this seven-factor solution showed some striking similarities to the Big Seven factor model (Almagor, Tellegen & Waller, 1995; Tellegen & Waller, 1987), that was found cross-culturally stable (Benet & Waller, 1995; Waller, 1999). Irritability shared a lot with Negative Emotionality ("nervous, moody, feeling hurt") and Positive Activity with Positive Emotionality ("sociable, animated, energetic"). Still, John et al. (1994), in spite of their arguments in favor of these two additional factors, recommended the use of only the traditional Big Five factors for further research purposes until the acceptance of the two additional dimensions is proven through independent research. They suggested this in favor of a "conceptual continuity" (John et al. 1994, p. 174) in developmental and adult personality research. Nevertheless, they also suggested, that the two additional factors could be added to any instrument as separate scales. The two additional factors could not be replicated entirely in other investigations. In a longitudinal developmental study Lamb, Chuang, Wessels, Broberg and Hwang (2002) failed to replicate Irritability and Positive Activity as independent factors.

1.2.3 Free developmental personality descriptions and the Big Five

The following developmental studies, which provided comprehensive and international data of child and young adolescent personality, contributed substantially to child personality and temperament research and yielded new aspects for research in developmental psychology.

Research projects that aimed at defining the five dimensions in children's personality were conducted on the basis of a 'lexicon' of free parental descriptions of children (Buyst, De

Fruyt & Mervielde, 1994; Havill, Allen, Halverson & Kohnstamm, 1994; Kohnstamm, Mervielde, Besevegis & Halverson, 1995; Slotboom, Elphink & Kohstamm, 1996). These studies came up with very similar concepts to the adult Big Five dimensions. Central questions to Kohnstamm et al. (1998) were which antecedents personality and temperament have, at what age these individual differences emerge, how universal these dimensions in childhood are, and how early personality characteristics can be interpreted in terms of the domains of the Big Five factors (Kohnstamm, Halverson, Mervielde & Havill, 1998).

Kohnstamm et al.'s Big Five oriented study was based on free descriptions collected in seven countries to provide a comprehensive pool of descriptors. Over two thousand children between the ages of 2 and 12 were described in this research and over two thousand mothers and fathers provided personality relevant data about their children (see Slotboom & Elphick, 1998). There was a remarkable variation in the average number of descriptors used by parents: it varied between 37 for Germany and 11 for the U.S.A. These variations were considered to be partly cultural and partly situational as the interview settings varied across the countries (Kohnstamm, Halverson, Mervielde & Havill, 1998). In regards to the relevance, Mervielde (1998) reported that 68 percent of the free descriptors used by parents could be sorted into the categories of the Big Five.

Since this international study concentrated on parental description of children and descriptions of personality by the parents in all age groups, it does not answer the question whether children and young adolescents themselves can fill out Big Five instruments.

1.2.4 The stability of personality through adolescence

According to Erikson (1968), crucial changes occur in adolescence during the development of identity. The choice of an occupation, the sexual orientation, and the adaptation of a value system are important markers of this life-segment. Blasi and Milton (1991) investigated the subjective experience of changes in self in adolescence and found that self-identity differs drastically between early and middle adolescence: older adolescents have a more emotional

and more important relation to themselves and are committed to being loyal to themselves. The question is whether these developmental changes influence personality as conceptualized by the Big Five dimensions.

Changes in the Big Five factors through adolescence were investigated by McCrae, et al. (2002) by obtaining mean level changes in the Big Five dimensions. McCrae et al. (2002) found that three of the five factors remain stable through adolescence, namely Extraversion, Agreeableness and Conscientiousness. Changes were reported in Openness to Experience, showing an increase in Neuroticism in the group of girls.

Two-year test-retest reliabilities were reported by Pullmann, Kiik and Allik (2004) who administered the NEO-FFI in an Estonian sample of adolescents. Pullmann et al. (2004) obtained stabilities of the personality dimensions in the group of 16-18 year old adolescents (from .62 to .73). In the youngest age group of the twelve year olds the test re-test reliabilities were overall lower (from .48 to .57). In a nine-year longitudinal study, Asendorpf and Van Aken (2003) investigated Big Five relevant personality judgments and behavioral observations of aggressiveness, inhibition, and cognitive aspects such as cognitive self-esteem and school achievement correlates and found a consistent relationship between these variables through childhood. A relative stability of the Big Five factors could be observed, especially at later adolescence, which spoke in favor of early formation of basic personality characteristics. Nevertheless, recent results reported changes in the Big Five characteristics when a larger life spectrum was investigated later in life (Helson, Kwan, John & Jones, 2002; Srivastava, John, Gosling & Potter, 2003).

