# Intellectually disabled adolescents Prepared in time

***A study into the possibilities of E-learning and substance use prevention-interventions for intellectually disabled adolescents.***

Louise E.M. Kemna

S0177148

27-11-2009

UNIVERSITY OF TWENTE.

AveleijnSDT

Tactus verslavingszorg

# Intellectually disabled adolescents Prepared in time

## *A study into the possibilities of E-learning and substance use prevention-interventions for intellectually disabled adolescents.*


Student: Louise E.M. Kemna, B.Sc

Studentnumber: S0177148


Date: 27-11-2009

Master: Psychology, Veiligheid & Gezondheid


Supervisors:

M. Kiewik – de Vries, M.Sc, first supervisor AveleijnSDT

C.H.C. Drossaert, PhD., first supervisor University of Twente

M.E. Pieterse, PhD., second supervisor University of Twente

## ABSTRACT

**Background:** There is a lack of research into the use and misuse of psychoactive substances such as alcohol and drugs among persons with an intellectual disability, especially among the adolescents in this population. To our knowledge there are no special prevention intervention programmes for special needs school students explaning them about the dangers of using tobacco and alcohol and helping them in not starting the use of any of these products. However there is an e-learning program 'Prepared in time' which has the main goal of prevention adolescents from using tobacco and alcohol. This program was developed for 5$^{th}$ and 6$^{th}$ graders in mainstream primary schools and has so far not been used in different settings. 'Prepared in time' aims to increased the knowledge on smoking and tobacco and also tries to change attitudes, lower intention to start using and increase the self-efficacy of the students working with the programme.

**Aim:** This study into substance use prevention among adolescents with an intellectual disability was twofold. First it gives an impression of the use of tobacco and alcohol amond 1$^{st}$ and 2$^{nd}$ graders in secundary special needs schools. Secondly it looks at the usefullness and the effectiveness of the e-learning program 'Prepared in time' for this population.

**Methods:** A quasi-experiment was used in which 232 students filled out a baseline and follow-up questionnaire. The respondents were students of one of the five participating schools. The schools were selected to be part of either the experimental group or control group based on number of students, gender of student and number of students in 1$^{st}$ and 2$^{nd}$ grade. The students in the experimentalgroup also worked with 'Prepared in time' and filled out a process evaluation on the e-learning programme.

**Results:** This study showed that a large proportion of respondents, age 11-15, initiated smoking (49%) and drinking (75%). The drinking percentage is consistent with national results however the students in this study smoke significantly more then was expected based on national studies. The students were well capable of working with the e-learning program 'Prepared in time'. They gave it a rating of 6 out of 10, finding it easy and, especially the games, fun. The e-learning programme significantly increased their knowledge on alcohol. It did however not affect their smoking or drinking behaviour or the behavioural determinants attitude, intention, subjective norm, peer pressure, social support and self-efficacy.

**Conclusion:** This study has showed some first results on the smoking and drinking behaviour of adolescents with a mild and borderline intellectual disability. The participating students were well capable of working with an e-learning programme and more research should be done into this way of teaching. To get effective results from 'Prepared in time' it will need some improvements to provide in the special needs these students have, such as repetition and simple explenations. If this were to be done, 'Prepared in time' could be a good supplement to a larger scale prevention program. These results show the importance of developing a proper prevention-intervention programme for this special population.

## SAMENVATTING

**Aanleiding:** Er is een gebrek aan onderzoek op het gebied van gebruik en misbruik van psychoactieve stoffen als alcohol en drugs onder mensen met een verstandelijke handicap en dan met name onder de adolescenten binnen deze populatie. Voor zover bij ons bekend zijn er geen speciale preventie programmas voor gebruik binnen het speciaal onderwijs die verstandelijk gehandicapte studenten informeren over de gevaren van roken en alcohol en hen leert dat het beter is deze producten niet te gebruiken. Echter, er bestaan een e-learning programma 'Op tijd voorbereid' dat als doel heeft te voorkomen dat adolescenten beginnen met het gebruiken van alcohol en sigaretten. Dit programma is ontwikkeld voor gebruik in groep 7 & 8 van het reguliere basisonderwijs en is tot noch toe niet gebruikt in andere settings. 'Op tijd voorbereid' heeft als doel om de kennis over alcohol en roken te vergroten en probeert daarnaast de attitudes van de leerlingen te veranderen, de intentie om te gaan gebruiken te verlagen en hun zelfeffectiviteit te verhogen.

**Doel:** Dit onderzoek was tweevoudig opgezet. Aan de ene kant geeft het informatie over het gebruik van alcohol en sigaretten onder jongeren in klas 1 en 2 binnen het praktijkonderwijs. Daarnaast is er gekeken naar de bruikbaarheid en effectiviteit van het e-learningprogramma 'Op tijd voorbereid' binnen deze doelgroep.

**Onderzoeksopzet:** Er is gebruik gemaakt van een quasi-experiment waarin 232 studenten 2 vragenlijsten hebben ingevuld; een voormeting en een nameting. 5 scholen hebben meegewerkt aan dit onderzoek en zijn op basis van aantal studenten, geslacht van studenten en aantal studenten in het $1^{e}$ en $2^{e}$ jaar geselecteerd voor de experiment- of controlegroep. De studenten in de experimentgroep hebben naast de vragenlijsten gewerkt met het programma 'Op tijd voorbereid' en hebben over dit programma een evaluatievragenlijst ingevuld.

**Resultaten:** Uit dit onderzoek blijkt dat een grote groep van de studenten (leeftijd 11-15 jaar) al eens heeft gerookt (49%) en alcohol heeft gedronken (75%). Het percentage drinkers komt overeen met het landelijk gemiddelde, het aantal rokers was echter significant hoger in vergelijking met landelijke cijfers. De studenten waren goed in staat om met het e-learning programma te werken en gaven het een score van 6 uit 10. Ze vonden het makkelijk om mee te werken en vooral de spelletjes werden erg gewaardeerd. 'Op tijd voorbereid' vergrote de kennis over alcohol significant. Echter het programma had geen invloed op het rook- en drinkgedrag van de jongeren. Ook was er geen invloed zichtbaar op de gedragsdeterminanten attitude, intentie, subjectieve norm, groepsdruk, sociale steun en zelfeffectiviteit.

**Conclusie:** Dit onderzoek levert eerste resultaten over het rook- en drinkgedrag van zwakbegaafde of licht verstandelijk gehandicapte jongeren. De studenten die meewerkten aan dit onderzoek waren prima in staat om te werken met een e-learning programma en het is aan te raden meer onderzoek te doen naar de mogelijkheden van e-learning binnen het speciaal onderwijs. Om effectieve resultaten te behalen met 'Op tijd voorbereid' zullen er een aantal aanpassingen gedaan moeten worden om het programma geschikt te maken voor deze studenten, zoals meer herhaling en eenvoudigere uitleg. Als dit gedaan owrdt dan zou 'Op tijd voorbereid' een goed

onderdeel kunnen vormen van een op groter schaal opgezet preventie programma. De resultaten van dit onderzoek laten zien hoe belangrijk is dat er een goed preventieprogramma komt dat speciaal ontwikkeld wordt voor deze doelgroep.

# INDEX

# CHAPTER 1 - INTRODUCTION

Substance use and misuse among persons with an intellectual disability (ID) has been the focus of much attention as it seems to have been increasing over the last 20 years (Krishef, 1986, Burgard, Donohue, Azrin & Teichner, 2000). However, treatment programs have not seen the same progress and are not suitable to provide the care this special population needs. (Kelman, Lindsay, McPherson & Mathewson, 1997) The same can be said for prevention intervention programmes. It seems there are no programmes available that are specifically developed for and useable with ID students in special needs schools.

AveleijnSDT is a dutch health care organization, providing care to mentally disabled persons. They are located in the east of the Netherlands. The organization provides care for people with an intellectual disability from childhood up to old age. With over 2400 clients and 1600 employees it is a large organization that provides housing, day care, sheltered working, therapy etc. Some clients are institutionalized, others live on their own and are regularly visited by their care providers. In line with findings in literature they have seen in increase in use and misuse of substances among their clients. They want to provide the best quality care possible and have started a special project (Binnenplein), that focuses on the substance use and misuse problems. One of the goals of this project is to develop a prevention-intervention programme to use among the younger clients.

Tactus addiction medicine is also located in the east of the Netherlands and faces similar problems as AveleijnSDT. They have seen a grow in clients that suffer from an intellectual disability and have difficulty providing care at their level. Besides treatment they also focus on providing prevention programmes among primary & secondary schools. One of these programmes is 'Prepared in time' a prevention intervention program that focuses on smoking & alcohol. It was developed for use in the $5^{th}$ & $6^{th}$ grade of regular primary schools. The program has 3 components; an e-learning program, group assignments & an information evening for parents. The main goal of this program is to prevent adolescents from starting smoking cigarettes & drinking alcohol. Its aim is to extend their knowledge and change their social attitudes towards tobacco and alcohol, thereby trying to establish behavioural changes.

As their are no official numbers available in the Netherlands on use of alcohol and tobacco among adolescents with an intellectual disability this study looked into their lifetime prevalence, monthly prevalence and daily use in order to get a first indication into the scale of substance use and misuse among this population. Besides being overlooked in national surveys on prevelances, these children and adolescents seem to be a forgotten target group when it comes to prevention interventions programs on alcohol, tobacco & drugs (Kelman et.al. 1997). The same can be said about the use of new methods like e-learning. By researching the program 'Prepared in time' an attempt was made to look at both the usefulness and effectiveness of e-learning for adolescents with an intellectual disability. 5 special needs schools were willing to participate, providing 232 students. The participants were divided into two groups: an experimental group and a control group. All of them filled out a baseline questionnaire and a follow-up questionnaire. The experimental group also worked with 'Prepared in time' and filled out a proces-evaluation on the program.

# CHAPTER 2 - PROBLEM STATEMENT

## 2.1 SUBSTANCE USE AND MISUSE AMONG PERSONS WITH AN INTELLECTUAL DISABILITY

Substance use and misuse among people with an intellectual disability seems to be a growing problem. Research shows that misuse and abuse of substances among people with an intellectual disability has grown over the last 20 years (Krishef, 1986; Burgard et.al., 2000). As there is an increasing emphasis on deinstitutionalization and normalization, persons with an ID are maintained within the community and ID adolescents socialize in similar environments as their non-ID peers (Cocco & Harper, 2002). This results in greater access to sport facilities, schools & shops but also to tobacco, alcohol and drugs such as cannabis, cocaine and XTC, subjecting them to greater opportunities of possibly misusing these products and increasing the likelyhood of potential harm and alcohol & drugs problems (Krishef & DiNitto, 1981; Krishef, 1986; McGillicuddy & Blane, 1999; Taylor, Standen, Cutajar, Fox & Wilson, 2004).

However, studies on substance use disorders among these people, and especially ID adolescents are rare (Beitchman, Wilson, Douglas, Young & Adlaf, 2001). From the few studies done so far it appears that people with an ID experience the same kind of drugs-related problems that occur in the general population (Christian & Poling, 1997). Beitchman et.al. (2001) found that there is no difference in the use of substances, the level of consumption or the onset history between participants with an intellectual disability and participants without an intellectual disability. This corresponds with a study by Krishef (1986) that indicates that persons with mild ID did not differ significantly from the general public as far as the number of problems associated with consumption of alcoholic beverages. However research done by McGillicuddy and Blane (1999) showed a 1:1 ratio of misusers to users for those who did drink alcohol. This result supports the idea that people with an ID get addicted to substances quicker than persons in the general population (Christian et.al.,1997; Burgard et.al. 2000).

Looking at ID adolescents studies show that they are a high risk group for developing substance abuse problems in the future (Kress & Elias, 1993; Beitchman et.al. 2001). Because of their intellectual disability they face unique risk factors as they suffer from a lack of skills, are extremely sensitive to peer pressure and are ill-equipped to face high stress situations (Kress et.al., 1993; Christian et.al.,1997; Burgard et.al. 2000). Besides these problems some researchers believe that part of the problem lies in the intellectual disability itself. Problems like inadequate self-regulatory behaviour have been identified as a frequent predictor in drug abuse among the general population but is also a known problem associated with ID (Christian et.al., 1997).

The cognitive limitations that increase the risk of substance misuse makes research with this population difficult (McGillicuddy et.al. 1999). It is hard to get informed consent as a result of high illiteracy among intellectually disabled persons. Also, reseachers perceive that obstacles as illiteracy, short attention spans, poor short and long

term memory, proclivity to distort abstract cognitive concepts and an overly compliant disposition may result in the provision of inaccurate information (McGillicuddy, et.al. 1999). Another problem in this field of research is the diversity of the population, definition problems on intellectual disability and on when they use or misuse substances as well as overprotection by the environment and legal and ethical issues. As a consequence, little controlled research dealing with etiology, prevention or treatment of alcohol or drugs among individuals with an intellectual disability has been done (McGillicuddy et.al. 1999). “Controlled research dealing with the genesis, treatment and prevention of drug abuse among people with ID is essentially non-existent, but badly needed” according to Christian & Poling (1997, p. 126).

In the Netherlands, no official data are available on the percentage of intellectually disabled people that suffer from substance use and misuse problems. A first inventory on this subject by Mutsaers, Blekman and Schipper (2007) gave no numbers but showed that there is a growing interest among social services and addiction care facilities into the subject. A study on alcohol use and drug use among adolescents with an intellectual disability was done by the Trimbos Institute (Bransen, Schipper, Mutsaers, Haverman & Blekman, 2008). It showed a lifetime prevalence of alcohol drinking at 76% and a lifetime prevalence of drug use at 34%. However this study was done by means of an online questionnaire which means that only indiviuals with a computerskills and internet access were able to participate. Also the agegroup was quite large with a range from 12-25 and an average of 16 years old. As the legal age of drinking alcohol in the Netherlands lies at 16, high use percentages can be expected. As this study only looked at alcohol and drugs they can not provide any numbers on smoking (Bransen,et.al. 2008). In September 2009 an epidemiology research on larger scale was set up by J. VanderNagel as part of SumID: Substance Use and Misuse in Intellectual Disabilities. Over a thousand people with an intellectual disability will participate in interviews, questionnaires and a biomarker research based on hair- and urine analyses (Tactus, 2009).

