

### **3.5 PERSONALITY AND ALCOHOL USE**

In this part of the thesis it is investigated whether personality factors can predict a change in adolescent self-reported alcohol consumption status and in their intention to drink alcohol. Moreover, a possible transfer effect of the tobacco specific prevention is examined toward alcohol use and future intention to drink. In addition, attention is paid to possible gender specific results, both in the short- and in the long-term evaluation.

#### **3.5.1 Introduction**

Alcohol, even with a high addiction potential, is part of normal western lifestyle. A glass of champagne belongs to almost all new years parties, birthdays and other celebrations.

Therefore, it is not realistic to speak of total abstinence as a goal of any reality based primary prevention work. On the contrary, it is of utmost importance to educate adolescents about the role of alcohol consumption, about the problems that are related to it in daily life, and to strengthen adolescents against alcohol use. Even when the prevalence rates show a declining tendency over the last two decades (see Kolip, 2000), Germany still belongs to the countries in the upper end of per capita alcohol consumption in Europe (Freitag, 1999; Kirkcaldy, Siefen, Surall & Bischoff, 2004). Moreover, it is known, that those, who start drinking at an early age reach a higher consumption level in adulthood than those who make their first experience with alcoholic beverages later in adolescence (Hansen, 1994).

Kolip, Nordlohne and Hurrelmann (1995) concluded, from a representative study on the health situation of 12-16 years old adolescents in Germany, that alcohol use is a part of adolescents' life. They found that over 80 percent of the adolescents had an experience with alcohol while the proportion of regular consumers was not above one percent. Kolip et al. (1995) argued that alcohol use not only fulfills developmental functions, like the anticipation of adulthood and integration into a peer group (Franzkowiak, 1987), but can also be considered a coping strategy which provides a short-term getaway from developmental and daily problems. According to this argument, alcohol problems in adolescence also point to

inefficient coping with developmental tasks.

With respect to substance use disorders, it was found that alcohol is responsible for the highest frequency of substance use disorders in boys (9,3%). This occurs independently from educational level and school form (Essau, Karpinski, Petermann & Conradt, 1998; Mittag & Jerusalem, 2000). Kolip (2000) supported these findings in her study and solely reported a non-significant tendency to higher consumption level in lower level secondary education.

Essau et al. (1998) also investigated co-morbid psychological disorders such as depression and somatic problems and found that depressive disorders and somatic disorders accompany substance use disorders in almost 15 percent of the cases. Specifically among male adolescents, the appearance of alcohol use disorders could be observed even around the age of 13. Around the age of 14, both gender groups showed a significant growing number of prevalence that did not change until the age of 16, when girls stagnated or declined a bit, but boys showed another significant rise in alcohol use. Essau et al. (1998) concluded that alcohol fulfilled all the characteristics of an access substance to drug use. From the onset of drug consumption and stabilization of drug related psychological and physical disturbances not more than one year passed by females and about two years by males.

Freitag and Hurrelmann (2001) provided a detailed description of lifetime prevalence and gender differences in Germany in their review of alcohol consumption and misuse. They found, like Kolip et al. (1995), that lifetime prevalence in alcohol use rose with 10 percent each year in early puberty and reached its peak at the age of 15-16 where almost all, over 90 percent of adolescents, reported having already collected experience with alcoholic beverages. They concluded that male adolescents were significantly more at risk than females, in regards to the intensity of consumption, and that they started drinking before girls did (Czekay & Kolip, 1996). Kirkcaldy et al. (2004) came to a similar conclusion when they reported that 96 percent of German adolescents had experience with alcohol (in their case, beer) before they were 18 years old and that, in this group, generally more male adolescents were represented

than females. Kolip (2000) reported similar conclusions in her analysis of alcohol use. In addition, she pointed to an altered consumption pattern in adolescence that showed a shift toward weekend-consumption from weekday drinking behavior.

Leppin (2000) provided a detailed view on the determinants and developmental processes behind alcohol use and misuse in adolescence. She summarized the influence of the different social factors (like parents, peers, environment) and intra-personal characteristics (gender, genetics, dispositions, coping with stress), and concluded that only a multi-factorial model that regards all social and intra-personal factors, together with the availability of substances, attitudes, and expectations toward alcohol, can represent the complex mechanisms that are involved in the etiology of alcohol use and misuse.

### **3.5.2 Alcohol use and life-skills promotion**

A high acceptability is characteristic of the German life-skills and general competence oriented primary prevention programs. The effectivity of those programs was, however, only partially significant and restricted to sub-groups of subjects (Hurrelmann & Szirmák, 1998; Kröger, Kutza, Walden & Riese, 1998; Pieper, 1999). The same can be said of the alcohol relevant prevention effects: although a high acceptance of the life-skills approach based alcohol prevention programs was found, the substance specific effects of such programs were weak (Silbereisen, 1997, 1998; Petermann, 1999). This phenomenon can be traced back to the multi-determinant nature of substance relevant behavior, to the intensity of implementation, but also to the fact that the German school system is based on a part-time education schedule. Students are only at school until midday, and, therefore, the family and home environment exerts much more influence on them than in the U.S.A., where the life-skills approach and research originated (Jerusalem & Klein-Heßling, 2002; Silbereisen, 1998). In this respect, the findings by Freitag (1999) on family determinants of adolescent alcohol use are of interest; the study supported the influential role of the family consumption pattern. Parental alcohol consumption affected adolescent alcohol use in a direct way: the more the parents drank, the

more probable it was that the adolescents also did so, especially at a young age. Even with the intention to drink this effect seemed to appear; children from families with parents who drank were less detached towards alcohol use than those with abstinent parents.