When looking for links between childhood and adulthood, it seems inevitable that some continuity exists between the different developmental stages. The real challenge for future research is, therefore, not only in the investigation of the origins and reasons of this stability and robustness in personality, but also the investigation of the changing developmental aspects.

In conclusion, in order to be able to provide more comprehensive results on the stability and change of personality over the life-span development, replications of former results are needed together with more developmentally oriented personality research that covers a larger life span from childhood to adulthood, that relies on different methods, and that provides results based on both observers and self-reports.

1.2.5 Recent developmental issues in Big Five - developmental Big Five measures

According to Mervielde and De Fruyt (2002), there are only a few developmentally oriented Big Five inventories for children and adolescents. There were a few attempts to apply an adult personality measure at the end of the '90s, for example, by Parker and Stumpf (1998), or Roth (2002), who used the NEO-FFI and by De Fruyt, Mervielde, Hoekstra and Rolland (2000), who used the NEO-PI-R with adolescents. These applications were performed with reasonable success in recapturing the original questionnaire domains. In applied research, mostly the NEO-PI-R was administered to subjects as young as 11 years old (for example, Gullone & Moore, 2000; Hrebickova, Cermak & Osecka, 2000).

To fill the gap between Big Five and developmental research Mervielde and De Fruyt (1999) developed the Hierarchical Personality Inventory for Children (HiPIC, Mervielde & De Fruyt, 1999), which they based on the free personality descriptions described earlier. This measure comprises the five Big Five relevant dimensions Extraversion, Benevolence, Conscientiousness, Emotional Stability and Imagination. It includes 18 hierarchical facets and can be administered to the age group of 6 to 12 years old. The authors suggested also using it for self-ratings of adolescents, although the HiPIC is primarily an observer inventory. The inventory consists of 144 behavior-oriented items (like "want to shine at everything") and takes, according to the authors, 15-20 minutes to fill out (Mervielde & De Fruyt, 2002).

Barbaranelli, Caprara, Rabasca and Pastorelli (2003) constructed another Big Five measure for adolescents, which they called the Big-Five Questionnaire - Children version (BFQ-C). This measure was developed for 9-13 year old children and adolescents and can be

administered as an observer measure for teachers and parents but can also be used for self-ratings. It consists of 65 items that are distributed equally (13 each) among the following Big Five domains: Energy/Extraversion, Agreeableness, Conscientiousness, Emotional Instability and Intellect/Openness (cf. Barabaranelli & Caprara, 2002). In their study, a moderately significant relation between observer-ratings and self-ratings was found, but two factors differentiated across the raters' samples, namely Conscientiousness and Intellect/Openness. While Van Lieshout and Haselager (1994) argued that teachers are better raters than mothers, Barbaranelli et al. (2003) found ratings by the mothers more informative. Finally, the authors concluded that, in spite of the incongruence in the different factor solutions, this measure is a good candidate for applied settings as well, such as in counseling or in the educational field (Barbaranelli & Caprara, 2002; Barbarabelli et al. 2003).

A less known questionnaire for self-ratings for adolescents was developed by Tatum (2000). This measure, the Adolescent Big Five Inventory (ABFI), consists of 85 items and includes items for measuring social desirability. The author found significant relations to the teachers' ratings in three factors, namely Extraversion, Openness to Experience and Agreeableness. Lounsbury, Tatum, Gibson, Park, Sundstrom and Wilburn reported to have developed the Adolescent Personal Style Inventory (APSI, 2003). This measure also aims to measure the Big Five domains, and is reported to be robust and reliable in adolescence.

In conclusion, in order to be able to anchor the Big Five dimensions in a developmental setting, not only the developmental antecedents of the Big Five, but also their relation to other aspects that have been linked to adolescent personality, should be investigated (Robins, John & Caspi, 1994).

1.3   CONCLUSIONS AND RESEARCH QUESTIONS

This present work aims to contribute to the investigation of the Big Five dimensions, and their relation to health relevant aspects of adolescent behavior, like the appearance of psychosomatic problems or the engagement in substance use. The above-presented scientific guidelines provide a firm basis for the following empirical chapters. While doing so, the following five research questions are put into the focus of the investigation:

1. How do Big Five dimensions develop during young adolescence?

2. Can reliable self-ratings be obtained in early adolescence?

3. How do personality characteristics and the success of a school oriented primary prevention correspond?

4. Can future health problems (for example, psychosomatic complaints) be predicted on the basis of personality structure in early adolescence?

5. Do personality variables play a predicting role in legal drug prevention (for example, in smoking and alcohol consumption)?