Literature research shows that substance use and misuse among people with an intellectual disability is a growing problem. So far it has received little scientific attention as researchers are weary of working with ID people because of their cognitive limitations and also because of a lack of funding. As a result there are no numbers available on how many ID adolescents drink alcohol and smoke cigarettes, making them a riskgroup for future addiction problems. Therefore this study wants to examn the cigarette smoking behaviour and alcohol drinking behaviour of adolescents with an intellectual disability. As ID persons have trouble resiting peer pressure and get addicted more easily it seems important to prevent them from starting the use of tobacco, alcohol and other (illegal) substances. A good way of doing so would be a prevention intervention programme for both adolescents and adults with ID.

## 2.2 INTERVENTION AND PREVENTION PROGRAMMES FOR PEOPLE WITH AN INTELLECTUAL DISABILITY AND SUBSTANCE USE PROBLEMS

The treatment of addiction in people with ID is difficult (Clarke & Wilson, 1999). One of the problems is a lack of training in working with persons with an intellectual disability among staff in subsance misuse services. Secondly the intellectual disablility means that their clients have difficulties with comprehension, abstract reasoning and sometimes reading skills. (Barret & Paschos, 2006). Most treatments work on external motivators, insight in the problem and support from support groups like AA. Unfortunatly most ID addicts are limited in their cognitive abilities and have poor insight into their behaviour (Annand and Ruff, 1998). It is hard for them to comprehend what is being said and what is expected of them. Next to that they find it hard to bond with other people in support groups as they can not identify with other group members (Annand et.al., 1998). These problems mean that addicted ID clients need more time to get positive results out of regular treatment programmes (Longo, 1997; Barret et.al, 2006). Whether addiction care centres are able and willing to provide this time is unknown, according to Cosden (2001) there are no published data about success rates in substance abuse treatment for clients with ID. Also it seems that there are very few, mostly uncontrolled, interventions developed for intellectually disabled clients in the field of substance misuse (Barret et.al., 2006). In this light preventing intellectually disabled persons from using alcohol, tabacco & drugs, thereby preventing them from addiction to these substances, seems even more crucial.

A study by McCusker, Clare, Cullen and Reep (1993) showed that the knowledge on alcohol was significantly poorer among persons with an intellectual disability in comparison to the general population. It also showed a larger susceptability to social pressure to drink alcohol among the ID population (McCusker et.al. 1993). However, very few prevention programs target this population specifically (Kress, et.al. 1993). McGillicuddy et.al (1999) tested 2 prevention intervention programmes which showed that individuals with ID provide reliable data and prevention intervention for persons with ID increase knowledge, at least short-term, and it improves relevant skills. This is a slight win as Leventhal, Fleming & Glynn (1988) showed that by delaying the onset of smoking, one not only decreases the likelihood of continued smoking but also delayed entry into what can be seen as a first step toward illegal substances. The same counts for alcohol. Research done by Monshouwer, Verdurmen, van Dorsselaer, Smit, Gorter and Vollebergh (2008) shows that students who have not had a drink at the age of 15 are very unlikely to start drinking alcohol later on in life.

Back in 1990 Pianta already called for greater attention in discussions of school reform for establishing prevention programs, particularly in special education. This view is supported by Kress et.al. (1993) as prevention programmes reach populations at earlier stages and forestall the development of future impairments.

Schools seem to be the idealic place for prevention intervention programmes and should be the focal point for several reasons (Cowen, Hightower, Pedro-Carroll & Work, 1990; Brandenmuller & Elias 1991):

- Children's ability to change makes them good targets
- Schools provide naturalistic accessibility to the largest number of children for the most extended periods of time
- Schools curricula can be adapted to include prevention ideas and technologies
- Because children spend much time there, school can be seen as naturalistic setting for developmentally targeted work
- Organizationally schools allow the possibility of systematic implementation and assessment

Within mainstream schools this view was adopted and many schools offer prevention programmes on subjects like substance use but also on health education and sex education. Unfortunately this is not the case in all special needs schools who either do not provide prevention programmes or use programmes set up for mainstream population that are to difficult for the intellectually disabled students (Cocco et.al. 2002). The lack of prevention programmes specifically developed for ID adolescents is also a concern of Bridges Robertson and Jackson (1996, p.248) who say that 'children with learning disabilities are as much in need of smoking prevention programmes as children without learning disabilities'.

Following the line of this information it seems that providing prevention intervention programmes in special needs schools is a good start. In the Netherlands secondary special needs schools held 125.000 students in the year 2008 (MinOCW, 2009). Offering them a good prevention intervention programme on tobacco, alcohol and drugs seems crucial in preventing them from becoming addicts later on in life. However, to our knowledge, no such programme exists at the moment.

## 2.3 E-LEARNING

E-learning is a relatively new form of learning that was developed in the late 1990's. The name e-learning was first used in 1999. The popularity of the world wide web took a big flight in the mid 1990's, handing companies a quick and cheap way of keeping in touch with different relations all over the world and selling their products online. This also meant a lot of training for employees. To keep costs down and help employees study in their own time and pace, new programs were developed, that could be done on a computer, online, either at the office or at home (Rubens, 2003)

After almost 10 years of e-learning it shows that the method is still mainly used for in-company training sessions. On smaller scale the education sector has seen its potentials and is starting to use this way of teaching. No research has been done on the effectiveness of e-learning in the special education system as the main focus has been on the target group mentioned above (Bershin, 2003).

However, there are studies on the effectiveness of e-therapy in which persons with mental health problems receive help online. They show that e-therapy can broaden the possibilities of healthcare and may be an appropriate kind of treatment when applied correctly (Postel, de Haan & de Jong, 2008).

Benefits of working with an e-learning programme are the fact that these kind of programs can be done outside working hours at home, people can work through the program in their own pace and they feel more secure and confident as most programs give the option of looking back at past information, taking away the feeling of having to learn and remember everything at once. Disadvantages for working with an e-learning program could be that people don't have the skills they need to work on a computer. It also limits the social aspect one would normally have when following a course (Kruse, 2002). Unfortunately no empirical studies were found that can either confirm or refute these pro's and con's for working with an e-learning program in favour of traditional education programmes.

It seems that so far no research has been done into using e-learning with people with an intellectual disability. Looking at the benefits mentioned above it seems there might be great potential here. Intellectually disabled people are, just like normal people, very different in their needs and possibilities. Being able to work in their own pace is very important for many of them. Not having to wait for slower classmates or missing information because they have a hard time keeping up will reduce their stress levels. Working with computers is part of the educational program in special needs schools. Many of these students are well capable of working with an computer program, have their own email address, chat online and keep personal websites. In the era of computers and internet it is important to look at new developments and the potential it offers into new learning techniques.

In our opinion E-learning seems to be the perfect new teaching method for students with an intellectual disability as it offers them the option of working in their own pace without the pressure of quicker classmates or the annoyance of slower ones. By working individually behind a computerscreen, wearing headphones they are less easily distracted. Besides these pro's computers are a modern way of learning that has a high appeal to the adolescent agegroup.

## 2.4 PREPARED IN TIME

The intervention programme “Prepared in time” was developed as an prevention intervention programme that can be used in the 5th and 6th grade of primary school. It targets both children between the ages of 9 – 13 years as well as their parents.

Fig. 1: Startpage Students Prepared in Time & Making your own portrait.

The aim of “Prepared in time” is to prepare children for the moment they will get into contact with tobacco and alcohol. By means of questions, answered by the students, a class profile is made, giving the teachers an idea of the attitudes and intentions of there students. The movies show the students different situations and answering options, thereby strengthening their ability to make their own choices and not give in to peer pressure. By means of games and movies the program tries to increase their knowledge and perception of alcohol and tobacco. It stimulates the students to think about the effects of smoking and alcohol on your body, your health but also on what it does with your social status. Part of the programme is a parent evening that educates and informs the students parents on the dangers of alcohol and tobacco. This way, Tactus tries to not only strengthen the children but also create support in the home environment.

Fig. 2: The Smoking Robot & Drinking-Driving game.

The effectiveness of "Prepared in time" was researched in 2006 by Elke Ter Huurne (Ter Huurne, 2006). She found that the knowledge significantly improved within the experimental group in comparison to the control group. Intention to start smoking was low in general, intention to start drinking before the age of 16 was higher. Only 25% said they would definitely not drink until the age of 16. The attitude of the respondents toward smoking and alcohol was greatly influenced by their age. The older the respondent, the more positive they looked at both smoking and alcohol. Most respondents felt they had great social support in not smoking and drinking. They did not feel much peer pressure. Looking at their self-efficacy it showed that the respondents think they are well capable of keeping away from smoking. Alcohol seems to be seen as more difficult (Ter Huurne, 2006).

"Prepared in time" is a prevention intervention program that was developed for children age 9-13 in the general population. As children with an intellectual disability in general have a slower developmental curve, we assume that the cognitive and emotional development of the studygroup is comparable with the original targetgroup of "Prepared in time". As e-learning is a new teaching method this study might indicate if it is a method that is suitable to use with ID students. Both the usefulness of the method as well as the effectiveness will be incorporated in this study. By using an existing prevention intervention programme on alcohol and smoking a first step is made in the development and use of a structured prevention intervention programme in special needs schools.

**Main research questions:**

**1. What is the life-time prevalence of smoking and drinking alcohol among 1st and 2nd graders in secondary special needs schools?**

**2. Is the e-learning program "Prepared in time" a useful prevention intervention programme for students in 1st and 2nd grade of secondary special needs schools?**

**Sub questions:**

- **What attitudes do 1st and 2nd graders in secondary specials needs schools have towards tobacco and alcohol?**
- **Which behavioural determinants can predict the use of tobacco and alcohol?**
- **Is e-learning a useful and workable method for these adolescents?**
- **Does "Prepared in time" extend the knowledge on alcohol & smoking among the ID adolescents?**
- **Does "Prepared in time" change behavioural attitudes on alcohol & smoking among the ID adolescents?**

# CHAPTER 3 - METHODS

## 3.1 DESIGN

To answer the research questions a quasi experimental design with a pretest and post-test was used (Fig.1).

**Fig 1.** *Schematic display research*

| Timeline | Week 1/2<br>1st Questionnaire | Week 3/4<br>Prepared in time | Week 6/7<br>2nd Questionnaire |
|---|---|---|---|
| Experimental group[1] | x | x | x |
| Control group[2] | x | o | x |

[1]Experimental group = Special needs schools in Enschede & Zutphen
[2]Control group = Special needs schools in Almelo, Ommen & Zwolle

5 schools were willing to participate in this research, providing 232 students. They were assigned to either of 2 groups: experimental or control. Schools were non-random selected based on number of students, location, gender, number of students in 1st and 2nd class and if any prevention education was done already that schoolyear, trying to create comparable groups (Table 3.1).

**Table 3.1** *Participating schools, number of students, gender & class*

| | Enschede | Zutphen | Almelo | Ommen | Zutphen | Total |
|---|---|---|---|---|---|---|
| Number of students | 10 | 91 | 61 | 42 | 28 | 232 |
| Male | 3 | 49 | 32 | 29 | 19 | 132 |
| Female | 7 | 42 | 29 | 13 | 9 | 100 |
| 1st class | 7 | 47 | 33 | 20 | 10 | 117 |
| 2nd class | 3 | 44 | 28 | 22 | 18 | 115 |
| Prevention education | No | No | No | No | No | |

## 3.2 STUDY GROUP

Several secondary special needs schools were first contacted by Tactus as they normally provide prevention education and they were asked if they would be willing to participate. 5 schools were willling to participate and were further contacted by researcher. Schools were asked to provide the number of students, number of boys/girls, how many were in 1st and 2nd grade, if they had had any interventions yet and the possibilities for working with all students in one class on computers at the same time. Based on this information schools were assigned; the special needs schools in Enschede and Zutphen to the experimental group and the special needs schools Almelo, Ommen and Zuthpen to the control group. A schedule was made, planning dates for the 1st questionnaire, working with Prepared in time and the 2nd questionnaire.

The study group consists of adolescents who visit a special needs school and are currently in the first or second grade. This means their age lies between 12 and 15 years. Their IQ levels lie between 51 and 90 IQ-points which indicates they have either a borderline or a mild intellectual disability. These adolescents grew up in a computer-era, with computers at home, connection to the world wide web and they have shown to be well capable of using these technologies as most of them have email, use chat programmes and maintain personal web-logs.

## 3.3 PROCEDURES

### 3.3.1 USABILITY & APPRECIATION

The usability and appreciation of Prepared in time with adolescents in special needs schools was measured by a short process-evaluation questionnaire as well as observation. The participants were asked to grade the computer programme, to indicate whether they thought it was fun, useful, interesting or childish and they had the opportunity to write down if they missed any information on both alcohol and tobacco. Participants worked classically with “Prepared in time” in the computerroom of their school. The questionnaire was filled out straigh after the participants worked with the programme. The researcher was present during the time the students worked with the program and whilst they were filling out the questionnaire. Participants were able to ask questions if things were unclear. After finishing the programme all students were asked to fill out a short proces-evaluation.

### 3.3.2. EFFECTIVENESS

To measure the effectiveness of “Prepared in time” a pre-test post-test system was used (fig. 1). Both the experimental and control group were asked to answer the same questions in both the first and second questionnaire. By comparing the answers it is possible to tell whether the experimental group gained more knowledge after working with the program, whether their attitudes changed and is they feel more competent to stand up to peer pressure.