#### *Alcohol specific prevention effects of German life-skills programs*

A decrease in the development of alcohol use was found in the intervention group of a life-skills oriented prevention program among the 16 year old adolescents, but the same effect was not found in the younger age group of 14-15 year olds (Kersch, Petermann & Fischer, 1998).

A stabilized short-term (three month) and long-term (one and half year) alcohol abstinence was found by Petermann and Fisher (2000) in their school focused longitudinal prevention study with adolescents. Moreover, a smoking specific life-skills approach oriented prevention program turned out to be positively influencing the future intention of alcohol consumption under the presence of certain personal or situational factors, like a good class climate of low individual vulnerability (Leppin, Freitag, Pieper, Szirmák & Hurrelmann, 1998).

Looking at the personality relevant protecting factors, social resistance, intention to consume, and self-esteem seemed to be important for future consumption behavior. These influences may be observed especially among older adolescents where alcohol use is already broadly practiced (Fischer & Röhr, 1999). Mittag and Jerusalem (2000) pointed at the importance of an elaborate and well-structured program concept as a token for longitudinally effective and clear intervention effects.

### **3.5.3 Big Five and alcohol consumption**

There are several articles that reported significant relationships between the Big Five domains and alcohol consumption. Nevertheless, it may be concluded that most of these studies investigated alcohol consumption from early adulthood up to late adulthood and mostly concentrated on individuals who already had firmly shaped drinking habits. Booth-Kewley and Vickers (1994) investigated the association between health behavior and personality dispositions. They found Conscientiousness to be a strong predictor of health behavior and

low Agreeableness to be responsible for risk taking. Health related habits were analyzed by Lemos-Giraldez and Fidalgo-Aliste (1997) and they found, in a cross-sectional study with over a thousand university students, a significant relationship between Conscientiousness, Agreeableness and health-related behaviors like current alcohol consumption. Martin and Sher (1994) investigated the family history of alcohol use disorders and their relation to the Five-Factor model and found Neuroticism, Non-Conscientiousness and Non-Agreeableness to be associated with problem drinking.

In the categorical motivational model by Cox and Klingel (1988, 1990), two major motivational dimensions were found behind drinking behavior and characterized benefits individuals hoped for: valence (reduction of negative vs. enhancement of positive feelings) and source (internal rewards vs. external rewards). The possible combinations of these two major dimensions resulted in a four factorial model of drinking motives (Cooper, 1994). On the conceptual basis of this model Cooper (1994) developed a four factorial measure of drinking motives that incorporated a social factor (external positive motivation, like, alcohol helps to enjoy a party), an enhancement factor (internal positive motivation, like, it is fun to drink), a conformity factor (external negative motivation, like, the friends pressure to drink) and a coping factor (internal negative motivation, like, forgetting about problems). She found that enhancement, coping, and the social factor were positively related to the amount and frequency of alcohol consumption, while conformity showed a negative relation to both outcomes.

Stewart and Devine (2000) and Stewart, Loughlin and Rhyno (2001) proposed the Big Five model for the investigation of the relationship between personality and the motives of alcohol use and misuse. Stewart and Devine (2000) first tested the applicability of the five factors to Cooper's (1994) four drinking motives model and found paths that linked internal drinking motives with the personality dimensions, but no significant linkage between personality and the external motives. Coping was associated with high Neuroticism and

enhancement with high Extraversion and low Conscientiousness. Stewart, Loughlin and Rhyno (2001) managed to only partially replicate the findings by Stewart and Devine (2000). While the relationship between high Neuroticism and coping motives was fully replicated, the enhancement relevant results showed up only partially. Low Conscientiousness remained a significant predictor, but instead of high Extraversion, low Neuroticism appeared in the replication study as a relevant second predictor. The authors (Stewart, Loughlin & Rhyno, 2001) explained these discrepancies in two ways. First, they argued that in the second study they used a different five factor measure and second, they traced it back to the observed high negative correlation between Extraversion and Neuroticism in their study and concluded that both factors were possibly relevant in the prediction of enhancement motivated drinking.

Theakston et al. (2004) examined the preventive role of the Big-Five personality domains toward drinking motives among young adult drinkers with the International Personality Item Pool (IPIP; Goldberg, 1997). They found that the personality domains predicted both external and internal motives. Results relevant to internal motives partially corresponded to the previous results by Stewart and Devine (2000) and Stewart et al. (2001) and connected personality vulnerability with risky internal reasons among drinkers. The difference was that in Theakston et al.'s (2004) study coping motives were predicted by low Extraversion and enhancement and low Agreeableness. Surprisingly Theakston et al. (2004) reported weaker but significant relations between personality and the external drinking motives, namely, between high Emotional Stability, low Intellect/Imagination and conformity motives, on one hand, and between low Intellect/Imagination and high Agreeableness and social motives on the other.

Perez (2003) reported in the group of highly addicted patients a relationship between Emotional Stability and Energy (comparable to Extraversion) as measured by the Big Five Questionnaire (BFQ; Caprara, Barbaranelli, Borgogni & Perugini, 1993). Malouf and Schutte (2002) asked for personality ratings of imaginary college students and lawyer fathers with

alcohol dependence. Judges rated the presumed alcohol dependent individuals as more non-agreeable and non-conscientious than imaginary persons without any substance abuse.