The baseline measurement was done with both the experimental group and the control group within the same 2 weeks. The experimental group would then work with the program “Prepared in time”, 2 weeks after the questionnaire. 3 weeks after working with “Prepared in time” they would fill out the follow-up questionnaire. The control group had no intervention between the baseline and follow-up questionnaire, filling out the last questionnaire 5 weeks after the baseline questionnaire. For measuring the usefullness of “Prepared in time” the experimental group also answered a short proces-evaluation questionnaire right after working with the program.

In week 1 and 2 all schools were visited by the researcher for the baseline questionnaire. The students filled them out during schooltime in their own classroom with the researcher present. This way students were able to ask questions if things were unclear and it gave the researcher the possibility to see if answers were given seriously and in the right way. The researcher would start with a short introduction, explaining how to fill out the questionnaire and garanteeing the anonimity of the students. Next the students would fill out the questionnaire, on average taking 25 to 35 minutes. All questionnaires were numbered with a letter-number code on the top right hand side of the first page. This way it was possible to compare the baseline and follow-up questionnaire.

The follow-up questionnaire was filled out the same way as the baseline questionnaire. All schools will be provided with the most important results of this study by means of a letter, including a school-based result.

## 3.5 MEASUREMENTS

For this study 3 questionnaires were used. The baseline questionnaire (appendix 2), a proces-evaluation (appendix 3) and the follow-up questionnaire (appendix 4 & 5). Table 3.2 shows the topics from the 3 questionnaires.

**Table 3.2** *Topics in questionnaires*

| | Baseline | Proces-Evaluation | Follow-up |
|---|---|---|---|
| Demographic variables | **x** | | |
| Knowledge | **x** | | **x** |
| Behaviour | **x** | | **x** |
| Parental influence | **x** | | **x** |
| Intention | **x** | | **x** |
| Attitude | **x** | | **x** |
| Social influences | **x** | | **x** |
| Self-Efficacy | **x** | | **x** |
| Implementation PiT | | **x** | **x** |
| Appreciation PiT | | **x** | **x** |
| Subjective effects PIT | | **x** | **x** |
| Improvements | | **x** | |
| Indirect effects | | **x** | **x** |
| Appreciation of the questionnaire | | | **x** |

### 3.5.1. PRETESTING

The original questionnaires developed for the study "Prepared in time, a research into the use of e-learning for substance use prevention for primary school" by Ter Huure (2006) were used for this study. The original questionnaire was pretested for use with ID children. It showed that a 5-point Likert answering scale was not adding much information as they would choose only the extreme answering questions, which is corresponding with findings by Finlay & Lyons (2001). After pretesting the questionnaires were altered, changing all the 5-point scales into 3-point scales on the questions measuring intention, attitude, subjective norm, peer pressure, social support and self-efficacy. For these categories the option 'I don't know' was removed as answering option forcing the participant to think about their opinions and not having an easy way out.

### 3.5.2. BASELINE QUESTIONNAIRE

Demographic variables

The demographic variables consisted of gender, age, country of birth of respondent, country of birth parents and living situation.

Knowledge

Knowledge of tobacco and alcohol was measured with 10 questiones; 5 multiple choice questions about tobacco and 5 questions on alcohol. Questions were aimed at knowledge about addiction, harmful substances in tobacco, influence of alcohol on body etcetra. Every question had 4 answering possibilities; 1 correct answer, 2 wrong answers and the 'I don't know option'. Participants were instructed to choose 'I don't know' rather then guess, if they did not know an answer. A knowledge smoking score was obtained by averaging the 5 smoking items. The same was done to compute a knowledge alcohol and a total knowledge score. Cronbachs Alpha on knowledge smoking was .42, on knowledge alcohol .32 and on total knowledge .49.

Behaviour on smoking

Smoking behaviour was measured by asking participants about lifetime prevalence, even if it was just inhaling once or twice. Answers were devided over 5 points going from 'I've never smoked in my life' (1); 'I smoked once or twice' (2); 'I sometimes smoke, but not every day' (3); 'I smoke every day' (4); 'I used to smoke, but I've quit' (5). Participants that did smoke were asked their monthly prevalence and daily smoking. There were 6 answering questions; 'I didn't smoke in the last 4 weeks' (1); 'Less then 1 cigarette a week' (2); 'Less then 1 cigarette a day' (3); '1 to5 cigarettes a day' (4); 6 to 20 cigarettes a day' (5); '20 cigarettes or more a day' (6). Also, smoking participants were asked at what age they started smoking. These questions are similar to the way national surveys ask participants about there lifetime prevalence, monthly prevelance and daily use. This way we were able to compare results from this study with national numbers (Monshouwer et.al. 2008; CBS 2009; Stivoro, 2009).

Behaviour on alcohol

Alcohol drinking behaviour was measured similairly to smoking behaviour. Participants were asked about their lifetime prevalence, giving them 3 answering options; 'No, I never drank alcohol' (1); 'Yes, I drank (a sip of) alcohol once' (2); 'Yes I drank alcohol more then once'(3). Alcohol drinking participants were asked at what age they started drinking. Next they were asked how many times in their life and how many times in the last four weeks they drank alcohol indicating on a scale running from 0 to 11 times or more. Participants that drank alcohol more then once were asked some extra questions, starting with were they drink. There were 8 answering options and they were allowed to choose more then one. On a 2 points scale the amount of alcohol drank on a drinking occasion was asked giving the options of 'less then one drink' (1) or ' I drink approximatly ... glasses' (insert answer)(2). Last they were asked if they had ever been tipsy/drunk in their life from drinking alcohol, scale running from 0 to 11 times or more. These questions are similar to the way national surveys ask participants about there lifetime prevalence, monthly prevelance and daily use. This way we were able to compare results from this study with national numbers (Monshouwer et.al. 2008; CBS 2009; Stivoro, 2009).

Intention

The intention of participants to start smoking or drinking alcohol was asked with 3 questions in which participants were asked whether they plans to start smoking in 6 months, in 2 years, in the future or to start drinking alcohol within 6 months, 2 years or before the age of 16. Respondents that already smoked or drank alcohol were asked if they had plans to stop smoking/drinking. By combining and averaging the scores of the seperate items on smoking & alcohol an combined intention was obtained. Cronbach's Alpha for start smoking was 0.79. Cronbach's Alpha for intention to stop smoking was 0.83. Cronbachs Alpha for combined intention (6 items) to start or stop smoking was 0.69. Cronbachs Alpha on intention to start drinking alcohol was 0.60. Cronbachs Alpha on intention to stop drinking alcohol was .83. Cronbachs Alpha for combined intention (6 items) to start or stop drinking alcohol was .70.

Attitude

Respondents attitude towards smoking and drinking alcohol was measured with 7 items. They were set out on a 3 point scale;' I find smoking; bad for my health (1); neutral (2); good for my health (3); annormal (1) / normal (3); uncool (1) / cool (3); unsocial (1)/ social (3); stupid (1)/ smart (3), makes less populair (1)/ doesn't change populairity (2)/ makes more populair (3). Attitudescore on smoking and alcohol was obtained by averaging the scores on the 7 previously mentioned items. Cronbach's alpha on smoking was 0.82. and Cronbachs Alpha on alcohol 0.73.

Social influences

Social influences is a combination of multiple factors that might influence the participant to start smoking/drinking or gives them the support to stay away from alcohol and tobacco. It was measured with several questions:

*Subjective norm*: two questions: 'My family/friends thinks I.....' 'shouldn't smoke/drink' (1); 'should decide for

myself whether I smoke/drink' (2); 'should smoke/drink' (3). Cronbach's alpha for smoking was 0.50 and for alcohol 0.65.

*Peer pressure:* one question: 'Do you sometimes feel like your friends want you to smoke/ drink alcohol?' 'No, never' (1); 'sometimes' (2), 'all the time' (3).

*Social support:* one question: 'Do you sometimes feel like your friends do not want you to smoke/ drink alcohol?' 'No, never' (1); 'sometimes' (2), 'all the time' (3).

*Modelling direct surroundings:* 5 items on a 4 point scale: 'Yes, smokes/drinks' (1); 'No, doesn't smoke/drink' (2); 'Quit smoking/drinking' (3); 'I don't know' (4) on which the respondent could indicate whether father, mother, brother/sister, best friend and teacher smoke cigarette or drink alcohol. Cronbach's alpha for smoking was 0.20 and for alcohol 0.38. Since both alpha's are very low, the items will be seen separatly and not as scale.

*Modelling classmates and friends:* 2 questions: How many of the boys/girls in your class / of your friends smoke/drink alcohol? Answered on a 5 point scale: '(almost) all (1); 'Many' (2); "one or two' (3); 'No one' (4); 'I don't know' (5). Cronbach's alpha for smoking was 0.28 and for alcohol 0.69. Since Cronbach's alpha is very low on smoking the items will be seen separatly and not as scale.

Self-efficacy

Self-efficacy was measured with 2 questions, which were different for non-smokers/non-drinkers and smokers/drinkers. The non-smokers & non-drinkers were asked whether they found it easy or hard to not smoke or drink alcohol until the age of 16. They were also asked whether they thought they were capable of not starting smoking or drinking alcohol. The smokers/drinkers were asked whether they found it easy or hard to stop smoking/drinking and if they thought they would be capable to stop if they really wanted to. The scores of the seperate items were combined and averaged to obtain a total score on self-efficacy. Cronbach's alpha on smoking was 0.66 and 0.84 on alcohol.

Parents knowledge on participants behaviour

The part parents play and how they influence smoking- and drinking behaviour of the participants was measured with 3 questions in the smoking part of the questionnaire and with 4 questions in the alcohol part. First they were asked if their parents knew about them smoking/drinking alcohol, which could be answered with 'Yes, they know' (1) or 'No, they don't know' (2). For alcohol they were also asked if parents know how much they drink, which could be answered in 4 ways; 'Yes, they know how much I drink' (1); 'No, they think I don't drink alcohol' (2); 'No, they think I drink less then I really do' (3); 'I don't know' (4). The questions 'Are you (or would you be) allowed to smoke/ drink at home' and 'Do you have an agreement with someone that you won't smoke/drink till a certain age' were asked all the participants.

### 3.5.3. PROCES EVALUATION QUESTIONNAIRE

Participants in the experimental group were asked to fill out a proces-evaluation questionnaire after working with Prepared in time. It contained 22 questions with mainly 3 answering options, none of them containing 'I don't know'. This way the respondents were forced to form an opinion and not have an easy way of quickly finishing this questionnaire.

Exposure

Firstly the participants were asked whether they finished the program on smoking and the program on alcohol. Both could be answered with 'Yes' (1) or 'No' (2).

Appreciation

The appreciation for the program "Prepared in time" was measured in different ways. First a general idea of the program was gained by asking on a 3 point scale whether the respondents thought the program was stupid/fun, difficult/easy, boring/interesting, childish/not childish, giving a neutral option in the middle. Then they were asked whether they thougt the program was 'too long' (1), 'ok' (2), 'too short' (3), measuring there opinion on the time it took them to finish. On a 3 point scale the repondents could indicate if they thought there were enough oppertunities to ask questions during the program; 'Yes, (1); 'sometimes' (2); 'no' (3). More detailed information was gained by asking the opinion of the respondents on specific parts of the program. They were asked to evaluate 5 parts; 'making your own portrait'; 'Professor Profitacto', 'the movies', 'the games' and 'the quizes' on a 4 point scale running from 'stupid' (1) to 'brilliant' (4). Extra evaluation on Professor Profitacto was asked by letting respondents indicate whether they thought that his explanations were 'unclear' (1); 'neutral' (2); 'clear' (3). A similair 3 point scale was used to see if respondents thought is was 'irritating' (1) or 'nice' (3) that they were not able to continue the program while Professor Profitacto was talking and had to wait for him to finish instructions. Finally respondents were asked to grade the program on a scale from 1-10, with one being the lowest and ten being the highest.

Subjective effects

Subjective effects were measured with two open answer questions, asking respondents what the most important thing was they learned in the smoking/alcohol programme.

Improvements

Whether respondents thought the programme could be improved was asked with 2 open answer questions, in which the respondents could give tips on improvments on the smoking/alcohol programme.

### 3.5.4. FOLLOW-UP QUESTIONNAIRE

The follow-up questionnaire was very similair to the baseline questionnaire, making it possible to compare them. Only the differences will be described here, as all other information has been given above. There were 2 versions of the follow-up questionnaire, one for the experimental group, one for the control group. The experimental group had a few extra questions about the computer program “Prepared in time”.

Exposure and appreciation

The implementation of “Prepared in time” and the appreciation of this programme was asked again in the experimental group. The questions were similair to the ones asked in the proces-evaluation. They were first asked whether they finished the programme on tobacco/alcohol. Next they had to indicate how many weeks ago they worked with the program ‘This week’ (1); ‘last week’ (2); ‘two weeks ago’ (3); ‘Three weeks ago’ (4); ‘Longer then 3 weeks ago’ (5).

Appreciation

Respondents in the experimental group were asked again to indicate what they thought about “Prepared in time” on a 3 point scale, ‘not fun’(1); ‘little bit of fun’ (2); ‘Great’ (3). They also graded the program on a scale from 1-10, one being the lowest and ten being the highest.

Subjective effects

The subjective effects of “Prepared in time” was measured with 2 questions. First respondents were asked if they learned ‘little’ (1); ‘ some’ (2); ‘a lot’ (3) from the program. Next they were asked whether they told at home that they worked with “Prepared in time”, answering options being ‘Yes’ (1) or ‘No’ (2).

Indirect effects

Both respondents in the experimental group and control group were asked 10 questions on a 2 point scale ‘yes’(1) or ‘no’ (2) on whether they talked with parents/friends/ in the classroom about smoking and alcohol in the period between the baseline and follow-up questionnaire. They were also asked whether they looked up extra information on smoking/alcohol and if they visited the website of Tactus.