Recently, Paunonen (2003) tested the applicability of various Big Five measures to the prediction of various socially and culturally significant behavioral variables (such as alcohol consumption) in two young adult samples. He did not only find that the different measures provided a consistent prediction of the behavioral variables, but also that in the case of alcohol consumption, Extraversion and Non-Conscientiousness played a determinant role in the prediction.

In the following empirical study the relevance and accuracy of the previously introduced and discussed findings are tested and the personality relevant predictors of alcohol consumption and future intention to alcohol use are investigated in early adolescent age.

#### **3.5.4 Method**

The influence of the Big Five personality characteristics on current alcohol use and intention to drink alcohol in the future was assessed in this study. The personality inventory (see sections 2.2 and 3.2) was administered at the first measurement sequence of the present study (W3). Approximately five month short-term effects (W4) and one year long-term effects (W5) were assessed with the variables “current alcohol consumption” and “future intention to drink alcohol”. For both dependent variables, logistic regressions were conducted with the step forward method and general and gender specific results were obtained as well in the short-term as in the long-term measurement sequences.

#### **3.5.5. Subjects**

Two relevant samples were defined in these analyses, according to the two different dependent variables. The students in both samples had a mean age of 11.8 years (SD = .71). The longitudinal results were collected at W4, when students were on average 12.1 (SD = .70), and at W5, when they were on average 13.1 (SD = .50) years old. In the

following, the two samples of current alcohol use and the intention to use alcohol are introduced in more details.

#### *Current alcohol consumption*

Those adolescents, who reported not having experienced any regular encounters with alcoholic drinks at the first personality relevant measurement sequence (W3) were selected for further analyses (Table 25, p. 129). This means, all who answered the question “Have you ever drunk alcohol?” [Hast Du schon Mal Alkohol getrunken?] with „no“ or „just a sip“ were selected from the total pool of adolescents (see Table 1, p. 41). Therefore, altogether 1122 adolescents participated in the analysis, 569 males and 541 females (12 gender unknown). From these students 894 (434 males and 453 females, missing 7) gave valid answers at W4 and 561 (254 males and 306 females, missing 1) at W5 at the one-year follow up assessment. The drop out rate between W3 and W5 was 55 percent. There was a slightly unbalanced distribution between the intervention (44%) and control classes (56%).

#### *Future intention to drink alcohol*

Adolescents who were sure or rather sure about not intending to drink alcoholic beverages in the future were selected for this analysis (Table 26, p. 130). There were 1066 students in this data pool, 520 girls and 535 boys (11 gender unknown), 464 in the intervention and 602 in the control classes. In the short-term evaluation, 836 (411 males and 418 females, 7 gender unknown) students participated and in the long-term, 526 (243 males and 281 females, 2 gender unknown).

### **3.5.6 Measures**

The Five Factor Personality Inventory (FFPI) was administered to measure Extraversion, Agreeableness, Conscientiousness, Emotional Stability and Autonomy. The personality measure and the alcohol consumption related items were presented as part of the longitudinal school focused health promotion questionnaire (see Appendix D and E).

The following item measured current alcohol use: “Hast Du schon mal Alkohol



getrunken?“ [Have you ever drunk alcohol?] There were four pre-formulated answers to choose from: 1 = “no, never”, 2 = ”yes, but just a sip”, 3 = yes, on occasion”, 4 = yes, regularly”. These answers were summarized for the logistic regressions into “no”(“never” + “just a sip”) and “yes” (“occasionally” + “regularly”).

Future intention to use alcohol was measured by the question: “Hast Du vor Alkohol zu trinken?“ [Are you intending to drink alcohol in the future?]. The possible answers were 1 = “not, surely”, 2 = ”rather not”, 3 = “perhaps”, 4 = ”rather yes”, 5 = ” yes, surely”. These replies were also calculated into a dichotomized variable with “yes” (“perhaps” + “rather yes” + ”yes, surely”) and “no” (“rather not” + “surely not”). It was necessary to add up the different samples and form two larger ones since, at this age, it was very difficult to distinguish between the different levels of drinking patterns; moreover, this way the group strength could also be increased (Kolip & Hurrelmann, 1995; Leppin et al., 1998).

### **3.5.7 Results**

#### *Current alcohol consumption*

As in Table 25 showed, at W3, at the age of 11-12 years, the majority of the children already had tried a sip of alcohol ( $N = 608$ ; 50%) but not much less had had no experience at all ( $N = 514$ ; 43%). 82 (7%) adolescents (51 boys and 31 girls) had occasionally drunk alcohol, and only five regularly. Four of the regular drinkers were boys and only one was a girl. In the short-term evaluation (W4;  $N = 894$ ), there were still 424 (45%) who reported having never tried a sip of alcohol, 470 (50%) who just tried a bit, 50 (5%; 30 boys, 18 girls) who had started to drink occasionally and two boys reported having become regular alcohol consumers. At W5, when 655 valid answers were available regarding the current consumption status. From those who had never drunk or had just tried a sip at W3, only 32 percent ( $N = 210$ ) said they had never tried alcohol at all, 53 percent ( $N = 351$ ) had tried a sip, and 85 (13%; 40 boys and 44 girls, 1 gender missing) were occasional consumers. Nine (1,5%; 7 boys, 1 girl, 1 gender unknown) reported drinking regularly. The prospectively

growing number of adolescents who started collecting more intense experience with alcohol is obvious in the lifetime prevalence results and shows how relevant this problem already is at the early adolescent years.