Behaviour on smoking

Smoking behaviour was measured similairly as in the baseline questionnaire. Different was the question on smoking behaviour since filling out baseline questionnaire; ‘No, I quit’ (1); ‘Yes’ (2); ‘I don’t smoke’ (3). Parents knowing about their smoking behaviour was also asked with the same question as in the baseline questionnaire, only this time it was directed to all respondents so the option of ‘I never smoked’ was added as an answering possibility.

Behaviour on alcohol

Alcohol drinking behaviour was measured with multiple questions, starting with whether or not respondents had drank alcohol since filling out the baseline questionnaire. This time the students that already drank alcohol were asked which kind of alcoholic drinks they normally drank, giving 9 options (including beer, wine, Bacardi Breezer, Flugel etc.) and a 'different, namely.....' option, with multiple answers possible.

Appreciation questionnaires

Respondents were asked to indicate on a four point scale, running from 'not at all' (1); 'a little' (2); 'pretty much' (3) to 'very much' (4), whether they thought filling out the follow-up questionnaire was 'fun', 'easy' and 'interesting'.

## 3.6 STATISTICAL ANALYSIS

The statistical analyses in this study were performed with SPSS 16.0. The significance levels were in general set at $P< 0.05$. Exception was made in the comparison of behavioural determinants in the follow-up questionnaire. Because of multiple comparisons significance levels were set at $P< 0.01$.

The scales on behavioural determinants were tested for reliability, where a Cronbach's Alpha of ≥ 0.6 was seen as reliable. More detailed description, including the alpha's can be found in 3.5.2. Modeling family/friends scored low alpha's therefore they were seen as seperate items.

Differences between the experimental group and control group on nominal scales as gender and origin were tested with a Chi-Square test. Ordinal scaled items were tested with one-way ANOVA. Differences between national percentages and percentages from this study on lifetime prevalence, monthly prevalence and daily smoking were tested with a significance test for comparing two proportions. As the reports on nationwide research only provided the total N of participants and the percentage, the count (X) was calculated to be able to perform this significance test.

To get a better insight into the effects of knowledge and behavioural determinants on smoking behaviour and drinking alcohol correlation analyses were performed. Multiple regression analyses were done to see which items were strong predictors of smoking- and drinking behaviour.

The effects of the program "Prepared in time" were measured by testing the differences between groups between scores on Q2 with ANOVA, taking scores on Q1 as covariate and keepin $p< .01$ because of multiple comparisons.

# CHAPTER 4 - RESULTS BASELINE QUESTIONNAIRE: PREVALENCE OF SUBSTANCE USE AND BEHAVIOURAL DETERMINANTS

## 4.1 STUDY GROUP

### 4.1.1. RESPONS

The respondents in this study were all students in 1st or 2nd grade of a special needs school. 5 school participated with a total number of 254 students. The schools were located in Enschede, Zutphen (experimental group), Almelo, Ommen and Zwolle (control group). The students were evenly devided over 1st and 2nd grade (table 4.1).

The baseline questionnaire was filled out by 232 students, as some of the total number weren't in that day because of illness or other reasons. The second questionniare was filled out by 235 students. However, some of the students who were absent the first time, participated in the follow-up questionnaire and students who participated in the baseline questionnaire were absent when the follow-up was filled out. This resulted in a total of 210 students who participated in both baseline and follow-up questionnaire. In the analyses of this study only those 210 students were counted.

**Table 4.1** *Participating school, classes and respons*

| | E-Learning | Control group | Total |
|---|---|---|---|
| Number of schools | 2 | 3 | 5 |
| Number of classes | 9 | 11 | 20 |
| Total number of students | 111 | 143 | 254 |
| Students 1st grade | 61 (24,1%) | 68 (26,8%) | 129 (50,8%) |
| Students 2nd grade | 50 (19,7%) | 75 (29,6%) | 125 (49,2%) |
| Respons 1st questionnaire | 101 | 131 | 232 |
| Respons 2nd questionnaire | 103 | 134 | 235 |
| Respons both 1st & 2nd questionnaire | 93 | 117 | 210 |

### 4.1.2. DEMOGRAPHIC VARIABLES

The percentage of boys that participated in this study were slighlty larger then the girls. The average age was 13.6 years. 75% of the respondents were native, the other 25% were either born abroad or one/both parents were born abroad, this is in line with the way the Central Bureau of Statistics counts native and foreign persons in the Netherlands (CBS, 2009). Looking at the living situation of the respondents, around two third lived at home with both parents and one or more brother(s)/sister(s). 20% lived at home with one parent and one or more brotehr(s)/sister(s).

Only a very small percentage did not live at home and were institutionalized (table 4.2). No significant differences were found between the experimental and control group for gender, age, origin or living situation (table 4.2).

**Table 4.2** *Demographic variables gender, age, origin and living situation of respondents by studygroup(N=210)*

| | | E-learning (88≥n≤93) | Control (112≥n≤117) | Total (200 ≥n≤210) | Significance[1] |
|---|---|---|---|---|---|
| Gender *(n=210)* | | | | | |
| | Male (n=121) | 52.7% | 61.5% | 57.6% | n.s. |
| | Female (n=89) | 47.3% | 38.5% | 42.4% | |
| Age *(n =210 )* | | | | | |
| | 12 | 4.3% | 6.0% | 5.2% | |
| | 13 | 36.6% | 36.8% | 36.7% | |
| | 14 | 50.5% | 41.9& | 45.7% | n.s. |
| | 15 & older | 8.6% | 15.4% | 12.4% | |
| | Mean age in years | 13.63 | 13.67 | 13.65 | |
| Origin[2] *(n=200)* | | | | | |
| | Native (n=150) | 73.9% | 75.9% | 75.0% | n.s. |
| | Foreign (n=50) | 26.1% | 24.1% | 25.0% | |
| Living situation *(n=208)* | | | | | |
| | 2 parents with brother and/or sister home | 62.6% | 64.1% | 63.5% | |
| | 2 parents, only child at home | 5.5% | 10.3% | 8.2% | n.s. |
| | 1 parent with brother and/or sister at home | 22.0% | 18.8% | 20.2% | |
| | 1 parent, only child at home | 6.6 % | 5.1% | 5.8% | |
| | Not living at home | 3.3% | 1.7% | 2.4% | |

[1] Differences between study groups between gender, origin and living situation were tested with Chi-Square and age was tested with one-way ANOVA.
[2] A person is considered native when both parents are born in the Netherlands and foreign when at least 1 parent was born abroad (CBS, 1999).

## 4.2 SMOKING BEHAVIOUR AT BASELINE

Half of the respondents tried a cigarette at least once in their lives (table 4.3). The lifetime prevelance of the female respondents in the controlgroup (51%) was higher then in the experimental group (41%). For the males it was the other way around, more males in the experimentalgroup (55%) had smoked then in the controlgroup (51%). However both differences were not significant. No significant differences were found either between the different schools or between gender (not in table). Both groups scored significanlty higher then could be expected based on a national survey (Monschouwer et.al. 2007).

**Table 4.3** *Smoking status, smoking bevahiour in last 4 weeks & smoking behaviour daily by gender & studygroup (N=209)*

| | E-learning (86≥n≤93) | Control (111≥n≤116) | Total (197≥n≤209) | Signifi-cance[1] | Regional PiT 2006[2] | Nation-wide[3] | Nation-wide[3] VMBO-B | Signifi-cance[4] |
|---|---|---|---|---|---|---|---|---|
| *Ever smoke (vs. never smoked)* | | | | | | | | |
| Male (n=120) | 55.1% | 50.7% | 52.2% | n.s. | 16.7% | - | - | |
| Female (n=89) | 40.9% | 51.1% | 46.1% | | 9.6% | - | - | |
| Total (n=209) | 48.4% | 50.9% | 49.8% | | 12.9% | 39% | 46% | p<.0004[6] |
| *Smoked in last 4 weeks (vs. never smoked)* | | | | | | | | |
| Male (n=113) | 26.7% | 32.4% | 30.1% | n.s. | 1.6% | - | - | |
| Female (n=84) | 19.5% | 32.6% | 26.2% | | 1.9% | - | - | |
| Total (n=197) | 23.3% | 32.4% | 28.4% | | 1.7% | 19% | 23% | p<.0002[7] |
| *Smokes on daily basis* | | | | | | | | |
| Male (n=113) | 17.8% | 23.5% | 21.2% | p=.03[5] | - | 8% | - | |
| Female (n=84) | 7.3% | 25.6% | 16.7% | | 0.3% | 7% | - | |
| Total (n=197) | 12.8% | 24.3% | 19.3% | | 0.1% | 7% | 11% | p<.0002[8] |

[1] Differences between groups were tested with Chi-Square
[2] Results from original study by Ter Huurne (2006); mainstream primaryschool, agegroup 9-13 years old (692≥n≤699)
[3] Monschouwer et.al. (2007), students in secundary schools age 12-16
[4] Difference between studygroup & nationwide, tested with significance test for comparing two proportions.
X count in nationwide unknown & calculated from percentage and total N.
[5] Respondents in the controlgroup smoke significantly more on a daily basis
[6] Ever smoke significantly higher in studygroup then nationwide
[7] Significantly more smoking in last 4 weeks in studygroup compared to nationwide
[8]Significantly more daily smokers in studygroup compared to nationwide.

Most adolescents tried their first cigarette between the ages of 12 and 14 with a peak at age 13 (table 4.4). Again, no significant differences were found between the experimental and control group. Still, one in ten of adolescents already tried their first cigarette at the age of 10 years or younger. This is in corresponcence with the results from Monschouwer et.al. (2007) who found that one in ten started before age 11 (not in table). Almost a third of the students had an agreement with either their parents, school or someone else to not start smoking (table 6.7). This is comparible with the 27% Monschouwer et.al. found in their study (2007). Over half of the respondents however did not have an agreement and did not want one either. Around two third of the parents of smoking respondents knew that their children smoked. A third of the smoking students had not told their parents. However this was a self-answering questionnaire in which the respondents had to indicate if their parents knew. If their estimate was correct and parents really did not know cannot be said with certainty.

**Table 4.4** *Age of first cigarette of respondents by study group (N=91)*

| | Frequency (n=91) | E-Learning (37≤n≥38) | Control (53≤n≥54) | Total (n=91) | Significance[1] |
|---|---|---|---|---|---|
| *Age smoking 1st cigarette (n=91)* | | | | | |
| 10 years or younger | 12 | 10.8% | 14.8% | 13.2% | |
| 11 years | 16 | 10.8% | 22.2% | 17.6% | |
| 12 years | 20 | 29.7% | 16.7% | 22.0% | n.s. |
| 13 years | 28 | 32.4% | 29.6% | 30.8% | |
| 14 years or older | 15 | 16.2% | 16.7% | 16.5% | |
| *Do parents know about smoking (n=91)* | | | | | |
| Yes | 57 | 60.5% | 64.2% | 62.6% | n.s. |
| No | 34 | 39.5% | 35.8% | 37.4% | |

[1] Differences in age between groups were tested with Unianova variance analyses. Knowledge of parents was tested with Chi-Square.

## 4.3 ALCOHOL DRINKING BEHAVIOUR AT BASELINE

Over half of the respondents in this study drank alcohol more then once. Only 25% had never had alcohol in their lives. No significant differences were found between the experimental and control group for lifetime prevelance or starting age for drinking alcohol (table 4.5). The same counts for a comparison between schools, no significant differences were found their either (not in table). The lifetime prevelance of alcohol among the males was significantly higher then among the females with 81.5% versus 67.0%. The precentage of males drinking more then once was also higher then for the females, however this difference was not significant (table 4.5). The starting age of a first drink looks slightly younger then the starting age for smoking. Around 15% already had their first drink at age 10. With 18.9% and the average at age 12 this seemed to be the most common age at which adolescents drank for the first time however it is pretty evenly devided within this study. Compared to the National Drug Monitor 2007 (Trimbos, 2007) this age is below the national average age of 14.6 years. The percentage of ever drinking is not comparible as it is unclear whether 'once (a sip of) alcohol' was counted as ever use in their survey.

**Table 4.5** *Alcohol status by gender & studygroup and & age first drink (N=208)*

| | E-learning (91≥n≤92) | Control (116≥n≤117) | Total (206≥n≤208) | Signifi cance[1] | Signifi cance[2] | Regional PiT 2006[3] | Nation-wide[4] | Signifi-cance[5] |
|---|---|---|---|---|---|---|---|---|
| *Ever drank alcohol* | | | | | | | | |
| Male (n =119) | 85.4% | 78.9% | 81.5% | n.s. | p =.02[6] | 88.4% | 81% | |
| Female (n=89) | 69.8% | 64.4% | 67.0% | | | 79.0% | 77% | |
| Total (n=208) | 78.0% | 73.3% | 75.4% | | | 83.4% | 79% | n.s. |
| *Once (a sip of) alcohol* | | | | | | | | |
| Male (n=24) | 25.0% | 16.9% | 20.2% | - | - | 32.1% | - | |
| Female (n=19) | 27.3% | 15.6% | 21.3% | | | 36.4% | - | |
| Total (n =43) | 26.1% | 16.4% | 20.7% | | | 34.4% | - | |
| *Drank alcohol more then once* | | | | | | | | |
| Male (n=73) | 60.4% | 62.0% | 61.3% | - | - | 56.3% | - | |
| Female (n=40) | 40.9% | 48.9% | 44.9% | | | 42.6% | - | |
| Total (n=113) | 51.1% | 56.9% | 54.3% | | | 48.9% | - | |
| *Age of drinking alcohol for 1st time (n=206)* | | | | | | | | |
| Never drank alcohol | 22.2% | 24.1% | 23.3% | | | - | - | |
| 10 or younger | 13.3% | 16.4% | 15.0% | | | - | - | |
| 11 | 10.0% | 15.5% | 13.1% | n.s. | n.s. | - | 16%[7] | |
| 12 | 22.2% | 16.4% | 18.9% | | | - | - | |
| 13 | 20.0% | 15.5% | 17.5% | | | - | - | |
| 14 or older | 12.2% | 12.1% | 12.1% | | | - | - | |
| Average age 1st drink | 12 | 12 | 12 | | | - | - | |

[1] Differences between groups were tested with Chi-Square & Unianova variance analyses, looking at never alcohol versus once a sip versus drank more then once.
[2] Differences between gender were tested with Unianova
[3] Results from original study by Ter Huurne (2006); mainstream primaryschool, agegroup 9-13 years old (n=703)
[4] Monschouwer et.al. (2007), students in secundary schools age 12-16
[5] Difference between studygroup & nationwide, tested with significance test for comparing two proportions. X count in nationwide unknown & calculated from percentage and total N.
[6] Males drink significantly more then females on total group.
[7] Nationwide: 11 years or younger having first drink

The respondents were asked about their lifetime and monthly prevelance of drinking alcohol (table 4.6). Looking at the lifetime prevalence of the boys almost a third drank more then 11 times and around half of them drank one to six times. The girls seemed to drink a little less. Only a fifth drank 11 times or more, a third drank only 1-3 times and a third indicates they never drank at all. This corresponts with the earlier questions about their drinking behaviour. The respondents did not seem to be regular drinkers yet as almost 60% did not drink alcohol in the last month. A fifth or them drank one to three times and 10% drank four to six times. This is slightly lower then the national numbers of 51% drinking in the last 4 weeks with 30% drinking 1-3 times (Monschouwer et.al. 2007). When respondents drink almost a quatre of them drinks two to three drinks. 20% drinks four to six drinks, bordering the binge-drinking line. Around one in ten seem to be binge-drinkers as they indicated to drink more then 7 drinks at a time. Again these numbers are the result of self-report. It is possible that respondents overrated their drinking in an attempt to show off. No significant differences were found in frequency of drinking or in the amount respondents drink on a drinking occasion (table 4.6). Looking at national numbers is shows that binge drinking increases as students get older, rapidly progressing between the ages of 13-15 (Monschouwer et.al., 2007).

**Table 4.6** *Alcohol frequencies in life by studygroup and gender (N=203)*

| | E-Learning (n=90) | | Control (n=113) | | Total (n=203) | | Signifi-cance[1] | Signifi-cance[2] |
|---|---|---|---|---|---|---|---|---|
| | Male (n=46) | Female (n=44) | Male (n=68) | Female (n=45) | Male (n=114) | Female (n=89) | | |
| *Alcohol frequency in whole life (n=203)* | | | | | | | | |
| Never | 17.4% | 29.5% | 20.6% | 33.3% | 19.3% | 31.5% | | |
| 1-3 times | 32.6% | 34.1% | 19.1% | 24.4% | 24.6% | 29.2% | | |
| 4-6 times | 19.6% | 18.2% | 20.6% | 8.9% | 20.2% | 13.5% | n.s. | n.s. |
| 7-10 times | 2.2% | 6.8% | 8.8% | 6.7% | 6.1% | 6.7% | | |
| 11 times or more | 28.3% | 11.4% | 30.9% | 26.7% | 29.8% | 19.1% | | |

[1] Differences between studygroups were tested with Unianova variance analyses
[2] Differences between gender were tested with Unianova variance analyses

Most of the drinking happens at home or at a friends/family members place. Other populair drinking spots seemed to be 'outside on the street' (hanging around with friends), 'in a bar, pub or drinkingshed' and 'on holidays' (table 4.7). Significant differences between experimental and controlgroup were found on the items 'Bar, pub or drinkingshed' 'On holidays' and 'Somewhere else'. Drinking in bars/pubs/drinkingsheds was done more often by respondents in the control group as was drinking somewhere else. Holidays seemed to be a populair drinking occasion for respondents in the experiment group (table 4.7).

**Table 4.7** *Alcohol frequencies in last 4 weeks, amount of alcohol on occasion and drinking places of respondents who drank alcohol more then once by study group (N=203)*

| | E-learning (64≤n≥89) | Control (88≤n≥113) | Total (101≤n≥202) | Significance[1] | Regional PiT 2006 |
|---|---|---|---|---|---|
| *Alcohol frequency in last 4 weeks (n=202)* | | | | | |
| Never | 64% | 55.8% | 59.4% | | - |
| 1-3 times | 19.1% | 19.5% | 19.3% | n.s. | - |
| 4-6 times | 10.1% | 10.6% | 10.4% | | - |
| 7-10 times | 5.6% | 4.4% | 5.0% | | - |
| 11 times or more | 1.1% | 9.7% | 5.9% | | - |
| | | | | | |
| *Amount respondents drink on occasion (n=152)* | | | | | |
| Never had a drink | 31.2% | 35.2% | 33.6% | | - |
| Less then 1 drink | 20.3% | 10.2% | 14.5% | | - |
| 1 drink | 12.5% | 13.6% | 13.2% | | - |
| 2-3 drinks | 14.1% | 17.0% | 15.8% | n.s. | - |
| 4-6 drinks | 12.5% | 14.8% | 13.8% | | - |
| 7-10 drinks | 6.1% | 4.5% | 5.3% | | - |
| More then 10 drinks | 3.1% | 4.5% | 3.9% | | - |
| | | | | | |
| *Where do respondents drink (n=116)*[6] | | | | | |
| At home | 52.0% | 51.5% | 51.7% | n.s. | 75.8% |
| With family or friends | 51.1% | 43.9% | 46.9% | n.s. | 30.0% |
| On street, park etc. | 19.0% | 24.6% | 22.4% | n.s. | 1.5% |
| Bar, pub or drinkingshed | 18.2% | 34.8% | 28.2% | p =.044 [3] | 7.0% |
| Restaurant | 4.5% | 1.5% | 2.7% | n.s. | 7.0% |
| On holidays | 40.9% | 18.2% | 27.3% | p= .008[4] | 28.3% |
| Sport canteen | 0.0% | 3.0% | 1.8% | n.s. | 0.6% |
| Somewhere else | 11.1% | 31.8% | 23.4% | p= .009 [5] | 12.0% |

[1] Differences between groups were tested with Unianova variance analyses for the first 2 variables, for the last variable a Chi-Square test was used.
[2] Results from original study by Ter Huurne (2006); normal primaryschool, agegroup 9-13 years old (n=343)
[3] The percentage of respondents drinking in bars, pubs and/or drinkingsheds was significantly higher in the control group.
[4] The percentage of respondents drinking on holidays was significantly higher in the e-learning group.
[5]The percentage of respondents drinking somewhere else was significantly higher in the control group.
[6] Respondents were allowed to give more then one answer.

Looking at this more closely a significant difference was be found on school level aswel (not in table). Bars/pubs/drinkingsheds were most populair in Almelo and Ommen with 41.9% resp. 29.0%. The respondents in Zutphen, Enschede and Zwolle did not seem to have the oppertunities or interest in drinking in those kinds of places (19.4%, 6.5% and 3.2%). The significance in 'On Holiday' seems to be created by the respondents in Zutphen as 46.7% of them indicated to drink while on vacation. Respondents in the other schools do not seem to drink on this occasion or perhaps are not going on holidays as often. The drinking 'somewhere else', again, is most populair in Almelo and Ommen (both 38.5%). As no option was given for writing down what place somewhere else could be, it is unclear where they drink. It is possible that one of their drinking spots could be classified as a drinking shed or friends place but was not recognised as such by the respondents.

Even though 50% indicated to drink at home in previous question, only 30% says to be allowed to drink at home (table 6.7). Possibly the drinking happens when the parents are out . Almost a third of respondents said not to know whether they were allowed to drink at home or not indicating that this topic has so far not been discussed with their parents. Around a quatre of the respondents had an agreement with their parents to not drink at all or until a certain age. 65-70% did not have an agreement and were not interested in one either. Only a small 7% did not have an agreement (yet) but would like one.

Respondents who answered they drank more then once were asked whether their parents knew about them drinking and if they knew how much they drink. 79% of respondents said their parents were aware of them drinking, and 52% claims their parents also knew how much they drink. Almost a fifth was not as open with their parents though, claiming the parents thought the respondents did not drink as much as they actually do (not in table).

**Table 4.8** *Frequency of smoking and drinking alcohol by persons in environment of respondent by study group (N=202)*

| | E-Learning (85≤n≥90) | Control (105≤n≥113) | Total (190≤n≥201) | Significance[1] |
|---|---|---|---|---|
| *Person smokes* | | | | |
| Father (n=198) | 48.9% | 59.1% | 54.5% | n.s. |
| Mother (n=201) | 42.7% | 53.6% | 48.8% | n.s. |
| One or more brother(s)/ sister(s) (n=191) | 23.3% | 35.2% | 29.8% | n.s. |
| Best friend (n=192) | 30.6% | 48.6% | 40.6% | p =.03[2] |
| Teacher (n=198) | 12.6% | 42.3% | 29.3% | p =.00[3] |
| | | | | |
| *Person drinks alcohol* | | | | |
| Father (n=202) | 77.8% | 70.5% | 73.8% | n.s. |
| Mother (n=202) | 67.4% | 54.0% | 59.9% | n.s. |
| One or more brother(s)/ sister(s) (n=196) | 45.5% | 53.7% | 50.0% | n.s. |
| Best friend (n=198) | 39.8% | 54.5% | 48.0% | n.s. |
| Teacher (n=202) | 66.3% | 63.7% | 64.9% | n.s. |

[1] Differences between groups were tested with Chi-Square
[2] Respondents in control group had significantly more times a best friend that smokes
[3] Teachers in control group smoke significantly more in comparison to teachers e-learning group

Most parents drank alcohol themselves, 73.8% of the fathers drank alcohol compared to 59.9% of mothers (table 4.8). About half of the brother(s)/sister(s) drank alcohol, as did the best friend of the respondent. Around two-third of teachers drink alcohol, although this last one was not very objective and can not be seen from a rolemodel point of view. A lot of students asked their teachers directly as they did not know, instead of answering with the 'I don't know' option. Next to that a lot of teachers twisted their answer by saying they did not drink or they "drank very rarely, which should be a no" in an attempt to set a good rolemodel. The drinking among parents is slightly lower then the national number of 85% drinking alcohol (Trimbos, 2007). No significance was found between experimental and control group.

Looking at smoking it showed that around 50% of mothers and 55% of fathers smoked (table 4.8). Almost a third of brother(s)/sister(s) smoked, setting an example for the respondents. This is very high when national average numbers show that 30.5% of men and 24.5% of females over 15 years old smoke (Trimbos, 2007). The differences between experiment- and controlgroup were not significant. The item on 'best friend smokes' did turn out a significant difference, with the respondents in the controlgroup more often having a best friend that smoked then the respondents in the experiment group (table 4.8). Also a significance was found on the item 'does your teacher smoke'. Significantly more teachers seemed to smoke in the control group. However this item is not very reliable as students asked their teacher while filling out the questionnaire, because they did not know.

Overall we can state that looking at smoking, there is a big problem among this targetgroup. They smoke significantly more then could be expected based on national numbers. We also see that parents smoke more then the national average, probably setting an example for their children. The use of alcohol is comparible with national statistics, however considering that 15% of adolescents already had their first drink by the age of 10, it is safe to say that here also lies a big problem. We can conclude that the use of tobacco and alcohol is nothing strange in the lives of intellectually disabled adolescents.

## 4.4 DETERMINANTS OF BEHAVIOUR AT BASELINE

### 4.4.1. KNOWLEDGE

A significant difference was found between knowledge on smoking between the males in the experimental group and control group (table 4.9). It seems to be caused by the question "which three substances are found in tobacco?" (not in table). More males in the experimental group knew the correct answer to this question. This also influences the total knowledge, creating a significant difference there between the males in both groups.

In general the average scores on knowledge are pretty low. Questions that were answered extremely badly were: What is tar? (both 1&2 correct; black sticky substance that sticks to your lungs & dasmages the cilium), what is the addicting substance in cigarettes (nicotine) and which is true about pure alcohol? (it is poisonous). Over 80% answered these questions incorrectly.

**Table 4.9** *Correct answered knowledge questions on avarage by theme and studygroup at baseline*(N=202 )

| | E-Learning (83≤n≥90) | Control (108≤n≥112) | Total (186≤n≥202) | Significance[1] |
|---|---|---|---|---|
| *Knowledge Smoking (0-5)(n=202)* | | | | |
| Male | 3.2 | 2.8 | 3.0 | .03[2] |
| Female | 2.9 | 3.0 | 2.9 | n.s. |
| Total | 3.0 | 2.9 | 3.0 | n.s. |
| *Knowledge Alcohol (0-5) (n=191)* | | | | |
| Male | 2.3 | 2.2 | 2.2 | n.s. |
| Female | 2.4 | 2.1 | 2.2 | n.s. |
| Total | 2.3 | 2.1 | 2.2 | n.s. |
| *Total Knowledge score (0-10)(n=186)* | | | | |
| Male | 5.4 | 5.0 | 5.1 | .048[3] |
| Female | 5.3 | 5.1 | 5.9 | n.s. |
| Total | 5.4 | 5.0 | 5.2 | n.s. |

[1] Differences between groups were tested with Unianova variance analyses
[2] Knowledge on smoking of males in experiment group was significantly higher then in control group.
[3] Average total knowledge of the males in the experiment group was significantly higher then in the control group at Q1.

### 4.4.2. INTENTION

As table 4.10 shows the intention to start/stay drinking in the future is low. Intention to start/stay smoking is slightly higher but still in the low side. Almost 50% of respondents indicated to have no intention in ever smoking. 21% of males and 41% of females indicates to have no intention in ever drinking alcohol. However many students said they found it hard to say how they would feel on the subject in 2 years time (not in table).