**Table 25. The frequencies of „current alcohol consumption“.**

Have you ever drunk alcohol?	W3 <sup>1</sup>			W4 <sup>2</sup>			W5 <sup>3</sup>		
	total	girls	boys	total	girls	boys	total	girls	boys
<b>No, never</b>	<b>514</b>	<b>240</b>	<b>265</b>	424	194	225	210	97	113
<b>Yes, but only a sip</b>	<b>608</b>	<b>301</b>	<b>304</b>	470	259	209	351	209	141
<b>Yes, occasionally</b>	82	31	51	50	18	30	85	40	44
<b>Yes, regularly</b>	5	1	4	2	0	2	9	1	7
<b>Totals</b>	1209	573	624	946	471	466	655	347	305

Note: because of the missing values, *N* may differ from column to column in the table;

1 = first personality relevant measurement in the seventh grade; 2 = second measurement approximately five months later; 3 = third measurement in the sixth grade one year after the first measurement.

Only those students participated in this study, who reported never having drunk or just had a sip of alcohol before the first personality relevant questioning (W3). The calculations for the short- (W4) and long-term (W5) frequencies rely only on participants of this particular sample (*N* written **bold**). The number of participants written *cursiv* were excluded from all analyses.

### *Future intention to drink alcohol*

The same tendencies as discussed above were observed when the frequencies of the variable “future intention to drink alcohol” were analyzed (Table 26). 1066 (88%) adolescents were sure or rather sure about their intention not to start drinking alcohol at W3. A relatively large group of 106 (9%) teenagers was unsure about their intention and only 40 (3%) said that it was at least quite likely that they were going to start drinking alcohol. There was not much change to observe in the short-term period (W4), but in the one year follow-up (W5), only 79 percent (*N* = 526) were sure or rather sure about their negative attitude toward drinking; 14 percent (*N* = 79) hesitant and seven percent (*N* = 27) were rather decided about their intention to consume alcohol. Looking at the gender balance of the subject pool of the intention to drink variable, there were similar tendencies in the short-term as well as in the long-term evaluation. In the group of adolescents that was uncertain towards future alcohol use, there

were always about as many females as males (W4: 24 girls and 31 boys; W5: 42 females and 37 males). The surer the intention toward future alcohol consumption, the fewer females appeared in the statistics. Particularly in the group of boys, there was a drastic change in attitude: at W3 three girls were sure about the intention to start drinking alcohol in comparison to twelve boys; at W4 only one out of 346 girls said she intended to start drinking alcohol, in comparison to four boys, and while none of the girls was sure about starting drinking at W5, five boys were. This draws the attention to the group of boys, who were apparently more at risk at this age than girls.

**Table 26. The frequencies of „future intention to drink alcohol“.**

Do you intend to drink alcohol in the near future?	W3 <sup>1</sup>			W4 <sup>2</sup>			W5 <sup>3</sup>		
	total	girls	boys	total	girls	boys	total	girls	boys
<b>Surely, don't</b>	<b>907</b>	<b>440</b>	<b>456</b>	704	346	352	407	216	190
<b>Rather, don't</b>	<b>159</b>	<b>80</b>	<b>79</b>	132	72	59	119	65	53
<i>Perhaps</i>	<i>106</i>	<i>40</i>	<i>65</i>	<i>56</i>	<i>31</i>	<i>24</i>	<i>79</i>	<i>42</i>	<i>37</i>
<b>Rather, do</b>	25	10	15	5	3	2	21	14	7
<b>Surely, do</b>	15	3	12	5	1	4	6	0	5
<b>Totals</b>	1212	573	627	902	453	441	632	337	292

Note: because of the missing values, *N* may differ from column to column in the table;

1 = first personality relevant measurement in the sixth grade; 2 = second measurement approximately five months later; 3 = third measurement in the seventh grade one year after the first measurement.

Only those students participated in this study, who reported to be sure, or rather sure about their intention not drinking in the near future at the first personality relevant questioning (W3). The calculations for the short-term (W4) and long-term (W5) frequencies rely only on participants of this particular sample (*N* written **bold**). The number of participants written *cursiv* were excluded from all analyses.

### 3.5.7.1 The role of personality in alcohol use

In the personality relevant analyses short-term results were provided over an approximately five month period and longitudinal results were computed over a one-year period. Current alcohol consumption was measured in the group of adolescents who reported not having collected any experience over a sip of alcohol one time in their lives. Intention to use alcohol

was measured by those who reported not intending to start drinking in the future. As, at this point, alcohol prevention was not part of the life-skills oriented health promotion program, current direct prevention effects through the educational units could not appear.

### **3.5.7.2 Current alcohol consumption**

In the prediction model the FFPI scales Extraversion ( $\alpha = .77$ ), Agreeableness ( $\alpha = .79$ ), Conscientiousness ( $\alpha = .73$ ), Emotional Stability ( $\alpha = .81$ ), and Autonomy ( $\alpha = .70$ ) were included together with the intervention program of the sixth grade that comprised the tobacco specific educational units. The alcohol specific prevention program had been scheduled for the seventh grade, but unfortunately the posttest results were not available at this phase of the study (W6). At the beginning of the logistic regression analysis the predictors had been entered in a block and their effects were tested. In a second step, the interactions between the personality predictors and the prevention program were also tested (e.g., Extraversion x prevention program, Agreeableness x prevention program, etc.), although no direct prevention effects were expected because at this point the alcohol specific prevention units had not been introduced to the program. The logistical regression analyses (step forward method) were computed six times: first in the total group of subjects, then the analysis was repeated in the group of girls, in the group of boys, and for both longitudinal evaluations (W4 + W5).