### 4.4.3. ATTITUDE

Attitude towards both alcohol & smoking were on the low to neutral side (table 4.10). Although 70-80% of the respondents found smoking bad for their health, almost 23% found smoking normal. It was seen as uncool but almost 1 in 5 also found it social. A big difference was seen between experimental- & controlgroup. In the experimentalgroup only 8% saw smoking as sociable compared to a 21% in the controlgroup. 66% found smoking stupid and they did not really like the smell. Besides these negatives 15% found that smoking makes them more populair (not in table). In general the females were a bit more negative towards smoking then the males. Looking at alcohol we see that a quarter of the respondent found drinking sociable. Almost 12% of females and 9% of males felt that drinking made them more populair. 30% of respondents indicate that they liked the taste of alcohol. There were no big differences between the males and females. Again on the social level there was a big difference between the experimental- and controlgroup. As 17% of the experimentalgroup found drinking social, the controlgroup scored much higher with 29%. Also, more students in the controlgroup found that drinking made them more populair (not in table).

### 4.4.4 SOCIAL INFLUENCES

Subjective Norm

The subjective norm on both smoking and alcohol was low to neutral (table 4.10). 75% of respondents indicated that their family felt they should not smoke. With friends over 60% of males and 50% indicated that they should decide for themselves whether they should smoke or not. Almost 60% of males and nearly 70% of females said that their family felt they should not drink. Again with friends the majority said they should decide for themselves. There were no big differences between both groups.

Peer Pressure

The respondents did not feel much peer pressure on smoking or drinking alcohol. The male respondents felt slightly more pressured to have a smoke (6.6%) then the females (1.1%). 70% of both females and males did not feel pressured into drinking alcohol (table 4.10).

Social Support

50% of the respondents felt their friends support them in not smoking. For not drinking the support is even higher, 55% of males and 64% of females felt their friends did not want them to drink alcohol. There were no significant differences between groups or gender (table 4.10).

### 4.4.5 SELF EFFICACY

The self-efficacy in not starting smoking or drinking (or capability of stopping smoking/drinking) was average to high on both smoking and drinking alcohol (table 4.10). Most respondents indicated that they found it easy to not start smoking and thought they would be able to not smoke when they get older. There were no big differences between the groups or gender. Most smokers and drinkers indicated that they would be capable of stopping if they wanted to. There were some differences between the experimental group and control group but since the N is low, no conclusions can be drawn from that.

**Table 4.10** *Behavioural determinants on smoking and alcohol by study group at baseline* (N=209)

| | E-Learning (51≥n≤70) | Control (76≥n≤86) | Total (177≥n≤209) | Significance[1] |
|---|---|---|---|---|
| *Intention (1=low - 3=high)* | | | | |
| Start/Stay smoking (n=150) | 1.4 | 1.4 | 1.4 | n.s. |
| Start/Stay drinking alcohol (n=179) | 1.2 | 1.1 | 1.1 | n.s. |
| *Attitude (1= negative towards - 3 = positive towards)* | | | | |
| Smoking (n=204) | 1.5 | 1.6 | 1.6 | n.s. |
| Alcohol (n=204) | 1.7 | 1.7 | 1.7 | n.s. |
| *Subjective Norm (1=negative towards – 3 = positive towards)* | | | | |
| Smoking (n=201) | 1.7 | 1.6 | 1.7 | n.s. |
| Alcohol (n=199) | 1.7 | 1.7 | 1.7 | n.s. |
| *Peer pressure (1=low feeling of PP- 3=high feeling of PP)* | | | | |
| Smoking (n=193) | 1.3 | 1.4 | 1.4 | n.s. |
| Alcohol (n=208) | 1.4 | 1.3 | 1.3 | n.s. |
| *Social Support ( 1=low feeling of SS - 3=high feeling of SS)* | | | | |
| DON'T smoke (n=193) | 1.7 | 1.7 | 1.7 | n.s. |
| DON'T drink alcohol (n=209) | 1.5 | 1.7 | 1.6 | n.s. |
| *Self-Efficacy (1=low feeling of SE - 3=high feeling of SE*) | | | | |
| Smoking (n=203) | 2.5 | 2.5 | 2.5 | n.s. |
| Alcohol (n=177) | 2.4 | 2.4 | 2.4 | n.s. |

[1] Differences between groups were tested with Unianova variance analyses
[2] Respondents in the controlgroup have significantly more classmates that smoke
[3] Respondents in the controlgroup have significantly more classmates that drink alcohol
[4]Respondents in the controlgroup have significantly more friends that smoke

## 4.5 MULTI-ANALYSIS ON SMOKING BEHAVIOUR & DRINKING BEHAVIOUR AT BASELINE

To see whether smoke status and alcohol status were connected to knowledge and the behavioural determinants correlation analyses were performed. Looking at smoking it shows that there were high correlations between smoking status and intention to start smoking. Also attitude towards smoking correlated highly with smoking status. As expected self-efficacy correlated in a negative way with smoking status. There also seemed to be a strong connection between attitude towards smoking and intention to start smoking. Intention and subjective norm also seemed to influence one another (table 4.11).

**Table 4.11** *Correlation Smoking behaviour, knowledge & behavioural determinants at baseline (148 ≥n≤209).*[1]

| | | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Smoke Status | .67 | .29 | .62 | .75 | .43 | .26 | . | -.34 |
| 2 | Smoke in last 4 weeks | - | .22 | .59 | .69 | .35 | . | . | -.35 |
| 3 | Knowledge | | - | .35 | .25 | .25 | . | . | . |
| 4 | Attitude | | | - | .53 | .46 | . | . | -.32 |
| 5 | Intention | | | | - | .42 | . | . | -.23 |
| 6 | Subjective norm | | | | | - | .24 | . | -.25 |
| 7 | Peer pressure | | | | | | - | . | . |
| 8 | Social Support | | | | | | | - | . |
| 9 | Self-Efficacy | | | | | | | | - |

[1] Table only shows correlations of r > .010 (two-tailed) p <.010 (Spearman's Rho)

Table 4.12 showed that there is a high correlation between drinking alcohol and attitude towards drinking alcohol. This attitude also correlated highly with drinking in the last 4 weeks. Different from smoking, intention to start drinking did not seem to correlate with the actual drinking status or drinking in the last 4 weeks. Subjective norm however did seem to be connected to alcohol status. There was also a strong relation between attitude towards drinking and subjective norm.

**Table 4.12** *Correlation Alcohol behaviour, knowledge & behavioural determinants at baseline (127≥n≤208).*[1]

| | | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Alcohol Status | .45 | . | .59 | . | .41 | . | . | -.41 |
| 2 | Drinking in last 4 weeks | - | . | .69 | . | .41 | . | . | -.33 |
| 3 | Knowledge | | - | . | . | . | . | . | . |
| 4 | Attitude | | | - | .24 | .61 | .26 | . | -.40 |
| 5 | Intention | | | | - | . | . | . | . |
| 6 | Subjective Norm | | | | | - | .29 | -.18 | -.31 |
| 7 | Peer Pressure | | | | | | - | . | . |
| 8 | Social Support | | | | | | | - | . |
| 9 | Self-Efficacy | | | | | | | | - |

[1] Table only shows correlations of r > .010 (two-tailed) p <.010 (Spearman's Rho)

To get a better insight in which determinants really influence smoking behaviour and intention a multiple regression analyses was performed (table 4.13). Looking at smoking behaviour it shows that 72.2% can be explained by the behavioural determinants. Attitude and intention prove to be the main predictors of smoking behaviour. Attitude is also connected to the intention to start smoking.

As could be expected by the correlation analyses, intention does not seem to play a role in alcoholdrinking behaviour. 60.5% of alcoholstatus can be explained by the behavioural determinants. Main predictor here is attitude towards alcohol. Subjective norm also seems to play a role in the choice to start drinking.

**Table 4.13** *Multiple regression analyses on smoking status, smoking last 4 weeks, intention to start smoking, alcohol status, drinking in last 4 weeks and intention to start drinking.*[1]

| | Smoking Status β | Smoking last 4 weeks β | Intention to start smoking β | Alcohol Status β | Drinking last 4 weeks β | Intention to start drinking β |
|---|---|---|---|---|---|---|
| Knowledge | . | . | . | . | . | -.21* |
| Attitude | .47*** | .45*** | .27** | .58*** | .38** | . |
| Intention | .44*** | .37*** | - | | | - |
| Subjective Norm | . | . | . | .25** | .24* | . |
| Peer Pressure | . | . | . | . | . | . |
| Social Support | . | . | . | . | . | . |
| Self-efficacy | . | . | . | . | . | .23* |
| $R^2$ | $R^2$ = 72.2% F=(7,111)=41.11 p≤.001 | $R^2$ = 64.3% F=(7,109)=28.04 p≤.001 | $R^2$ = 22.2% F=(6,112)=5.33 p≤.001 | $R^2$ = 60.5% F=(7,101)=22.09 p≤.001 | $R^2$ = 34.8% F=(7,100)=7.63 p≤.001 | $R^2$ = 17.6% F=(6,102)=3.63 p≤.003 |

[1] Table shows significantly independent predictors if *=p<.05, **= p<.01, *** = p<.001 .

# CHAPTER 5 - RESULTS PROCES EVALUATION

## 5.1 RESPONS

The schools in Enschede and Zutphen were selected for the experimental group, which meant they got to work with the e-learning program Prepared in time. A total of 97 students, 10 in Enschede and 87 in Zutphen, worked with the programme and filled out an evaluation questionnaire.

## 5.2 APPRECIATION

The respondents were asked on a 3-pointscale whether they thought the program was fun, easy to do, interesting and childish where 1 was negative, 2 neutral and 3 positive (table 5.1). Scoring an average 2.48 out of 3, the program was seen as easy and well doable. Most children had no problems working with it what so ever. On the points of interesting (1.75) and fun (1.87) however they were not so positive.

The respondents were neutral on whether the programme was childish or not. They did not seem to mind working with it from that perspective. The respondents in Zutphen spent around an hour working with the program in which they did half the smoking part and the full alcohol part. Normally they would have been able to do the full programme in this time, which was unfortunately not possible because of a problem with their computers. The respondents in Enschede did both parts in around an hour. The respondents were not positive on this amount of time, finding it too long.

Respondents were asked to grade the programme on a scale from 1-10, 1 being the lowest and 10 being the highest. Their average grade overall was a 5.98, running from ones to tens, showing a great difference between the respondents (table 5.1). 14 students graded the programme with a one, pulling the average down. Looking at the median it showed that an axis around a 7, with 11 students grading a 6, 33 students grading a 7 and 12 students grading the programme with an 8. A ten was given by 8 students (not in table).

**Table 5.1** *Appreciation and average grades of e-learning program (N=97)*

| | Percentage | Mean (1=low, 3=high) |
|---|---|---|
| *Did you think the program was: (n=97)* | | 1.9 |
| 1.Stupid | 34.0% | |
| 2.Neutral | 45.4% | |
| 3.Fun | 20.6% | |
| *Did you find the program: (n=96)* | | 2.5 |
| 1.Difficult | 5.2% | |
| 2.Neutral | 41.7% | |
| 3.Easy | 53.1% | |
| *Did you find the program: (n=97)* | | 1.8 |
| 1.Boring | 46.4% | |
| 2.Neutral | 32.0% | |
| 3.Interesting | 21.6% | |
| *Did you think the program was: (n=97)* | | 1.9 |
| 1.Childish | 28.9% | |
| 2.Neutral | 49.5% | |
| 3.Cool | 21.6% | |
| *Did you have enough time for working with the program? (n=97)* | | 1.5 |
| 1.Time was too long | 58.8% | |
| 2.Time was OK | 36.1% | |
| 3.Time was too short | 5.2% | |
| *Mean Grade (n=96)* | | 6.0 |

To get a better impression of which parts of the programme the respondents liked, they were asked specifically about these parts (table 5.2). At the start of the program all students had to make a portrait of themselves. Almost 70% seemed to appreciate this aspect from allright to brilliant. Professor Profitacto was not as populair and found stupid by 40%. Over 60% did not appreciate the movies either, which is probably caused by the problems with the sound system, preventing most students to watch the movies properly. The games and quizzes were appreciated a lot more with only 20% finding them stupid.

**Table 5.2** *Appreciation different items on e-learning program (N=96)*

| | Stupid (1) | Allright (2) | Fun (3) | Brilliant (4) | Mean(1=low–4=high) |
|---|---|---|---|---|---|
| Making own portret (n=95) | 25.3% | 38.9% | 28.4% | 7.4% | 2.2 |
| Professor Profitacto | 39.1% | 42.4% | 17.4% | 1.1% | 1.8 |
| Movies | 61.1% | 29.5% | 8.4% | 1.1% | 1.5 |
| Games | 20.8% | 31.2% | 38.5% | 9.4% | 2.4 |
| Tests & quizzes | 21.1% | 45.3% | 23.2% | 10.5% | 2.2 |

Table 5.3 shows more closely why the students were no fans of Professor Proficacto. Even though his explenations were alright nearly half of the students got irritated waiting for him to finish his talks before they could move on to the next screen.

**Table 5.3** *Appreciation of Professor Profitacto* (N=96)

| | Frequency | Percentage |
|---|---|---|
| *Clear explanations* | | |
| Very unclear | 25 | 26.0% |
| Neutral | 43 | 44.8% |
| Very clear | 28 | 29.2% |
| | | |
| *Wait for Prof. Profitacto before going to next screen* | | |
| Irritating | 44 | 45.8% |
| Neutral | 35 | 36.5% |
| Nice | 17 | 17.7% |

With 2 open questions respondents were asked what they learned from both the smoking and the alcohol part. They gave many different answers that were categorized afterwards. One in three students found they did not learn (anything new) on the subjects. Also seen a lot were answers like 'it is bad for your health', 'you can get addicted' and ' it is bad for your brain' in case of alcohol. Table 5.4 shows the most given answers.