As expected, no prediction effects were found either for the intervention program or for the interactions with the intervention program: therefore, the prevention program as predictor and the interactions between the program and the personality variables were removed from the model.

As shown in Table 28, there were two major prediction effects that regarded attention in the short-term prediction model (W4), namely through Conscientiousness (Wald statistic = 8.37;  $p < .005$ ), and Emotional Stability (Wald statistic = 12.67;  $p < .001$ ). The model proved to be highly significant ( $\chi^2 = 23.98$ ;  $p < .001$ ) and showed that adolescents who considered themselves conscientious and emotionally stable were less likely to drink than the merry-go-

lucky and emotionally unbalanced ones after the approximately five month short-term period.

The long-term effects are slightly less robust in their appearance ( $\chi^2 = 16.45$ ;  $p < .001$ ), but both personality relevant short-term predictors remained significant (Table 28). It seems, that after one year, the conscientious and stable ones were still the ones who did not start drinking, while the others remained less resistant. Unfortunately, the classification tables showed a poor prediction success both in the short- and long-term predictions and, therefore, the results may be interpreted with some caution (Table 27).

**Table 27. Classification tables: The predictive role of personality in current alcohol consumption.**

**Short-term (W4)**

		Predicted Drinking		Corrected Percentages
		1	2	
Observed	1	700	1	99,9
Drinking	2	38	1	2,6
		738	2	94,7

Note: 1 = never, only one sip; 2 = occasionally, regularly

**Long-term (W5)**

		Predicted Drinking		Corrected Percentages
		1	2	
Observed	1	461	1	99,8
Drinking	2	73	0	0
		534	1	86,2

Note: 1 = never, only one sip; 2 = occasionally, regularly

**Table 28. The predictive role of personality in current alcohol consumption.**

**short-term (W4)**

Model chi-square	23.98
Degrees of freedom	2
Statistical significance of the model (p-value)	<.001
-2 Log Likelihood	281.49
Nagelkerke's adjusted R <sup>2</sup>	.09

**Individual predictors**

<u>Independent variables</u>	<u>B</u>	<u>SEB</u>	<u>Odds Ratio</u>	<u>Wald Statistic</u>	<u>p</u>
Conscientiousness	-.03	.01	.97	8.37	<.005
Emotional Stability	.01	.01	1.00	12.67	<.001

Note: N = 740

**long-term (W5)**

Model chi-square	16.45
Degrees of freedom	2
Statistical significance of the model (p-value)	<.001
-2 Log Likelihood	409.90
Nagelkerke's adjusted R <sup>2</sup>	.06

**Individual predictors**

<u>Independent variables</u>	<u>B</u>	<u>SEB</u>	<u>Odds Ratio</u>	<u>Wald Statistic</u>	<u>p</u>
Conscientiousness	-.02	.01	.98	4.32	<.05
Emotional Stability	.00	.00	1.00	11.22	<.005

Note: N = 535

**Table 29. Classification tables: The predictive role of personality in current alcohol consumption – gender specific results.**

**Girls - short-term (W4)**

		Predicted Drinking		Corrected Percentages
		1	2	
Observed	1	371	0	100
Drinking	2	14	0	0
		385	0	96,4

Note: 1 = never, only one sip; 2 = occasionally, regularly

**Boys - short-term (W4)**

		Predicted Drinking		Corrected Percentages
		1	2	
Observed	1	326	1	99,7
Drinking	2	23	0	0
		349	1	93,1

Note: 1 = never, only one sip; 2 = occasionally, regularly

**Boys - long-term (W5)**

		Predicted Drinking		Corrected Percentages
		1	2	
Observed	1	202	1	99,5
Drinking	2	35	1	2,8
		237	2	84,9

Note: 1 = never, only one sip; 2 = occasionally, regularly

**Table 30. The predictive role of personality in current alcohol consumption – gender specific results.**

**Girls - short-term (W4)**

Model chi-square	4.68
Degrees of freedom	1
Statistical significance of the model (p-value)	<.05
-2 Log Likelihood	115.60
Nagelkerke's adjusted R <sup>2</sup>	.05

**Individual predictor**

<b>Independent variable</b>	<b>B</b>	<b>SEB</b>	<b>Odds Ratio</b>	<b>Wald Statistic</b>	<b>p</b>
Conscientiousness	-.03	.01	.97	5.23	<.05

Note: N = 385

**Boys - short-term (W4)**

Model chi-square	17.40
Degrees of freedom	2
Statistical significance of the model (p-value)	<.001
-2 Log Likelihood	152.29
Nagelkerke's adjusted R <sup>2</sup>	.13

**Individual predictors**

<b>Independent variables</b>	<b>B</b>	<b>SEB</b>	<b>Odds Ratio</b>	<b>Wald Statistic</b>	<b>p</b>
Agreeableness	-.08	.02	.93	9.75	<.005
Conscientiousness	-.03	.01	.97	6.04	<.05

Note: N = 350

**Boys - long-term (W5)**

Model chi-square	14.00
Degrees of freedom	1
Statistical significance of the model (p-value)	<.001
-2 Log Likelihood	188.58
Nagelkerke's adjusted R <sup>2</sup>	.10

**Individual predictor**

<b>Independent variable</b>	<b>B</b>	<b>SEB</b>	<b>Odds Ratio</b>	<b>Wald Statistic</b>	<b>p</b>
Emotional Stability	.01	.00	1.01	12.63	<.001

Note: N = 239

On the gender specific level no predictions could be done for the group of girls in the long-term evaluation (Table 30). This might be caused by the relatively low prevalence rates in general and with the absence of females who regularly drink in the sample. In the short-term evaluation the prediction model for girls appeared to be weak ( $\chi^2 = 4.68$ ;  $p < .05$ ) and only Conscientiousness (Wald statistic = 5.23;  $p < .05$ ) showed a significant main effect. The



situation in the group of male subjects was different. The prevention model for the group of boys was significant both in the short ( $\chi^2 = 17.40$ ;  $p < .001$ ) and in the long-term evaluation ( $\chi^2 = 14.00$ ;  $p < .001$ ) even though, as shown in Table 25 (p. 128) the frequencies were also rather low in this gender group for those who changed their status regarding their self-reported alcohol consumption rate over the measurement sequences. This was also mirrored in the classification tables (Table 29) where poor predictions of the category memberships showed up. Nevertheless, the statistically significant results let us presume that in the short-term period for boys, Agreeableness (Wald statistic = 9.75;  $p < .005$ ) and Conscientiousness (Wald statistic = 6.04;  $p < .05$ ) played a predictive role in the development of alcohol consumption, the way that agreeable and conscientious boys were less likely to report having started drinking alcohol than the ones who considered themselves quarrelsome or negligent. In the long-term evaluation the prediction model fitted sufficiently ( $\chi^2 = 14.00$ ;  $p < .001$ ) and surprisingly, Emotional Stability (Wald statistic = 12.63;  $p < .001$ ) became a single and relatively strong main predictor. Thus, it is further to assume that the effect of Emotional Stability in the total group is caused by its predicting role in the group of boys. Here again, the support of correct classifications would have been helpful for a undoubtful interpretation of the results.

### **3.5.7.3 Future intention to drink alcohol**

At the beginning of the investigations all personality relevant predictors (e.g., Extraversion, Agreeableness, Conscientiousness, Emotional Stability and Autonomy) were included in the prediction model together with the prevention program. All possible interactions between the personality relevant predictors and the prevention program (e.g., Extraversion x prevention program, Agreeableness x prevention program, etc.) were included in a second, separate block. The model with the interactions between the personality dimensions and prevention program and the main effect for the prevention program were not found to be significant in any of the six logistic regression analyses. Therefore, for further analyses only, the main

effects of the personality dimension were calculated with the dichotomized dependent variable “future intention to drink alcohol” for the short- and long-term measurement sequences in the total sample of abstinent subjects and for both abstinent girls and boys.

Table 32 shows the predictive effects of the personality variables in the total group of subjects regarding the intention toward future alcohol consumption. The prediction model was weak but significant ( $\chi^2 = 7.86$ ;  $p < .05$ ) and included two personality variables: Emotional Stability (Wald statistic = 4.51;  $p < .05$ ) and with a moderate negative effect Autonomy (Wald statistic = 4.12;  $p < .05$ ).

In the one-year follow-up evaluation (W5), the prediction model became significant ( $\chi^2 = 11.75$ ;  $p < .005$ ) and from the personality variables Agreeableness (Wald statistic = 10.53;  $p < .005$ ) showed up as the main predictor for future intention to drink alcohol. Also here, as in the case of current alcohol consumption, it seemed highly likely that those adolescents who were co-operative, socially uncomplicated, and easy to get along with for others, were less in danger of drifting toward alcohol consumption. Nevertheless, the classification tables showed unsatisfying results (Table 31).

**Table 31. Classification tables: The predictive role of personality in future intention to drink alcohol.**

**Short-term (W4)**

		Predicted Drinking		Corrected Percentages
		1	2	
Observed	1	295	0	100
Drinking	2	14	0	0
		309	0	95,5

Note: 1 = surely don't, rather don't; 2 = rather do, surely do

**Long-term (W5)**

		Predicted Drinking		Corrected Percentages
		1	2	
Observed	1	213	0	100
Drinking	2	23	0	0
		236	0	90,3

Note: 1 = surely don't, rather don't; 2 = rather do, surely do

**Table 32. The predictive role of personality in future intention to drink alcohol.**

**short-term (W4)**

Model chi-square	7.86
Degrees of freedom	2
Statistical significance of the model (p-value)	< .05
-2 Log Likelihood	106.13
Nagelkerke's adjusted R <sup>2</sup>	.08

**Individual predictors**

<u>Independent variables</u>	<u>B</u>	<u>SEB</u>	<u>Odds Ratio</u>	<u>Wald Statistic</u>	<u>p</u>
Emotional Stability	-.06	.03	.94	4.51	<.05
Autonomy	.08	.04	1.08	4.12	<.05

Note: N = 309

**long-term (W5)**

Model chi-square	11.75
Degrees of freedom	1
Statistical significance of the model (p-value)	< .005
-2 Log Likelihood	139.04
Nagelkerke's adjusted R <sup>2</sup>	.10