**Table 5.4** *What respondents learned about smoking and alcohol (N=99)*

| | Frequency | Percentage |
|---|---|---|
| *Smoking (n=91)* | | |
| No, I learned nothing (new) | 28 | 30.8% |
| I learned very much | 3 | 3.3% |
| | | |
| It is bad for you / your health | 22 | 24.2% |
| Don't start smoking | 7 | 7.7% |
| It is bad for your lungs | 4 | 4.4% |
| You can get addicted | 4 | 4.4% |
| Smoking can kill you | 1 | 1.1% |
| You can get sick | 1 | 1.1% |
| 28% of people in Holland smoke | 1 | 1.1% |
| Something else | 20 | 22.0% |
| | | |
| *Alcohol (n=90)* | | |
| No, I learned nothing (new) | 27 | 30.0% |
| I don't know | 5 | 5.6% |
| I learned a lot | 2 | 2.2% |
| | | |
| That alcohol is bad for you | 14 | 15.6% |
| It is bad for your brain | 11 | 12.2% |
| Don't start drinking (before 16) | 7 | 7.8% |
| How many people drink alcohol | 3 | 3.3% |
| Alcohol is poisonous | 2 | 2.2% |
| You shouldn't drink too much | 2 | 2.2% |
| Same amount of pure alcohol in different drinks | 2 | 2.2% |
| Alcohol can kill you | 2 | 2.2% |
| Don't get addicted | 1 | 1.1% |
| Something else | 12 | 13.3% |

## 5.3 IMPROVEMENT

Many students had no ideas or tips on how to improve the programme. The given answers were categorized as can be seen in table 5.5. Some are very contradictory and personal, showed by one student wanting longer movies where as another wants shorter movies. Most important for future users is to check whether their computersystem is able to run the program correctly at normal speed and with proper sound.

**Table 5.5** *Improvement tips for programme according to respondents (N=99)*

| | Frequency of mentioning |
|---|---|
| *Smoking* | |
| No tips | 65 |
| Shorter movies | 2 |
| Chat with others | 1 |
| Images more clear | 1 |
| Programme should work faster | 1 |
| It should be just verbal | 1 |
| Programme is too long | 1 |
| Too much explanation | 1 |
| | |
| *Alcohol* | |
| No tips | 68 |
| Movies should be longer | 1 |
| Images more clear | 1 |
| More explanation | 1 |
| Movies should be shorter | 1 |
| Less movies | 1 |

Most students enjoyed working with the program but some elements were long and students lost their interest at those points. It would help a lot if teachers would be able to skip certain parts or movies. Games were appreciated most and are definitly a good part in the program. However, the explenation on how to play the games was not always clear, causing irretation among the students. Working with “Prepared in time” over 2 or 3 times will work better as well. Doing both smoking and alcohol in 1 hour is asking to much of these students. They find it difficult to concentrate and stay focused for so long.

## 5.4 OBSERVATIONS

Observations showed that the students were well capable of working with a computerprogram. One of the comments heard a lot was that the program, and especially some games, were moving to slow. The students were very focussed on their own screen, mainly seeking contact with classmates when they discovered a ‘cool’ game. They did try and keep track of eachother at the start, asking how far others were but became more focused on their own progress as time went on. The problems with the soundsystem proofed annoying to the students. They were not capable of waiting for a movie to finish and became restless. Classes that were allowed to do only a short part of the smoking module and move on to the alcohol part then were less restless and annoyed. Some teachers had the feeling that the students were capable of concentrating longer working behind

the computer then they normally would be able to do in a classroom situation. As this wasn't part of this study no measurements were made that could confirm this observation.

Observation also showed that some information on the programme was to difficult for this group of students. For example the explanation on pure alcohol and how it is a substance on its own was difficult for them to comprehend. When compared to lemonade and how you can change the strenght and taste by adding water most students seemed to grasp how pure alcohol is a substance on its own that is added to drinks, and that alcohol is not the drink itself.

In general it showed that students did not appreciate the programme very much, giving it a mere 6 out of 10. This did not show while they were working with the programme. Most students were participating very well, focused on what they had to do and not afraid to ask question when they did not understand or calling over the researcher to show how well they performed on a quiz.

# CHAPTER 6 - RESULTS FOLLOW-UP QUESTIONNAIRE: PREVALENCE OF SUBSTANCE USE AND BEHAVIOURAL DETERMINANTS

## 6.1 INDIRECT BEHAVIOURAL ASPECTS

About a third of students told at home that they filled out the baseline questionnaire. Only 12% talked with their parents about smoking and alcohol, showing that it is not a topic they talk about with their parents (table 6.1). Significantly more students in the experiment group looked up extra information on smoking compared to the control group. The question however does not ask whether they looked it up themselves or if it was a school assignment. Smoking and drinking alcohol does not seem to be a general topic of conversation among these students.

**Table 6.1** *Indirect behavioural effects of intervention by studygroup (N=198)*

| | E-Learning (82 ≤n≥84) | Control (114≤n≥116) | Total (197≤n≥198) | Significance[1] |
|---|---|---|---|---|
| Told at home about baseline questionnaire (n=198) | 37.3% | 29.6% | 32.8% | n.s. |
| Talked with parents about smoking (n=198) | 12.2% | 12.1% | 12.1% | n.s. |
| Talked with parents about alcohol (n=199) | 12.0% | 11.2% | 11.6% | n.s. |
| Talked with friends about smoking (n=199) | 21.7% | 12.9% | 16.6% | n.s. |
| Talked with friends about alcohol (n=198) | 14.5% | 13.9% | 14.1% | n.s. |
| Talked in class about smoking (n=197) | 16.9% | 11.4% | 13.7% | n.s. |
| Talked in class about alcohol (n=198) | 19.0% | 13.2% | 15.7% | n.s. |
| Searched for extra info smoking (n=198) | 11.9% | 2.6% | 6.6% | p=.016[2] |
| Searched for extra info alcohol (n=197) | 8.4% | 4.4% | 6.1% | n.s. |
| Visited website Tactus (n=197) | 8.4% | 3.5% | 5.6% | n.s. |

[1] Differences between studygroups tested with Chi-Square
[2] Significantly more students in E-learning group looked up extra information on smoking

## 6.2 EFFECTS ON KNOWLEDGE & VARIABLES ASE-MODEL

Looking at table 6.2 it shows that knowledge on smoking did not improve after working with “Prepared in time”. Infact, both groups scored worse on the follow-up questionnaire compared to the baseline. Explenation for this phenomena might be that the schoolyear was coming to an end and students were not motivated to fill out another questionnaire when the first one was only a few weeks earlier. Also, as the movies were not working properly the students in the experimental group only did a short bit on smoking in the e-learning program, preventing them from getting all the information. On alcohol however the knowledge did improve significantly when comparing the experimental group with the control group. Explenation for this could be that the experiment group students remembered the learned knowledge on alcohol better, as they did the full program on alcohol. If a student knows an answer it is easy to fill out a form, they do not have to think that much.

**Table 6.2** *Knowledge scores on smoking and alcohol on baseline (Q1) andfollow-up (Q2) by studygroup (N=210).*

| | E-Learning (82≥n≤90) | | Control (104≥n≤116) | | Total (202≥n≤204) | | Significance[1] |
|---|---|---|---|---|---|---|---|
| | Q1 | Q2 | Q1 | Q2 | Q1 | Q2 | |
| *Knowledge score* | | | | | | | |
| Smoking (0-5) | 3.02 | 2.60 | 2.88 | 2.45 | 2.95 | 2.51 | n.s. |
| Alcohol 0-5 | 2.34 | 2.52 | 2.14 | 2.14 | 2.23 | 2.30 | p=.036 |
| Total (0-10) | 5.35 | 5.12 | 4.99 | 4.63 | 5.15 | 4.83 | n.s. |

[1] Differences between scores on Q2 were tested with ANOVA, taking scores on Q1 as covariate
[2] The knowledge about alcohol was significantly higher in the experimental group at Q2.

Looking at the behavioural determinants there were no significant differences there (table 6.3). "Prepared in time" did not seem to have changed students attitude towards or intention to start smoking and/or drinking. Both peer pressure and social support on drinking alcohol seem to have become slighlty higher and self-efficacy has come down a bit which, even though not significant, is a worrying point considering the wanted effect is the other way around.

**Table 6.3** *Behaviourdeterminants from ASE-Model on smoking and alcohol on baseline (Q1) and follow-up (Q2) by studygroup (N=208)*

| | E-Learning (62≥n≤69) | | Control (76≥n≤84) | | Total (96≥n≤208) | | Significance[1] |
|---|---|---|---|---|---|---|---|
| | Q1 | Q2 | Q1 | Q2 | Q1 | Q2 | |
| *Intention (1=low-3=high)* | | | | | | | |
| Start/stay smoking (n=146) | 1.4 | 1.1 | 1.4 | 1.1 | 1.4 | 1.1 | n.s. |
| Start/stay drinking alcohol (n=145) | 1.2 | 1.0 | 1.1 | 1.0 | 1.1 | 1.0 | n.s. |
| *Attitude (1=low-3=high)* | | | | | | | |
| Smoking (n=205) | 1.5 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | n.s. |
| Alcohol (n=202) | 1.7 | 1.8 | 1.7 | 1.7 | 1.7 | 1.8 | n.s. |
| *Subjective norm (1=low-3=high)* | | | | | | | |
| Smoking(n=204) | 1.7 | 1.6 | 1.8 | 1.7 | 1.7 | 1.6 | n.s. |
| Alcohol(n=201) | 1.6 | 1.6 | 1.7 | 1.7 | 1.7 | 1.7 | n.s. |
| *Peer pressure (1=low-3=high)* | | | | | | | |
| Smoking (n=193) | 1.3 | 1.3 | 1.4 | 1.3 | 1.4 | 1.3 | n.s. |
| Alcohol (n=208) | 1.4 | 2.6 | 1.3 | 2.6 | 1.3 | 2.6 | n.s. |
| *Social Support (1=low-3=high)* | | | | | | | |
| Smoking (n=198) | 1.7 | 1.8 | 1.7 | 1.7 | 1.7 | 1.8 | n.s. |
| Alcohol (n=197) | 1.5 | 2.4 | 1.8 | 2.5 | 1.6 | 2.4 | n.s. |
| *Self-Efficacy (1=low-3=high)* | | | | | | | |
| Smoking (n=143) | 2.5 | 2.6 | 2.5 | 2.4 | 2.5 | 2.5 | n.s. |
| Alchohol (n=141) | 2.4 | 1.5 | 2.4 | 1.4 | 2.4 | 1.4 | n.s. |

[1] Differences between scores on Q2 were tested with ANOVA, taking scores on Q1 as covariate, keepin p< .01 because of multiple comparisons

Again, there were no significant differences between the smoking and drinking behavior parents/brothers/sisters and best friends between the groups (table 6.4). Teachers smoking behaviour was again significantly higher in the control group. As the programme targeted the students themselves and not their surroundings no big differences were expected here. The slight differences between baseline and follow-up might be the result of more awareness on the topics among the students, making them watch their parents more closely.

**Table 6.4** *Observed smoking- and drinking behaviour of direct environments respondents on baseline (Q1) and follow-up (Q2) by studygroup (N=204)*

| | E-Learning (86≥n≤90) | | Control (113≥n≤114) | | Total (200≥n≤204) | | Significance[1] |
|---|---|---|---|---|---|---|---|
| | Q1 | Q2 | Q1 | Q2 | Q1 | Q2 | |
| *Smoking* | | | | | | | |
| Father (n=202) | 48.9% | 47.2% | 59.1% | 54.0% | 54.5% | 51.0% | n.s. |
| Mother (n=202) | 42.7% | 48.3% | 53.6 % | 45.1% | 48.8% | 46.5% | n.s. |
| Brother and/or sister (n=200) | 23.3% | 24.4% | 35.2% | 36.0% | 29.8% | 31.0% | n.s. |
| Best friend (n=204) | 30.6% | 41.1% | 48.6% | 45.6% | 40.6% | 43.6% | n.s. |
| Teacher (n=200) | 12.6% | 18.4% | 42.3% | 46.9% | 29.3% | 34.5% | p=.00[2] |
| *Drinks Alcohol* | | | | | | | |
| Father (n=204) | 77.8% | 75.6% | 70.5% | 78.1% | 73.8% | 77.0% | n.s. |
| Mother (n=203) | 67.4% | 59.6% | 54.0% | 57.0% | 59.9% | 58.1% | n.s. |
| Brother and/or sister (n=202) | 45.5% | 44.9% | 53.7% | 54.0% | 50.0% | 50.0% | n.s. |
| Best friend (n=203) | 39.8% | 52.8% | 54.5% | 54.4% | 48.0% | 53.7% | n.s. |
| Teacher (n=203) | 66.3% | 65.2% | 63.7% | 62.3% | 64.9% | 63.5% | n.s. |

[1] Differences between groups tested with Chi-Square, keepin p< .01 because of multiple comparisons
[2] Significant difference between groups, more smoking teachers in control group

## 6.3 EFFECTS ON BEHAVIOUR

In comparison with the baseline results there are no great differences in smoking and drinking alcohol in the last 4 weeks (table 6.5). Working with “Prepared in time” did not change the behaviour of the students. We do see a significant difference between the experiment group and control group. More respondents in the control group smoked over the last 4 weeks in comparison to the experiment group. The difference might be caused by the program, with less students starting smoking in the experiment group, but might also be caused by a different reason. There is also a significant difference between the experimental group and control group on drinking alcohol in the last 4 weeks. More students in the control group have been drinking. Again it is hard to say if this effect can be claimed by the e-learningprogram only or if other influences caused this difference (table 6.5).