**Individual predictor**

<u>Independent variable</u>	<u>B</u>	<u>SEB</u>	<u>Odds Ratio</u>	<u>Wald Statistic</u>	<u>p</u>
Agreeableness	-.09	.03	.91	10.53	< .005

Note: N = 236

**Table 33. Classification tables: The predictive role of personality in future intention to drink alcohol – gender specific results.**

**Girls - short-term (W4)**

		Predicted Drinking		Corrected Percentages
		1	2	
Observed	1	144	0	100
Drinking	2	5	0	0
		149	0	96,6

Note: 1 = surely don't, rather don't; 2 = rather do, surely do

**Boys - long-term (W5)**

		Predicted Drinking		Corrected Percentages
		1	2	
Observed	1	96	1	99,0
Drinking	2	11	4	26,7
		107	5	89,3

Note: 1 = surely don't, rather don't; 2 = rather do, surely do

**Table 34. The predictive role of personality in intention to drink alcohol – gender specific results.**

**Girls - short-term (W4)**

Model chi-square	5.50
Degrees of freedom	1
Statistical significance of the model (p-value)	< .05
-2 Log Likelihood	38.28
Nagelkerke's adjusted R <sup>2</sup>	.14

**Individual predictor**

<u>Independent variable</u>	<u>B</u>	<u>SEB</u>	<u>Odds Ratio</u>	<u>Wald Statistic</u>	<u>p</u>
Emotional Stability	-.11	.04	.90	5.64	< .05

Note: N = 149

**Boys - long-term (W5)**

Model chi-square	12.41
Degrees of freedom	1
Statistical significance of the model (p-value)	< .001
-2 Log Likelihood	75.80
Nagelkerke's adjusted R <sup>2</sup>	.19

**Individual predictor**

<u>Independent variable</u>	<u>B</u>	<u>SEB</u>	<u>Odds Ratio</u>	<u>Wald Statistic</u>	<u>p</u>
Agreeableness	-.15	.05	.86	9.78	< .005

Note: N= 112

As represented in Table 34, there were no significant effects for boys in the short term evaluation for future intention to drink. On the contrary, the prediction model did become significant for girls ( $\chi^2 = 5.50$ ;  $p < .05$ ), and Emotional Stability (Wald statistic = 5.64;  $p < .05$ ) appeared as a main predictor. While no long-term predictions could be made for the girls, the long-term prediction model for boys turned out to be statistically significant ( $\chi^2 = 12.41$ ;  $p < .001$ ). The positive role of Agreeableness in the prevention of substance use showed up quite clearly (Wald statistic = 9.78;  $p < .005$ ).

Therefore, one may conclude that there was a lower probability for agreeable or socially uncomplicated and pleasant adolescents, particularly males, to change their previously negative attitude toward drinking alcohol and to become real consumers. This effect manifested independently from any intervention efforts and unfolded its effect rather in the long run. Also here, the classification tables showed no satisfying picture and therefore, could not support the results of the prediction model (Table 33).

### **3.5.8 Discussion**

Caution is appropriate when interpreting these results. The analyses were conducted in a population in which drinking behavior is rather seldomly manifested and was mostly apparent only on social occasions. Nevertheless, the results showed sufficient statistical significance in spite of certain unfavorable circumstances, like low prevalences and unequal distributions of consumption levels.

It may be concluded that in regard to alcohol use and future intention to drink in the age group of 12-16 year old adolescents, and in the investigated longitudinal period, no positive carry over effects of the general and smoking relevant life-skills oriented prevention programs were observed. Transfer effects of a general or smoking specific intervention, such as reported by Botvin, Baker, Filazzola and Botvin (1990) and Leppin,

Pieper, Szirmák, Freitag & Hurrelmann (1999), were not supported by the results of the present study.

A great majority of adolescents were non-consumers during the investigated age period, but the prevalence showed a tendency that could not significantly be influenced by the general and tobacco specific life-skills prevention units. One might reach a satisfying prevention effect for alcohol with the life-skills training method when alcohol relevant units are implemented (Botvin, Griffin, Paul & Macaulay, 2003; Botvin & Kantor, 2000). The results suggest that the role of personality in the school oriented legal drug prevention is crucial. Three Big Five factors, Conscientiousness, Emotional Stability and Agreeableness were meaningfully related to current alcohol use and future intention to drink alcohol. Agreeableness was rather predictive for boys. As Booth-Kewley and Vickers (1994) suggest, some element of Agreeableness, like trust and straightforwardness, can form the basis of its health relevant role. Booth-Kewley and Vickers (1994) also discussed the role of Conscientiousness in health and came to the conclusion that Conscientiousness explained a great proportion of individual differences in health relevant behavior and through the ability of conscientious people to focus on distant gains and gratification and to be more self-controlled and persistent than non-conscientious individuals (Lemos-Giráldez & Fidalgo-Aliste, 1997).

The fact that personality characteristics with a moral connotation, like Conscientiousness and Agreeableness, seemed to determine future alcohol consumption and intention to drink point to the moral character of alcohol consumption at adolescent age. The motives to consume are different from the motives of adult addicted drinkers, where anxiety and depressive symptoms accompany alcohol misuse (Kirkcaldy et al., 2004), even though the role of Emotional Stability already showed these aspects, too. Still, it seems better to speak of alcohol use than of misuse at this age in general populations and to look for the motives of consumption at the moral-social level. Adolescents drink, not so much because of emotional

unbalance, though it plays a subordinate role in the current use of alcohol, but rather to impress peers and to protest against adult rules and regulations. This is indicated by the results: those who were socially pleasant and reliable probably did not need this way of acknowledgement and managed their social contacts without attracting the attention of others through drinking. Stewart, Loughlin and Rhyno (2001) supported this argumentation with their findings that non-agreeable individuals tend to increase social benefits and positive moods through the consumption of alcoholic beverages. Fact is, that adolescents mostly drink at parties and together with other peers and in groups (Kolip, 2000).

Zuckerman (1994) - as summarized by Kirkcaldy et al. (2004) - spoke of the early and late onset of alcohol consumption and stressed the difference between the two. The early type was mostly characterized by sensation seeking and an antisocial pattern of consumption, while the late-type was mostly characterized by submissive and neurotic patterns. Zuckerman and Kuhlman (2000) also provided proofs for the relationship between non-conscientiousness and risky behavior. Therefore, Kirkcaldy et al. (2004) concluded that the early type of consumer, the non-conscientious type, was characteristic for the adolescent consumers. Kirkcaldy et al. (2004) assumed, moreover, that the non-conscientious and non-agreeable early consumers probably did not become heavy regular drinkers because anxiety was not the most important trait in their development of alcohol consumption and their motives were rather external, like drinking under peer pressure.

Through the results of the present study the above suggestions may be supported. The results pointed to a socially-morally relevant direction of the interpretation (Hurrelmann, 1990). Probably an inefficient coping with the socially relevant developmental tasks, such as the acknowledgement by peers, the integration in a desired group, and the anticipation of the independence of adulthood, triggers alcohol use rather than intra-personal emotional disturbances. Findings by Victor (1994), Ehrler, Evans and McGhee (1999), and Shiner, Masten and Tellegen (2002) support this argumentation: they found that low Agreeableness

and Conscientiousness were related to antisocial conduct. Although the prediction models appeared to be significant, as already discussed, the relationship between the predictors and the dependent variable was not overall robust. The problem of the robustness of the results could lie in the nature and the characteristics of the personality variables and dependent behavioral and motivational variables. On one hand, alcohol consumption is a multi-determined phenomenon (Leppin, 2000), but the personality factors are also complex in their nature. As Paunonen (2003) argued, it may be true that low Conscientiousness predicts alcohol consumption, but the question is which facet is in charge of the predictive relationship. He argued that, although alcohol consumption may be related to low self-discipline, it might have nothing to do with any other facets of Conscientiousness. By assessing the broad construct instead of building some narrow separate predictors may well lead to a lower robustness of the prediction. He also suggested that maybe some other non-Big Five personality variables, like honesty (Ashton, Lee & Son, 2000), may provide better predictions of the investigated behavior, and genetic and environmental factors can also significantly determine the appearance of substance specific behavior.

When the motivational level was investigated (Cooper, 1994), Conscientiousness seemed to play a central role in enhancement (for example, drinking for fun). The latter findings do correspond to the findings by Steward and Devine (2000) who associated Extraversion and Non-Conscientiousness and enhancement motives (like drinking at parties). Non-conscientious individuals do not care about longitudinal consequences and do not really consider adult warnings. The same is true for the low agreeable ones, who are not afraid of confrontations or of violating adult prohibitions. The relationship between the external motives and personality as reported by Theakston et al. (2004) could not be supported by the present adolescent results. High Agreeableness turned out to be a rather protective factor, as well as high Emotional Stability. Drinking under motives of conformity, like under group pressure or just to be part of the crowd, is a well-documented phenomenon in adolescence, but



such drinking is not very likely to be determined by high Emotional Stability. It seems more plausible that drinking behavior in early adolescents is determined mostly by enhancement motives, which means that adolescents drink for short-term internal positive reinforcement reasons, to have an exciting experience and to have fun or enjoy being tipsy. For that, they only “need” to be a bit non-conscientious and forget about the unhealthy aspects, to be non-agreeable and disobey the prohibition regarding alcohol use. Nevertheless, it is known that enhancement does predict quantity and frequency of consumption (Cooper, 1994) and that enhancement motives mediate the relationship between heavy drinking and Conscientiousness (Stewart et al., 2001). This fact cannot be neglected in future prevention.

Especially characteristic is the behavior of the boys, who start drinking before girls do, and drink more than girls do. It seems that male adolescents are more at risk when alcohol consumption is regarded, and that they need special attention in school-focused prevention programs. The rebellious, non-committed males are the first to engage in health hazardous behavior. Robins, John and Caspi (1994) related juvenile delinquency and antisocial personality (un-emphatic, selfish, aggressive, rebellious, egocentric individual with insufficient impulse control) with low Agreeableness and low Conscientiousness. Because of the carefree, non-authoritarian and egocentric attitude of these adolescents, it is difficult to reach them by a prevention program that is implemented by the “authoritarian” adult, as class teachers usually are in the eyes of the students.

Nevertheless, these results did not show an alarming picture of alcohol use in adolescents, but they pointed to some major aspects of the development of alcohol use and so may facilitate more effective and individually tailored prevention in the future. This study shows that not all adolescent are at risk of becoming alcohol consumers, but that only certain individuals are, and these deserve more help and attention in their development.