**Table 6.5** *Behaviour on smoking and drinking alcohol on follow up by studygroup (N=205)*

| | E-Learning | Control | Total | Significance[1] |
|---|---|---|---|---|
| *Did you smoke since filling out baseline? (n=205)* | | | | |
| Yes | 26.7% | 43.5% | 36.1% | .001[2] |
| No | 73.3% | 56.5% | 63.9% | |
| *Did you smoke in the last 4 weeks? (n=204)* | | | | |
| Yes | 25.3% | 27.4% | 26.5% | n.s. |
| No | 74.7% | 72.6% | 73.5% | |
| *Did you drink alcohol since filling out baseline? (n=185)* | | | | |
| Yes | 43.8% | 49.5% | 47.0% | n.s. |
| No | 56.2% | 50.5% | 53.0% | |
| *Did you drink alcohol in last 4 weeks? (n=128)* | | | | |
| Yes | 54.2% | 78.3% | 67.2% | .016[3] |
| No | 45.8% | 21.7% | 32.8% | |

[1] Differences testen with ANOVA
[2] Significantly more respondents in the controlgroup smoked since filling out Q1
[3] Significantly more respondents in the controlgroup drank alcohol in the last 4 weeks.

When we look at the alcoholfrequency in the last 4 weeks and the amount of drinks there are no significant differences between the experiment- and controlgroep. However we do see an increase in the drinking compared to the baseline in both groups. The percentage of respondents drinking 1-3 times in the last 4 weeks nearly doubled compared to the baseline. The amount of drinks they drink on such an occasion however has not really increased. Most respondents still drinking 1 drink or less (table 6.6).

**Table 6.6** *Alcoholfrequency in last 4 weeks & amount of alcohol on occasion on baseline (Q1) and follow-up (Q2) for respondents who indicated drinking alcohol more then once on Q1 (N=128)*

| | E-Learning | | Control | | Total | | Significance[1] |
|---|---|---|---|---|---|---|---|
| | Q1 | Q2 | Q1 | Q2 | Q1 | Q2 | |
| *Alcoholfrequency in last 4 weeks (n=128)* | | | | | | | |
| 0 | 64% | 45.8% | 55.8% | 21.7% | 59.4% | 32.8% | n.s. |
| 1-3 | 19.1% | 32.2% | 19.5% | 40.6% | 19.3% | 36.7% | |
| 4-6 | 10.1% | 11.9% | 10.6% | 20.3% | 10.4% | 16.4% | |
| 7-10 | 5.6% | 8.5% | 4.4% | 4.3% | 5.0% | 6.2% | |
| 11 times or more | 1.1% | 1.7% | 9.7% | 13.0% | 5.9% | 7.8% | |
| *How many drinks on occasion? (n=111)* | | | | | | | |
| Never had a drink | 31.2% | 29.0% | 35.2% | 36.5% | 33.6% | 33.1% | |
| Less then 1 | 20.3% | - | 10.2% | - | 14.5% | - | n.s. |
| 1 | 12.5% | 30.4% | 13.6% | 23.5% | 13.2% | 26.6% | |
| 2-3 | 14.1% | 17.4% | 17.0% | 17.6% | 15.8% | 17.5% | |
| 4-6 | 12.5% | 14.5% | 14.8% | 11.8% | 13.8% | 13.0% | |
| 7-10 | 6.1% | 7.2% | 4.5% | 9.4% | 5.3% | 8.4% | |
| More then 10 | 3.1% | 1.4% | 4.5% | 1.2% | 3.9% | 1.3% | |

[1] Differences between groups were tested with Unianova variance analyses

Working with “Prepared in time” does not seem to have had any effect on being allowed to smoke or drink at home (table 6.7). Neither did it prompt students to make agreements with their parents on smoking and drinking. There are no significant differences between the groups. There are no great differences between the baseline and follow-up either. As we already saw that most students did not tell their parents about the baseline questionnaire and hardly talk about smoking and alcohol with their parents and friends this is not surprising and lies in line with expectation.

**Table 6.7** *Results baseline (Q1) and follow-up (Q2) allowed to smoke/drink alcohol at home & non-smoking and non-drinking agreements by studygroup (N=205)*

| | E-Learning (88≥n≤92) | | Control (110≥n≤115) | | Total (201≥n≤205) | | Signifi cance[1] | Total 2006[2] (n=703) |
|---|---|---|---|---|---|---|---|---|
| | Q1 | Q2 | Q1 | Q2 | Q1 | Q2 | | |
| *Are you allowed to smoke at home? (n=205)* | | | | | | | n.s. | |
| Yes, I already smoke at home | 10.9% | 12.2% | 15.0% | 12.7% | 13.2% | 12.5% | | <1% |
| Yes, I'm allowed but I don't smoke at home | 15.2% | 18.9% | 17.7% | 15.5% | 16.6% | 17.0% | | 13% |
| No, I'm not allowed to smoke at home | 51.1% | 37.8% | 45.1% | 42.7% | 47.8% | 40.5% | | 48% |
| I don't know | 22.8% | 31.1% | 22.1% | 29.1% | 22.4% | 30.0% | | 39% |
| *Are you allowed to drink alcohol at home? (n=205)* | | | | | | | n.s. | |
| Yes, I drink alcohol at home | 27.2% | 23.3% | 32.7% | 38.9% | 30.2% | 32.0% | | 38% |
| Yes, I'm allowed but don't drink alcohol at home | 15.2% | 22.2% | 12.4% | 11.5% | 13.7% | 16.3% | | 19% |
| No, I'm not allowed to drink alcohol at home | 34.8% | 22.2% | 34.5% | 17.7% | 34.6% | 19.7% | | 15% |
| I don't know | 22.8% | 32.2% | 20.4% | 31.9% | 21.0% | 31.5% | | 29% |
| *Do you have an agreement with someone to not start smoking (until a certain age)? (n=203)* | | | | | | | n.s. | |
| Yes, with my parents | 22.7% | 23.9% | 28.7% | 24.1% | 26.1% | 24.0% | | 30% |
| Yes, at school | 5.7% | 3.4% | - | 0.9% | 2.5% | 2.0% | | <1% |
| Yes, with someone else | 1.1% | - | 1.7% | 3.6% | 1.5% | 2.0% | | 1% |
| No, but I'd like an agreement | 4.5% | 2.3% | 9.6% | 4.5% | 7.4% | 3.5% | | 18% |
| No, I don't want an agreement | 65.9% | 70.5% | 60.0% | 67.0% | 62.6% | 68.5% | | 50% |
| *Do you have an agreement with someone to not start drinking alcohol (until a certain age)? (n=201)* | | | | | | | n.s. | |
| Yes, with my parents | 29.5% | 20.0% | 23.9% | 19.3% | 26.4% | 19.6% | | 19% |
| Yes, at school | - | 1.1% | 0.9% | 0.9% | 0.5% | 1.0% | | - |
| Yes, with someone else | 1.1% | 3.3% | - | 2.8% | 0.5% | 3.0% | | - |
| No, but I'd like an agreement | 5.7% | 3.3% | 8.0% | 7.3% | 7.0% | 5.5% | | 16% |
| No, I don't want an agreement | 63.6% | 72.2% | 67.3% | 69.7% | 65.7% | 70.9% | | 65% |

[1]Differences between groups were tested with Unianova variance analyses

[2]Results from original study by Ter Huurne (2006); normal primaryschool, agegroup 9-13 years old

# CHAPTER 7 - DISCUSSION & RECOMMENDATIONS

## 7.1 PREVALENCE OF CIGARETTE SMOKING AND ALCOHOL DRINKING AMONG ADOLESCENTS WITH AN INTELLECTUAL DISABILITY

This study gives a first impression into the smoking and alcohol drinking behaviour of adolescents with a borderline or mild intellectual disability in the Netherlands. Looking at the lifetime prevalence of smoking we saw that nearly 50% of the respondents already had their first smoke. Considering the average age of the studygroup was 13½ years old, this percentage is scaringly high. With a monthly prevalence of 28% and daily use at nearly 20% this studygroup scores significantly higher then their peers in the general population who have a lifetime prevalence of 39%, a monthly prevalence of 19% and a daily use of 7% (Monschouwer et.al. 2007). We do see however that it is not just the adolescents in the studygroup that score high above average, the smoking behaviour of their parents is also concerning. Around 50% of fathers and mothers smoke, which is also high above the national average of 28% (Monschouwer et.al. 2007).

When we look at alcohol drinking behaviour we do not see significant differences with the general population (Monschouwer et.al. 2007; CBS, 2009). With a lifetime prevalence of 81% among the men and 67% among the females however, the alcohol drinking behaviour of these adolescents seems problematic. For most of these students the drinking happened more then once, with 15% even drinking before the age of 10. It is not just the prevalence that is problematic, also the amount most respondents drink is dangerously high with nearly 20% binge drinking on a drinking occasion, damaging their health and enlarging the risk of becoming an alcoholic later on in life (McGillicuddy, 2006). As the drinking behaviour of the general adolescent population is seen as problematic by the Dutch government it is safe to say it should also be seen as a big problem among the intellectually disabled adolescents. Even more so as the risks of problematic use among this group in the future are bigger (Kress et.al., 1993; McGillicuddy et.al. 1999; Beitchman et.al. 2001).

The national survey by Monschouwer et.al. (2007) was done in the agegroup 12-16 years old, which is slighlty older then our studygroup and was done within mainstream school levels. It is known that lower level education people smoke more and at an earlier age then higher level education people. (CBS, 2008) Since this study was done with special needs students only it is likely that the higher percentage of ever smoke can be acclaimed to this fact. If we look at the nationwide VMBO-B level, the lowest mainstream +education level and closest to special needs schools, we see that they score higher than the national average as well and are closer to the studygroup (Monschouwer et.al., 2007).

This study was a pilot study with a small N. All schools were located in the east of the Netherlands, comparable among each other but not necessarily comparable with other parts in the Netherlands. Measurements were done with self-answering questionnaires which means all is seen from the perspective of the respondents. This

might influence the accuracy as they might have tried to make themselves look better by reducing their smoking/drinking behavior or the other way around, by thinking giving high answers makes them 'cool'. All questionnaires however were anonymous, only identifiable by numbers, in order to try and downsize this effect.

## 7.2 PREPARED IN TIME

This study shows that e-learning is a useful method for adolescents with an ID. The participants were well capable of working with the computerprogram, even complaining about it being to slow. While working with the program some teachers felt that students were more willing to cooperate. They also noticed that it seemed that students were able to concentrate longer than in 'normal' classes and they seemed to show a longer attentionspan while working with the program. The students graded the "Prepared in time" with an average of 6 out of 10. They did not mind working with it but found that it sometimes was a little childish and slow. They also suffered from problems with the sound-system, preventing them from watching the movies and hearing the explenation given by Professor Proficatco. This problem definitely influences the students interest in the program as they afterwards indicated that they would have enjoyed the program more if the movies could have been watched properly.

Looking at the effectiveness we a significant increase in knowledge on alcohol was found, when comparing the experiment group with the control group. There was no significant increase in knowledge on smoking or in total knowledge. Also on the behavioural determinants attitude, intention, subjective norm, social support, peer pressure and self-efficicay no significant increases were found. However, attitude proved to be a big indicator in use of alcohol and tobacco. This is not in line with Theory of Planned Behaviour (TPB) by Ajzen (Conner & Norman, 2005), which says that all behaviour comes from intention and that intention is influenced by attitude, perceived behavioural control and subjective norm. According to the TPB someones attitude has no direct influence on a persons behaviour (Conner et.al., 2005). The results of this study show otherwise which might indicate that this theory does not fit with the ID population. However, as said before, this study only had a small number of participant. On larger scale these effects might turn out differently.

While evaluation the scores on the behavioural determintants of the baseline questionnaire and the follow-up questionnaire a strange phenomena was seen on alcohol drinking; students felt more peer pressure but also more social support while their feelings of self-efficacy went down. An explanation for this strange development could be the schoolcamps the students went on the week before answering the follow-up questionnaire. All participating schools went on schoolcamps which, in general, are moments in a adolescents life where they are exposed to substances like alcohol. They might have felt more pressure and also support from classmates to drink or not drink. As there was also an increase in drinking over the last 4 weeks on the follow-up questionnaire it is likely that students gave in and had a drink, experiencing lower self-efficacy. However this raises the question on the effectiveness of "Prepared in time" as a prevention intervention programme. As mentioned before, this development happened in both the experimental group and control group. It appears that the

students in the experimental group went through the same process as the other students, not feeling supported or more adequate to deal with this kind of high pressure situations. As the goals of “Prepared in time” include raising self-efficacy, changing attitudes and lowering intention to start smoking and drinking alcohol is seems to have failed on this occasion.

Influencing the outcome in this study was the fact that the sound system on the computers in the largest experimental school did not work properly. Because of this the movies in the program could not be watched properly. To keep the students focussed the decision was made to only do half of the smoking part and to do the full alcohol part. However, this problem does not seem to explain the problems in achieving the set goals of “Prepared in time”. The largest differences on lower self-efficacy and higher peer-pressure where seen on drinking alcohol. The students all finished the alcohol part in “Prepared in time” and only did half of the smoking part. Not being able to do the full smoking part probably does explain the lack of significant results on the knowledge on smoking, as we did see a significant increase in knowledge on alcohol within the experimentgroup.

All together though not many results were found on effectiveness, which raises the question whether it is a better way of teaching in comparison to ‘normal’ classroom/guestteacher programmes. It is known that repetition is very important in the education of ID people (Annand et.al. 1998). For this study they worked with “Prepared in time” only once and there was no follow-up in the classroom or at home.

As this study was done towards the end of the school year the pressure to get all data before the summer holidays was on. This meant there was exactly 6 weeks between baseline and follow-up questionnaire. Quite a few students did not feel like answering a questionnaire again, finding them boring and too long. This might have influenced the outcome of all parts, also explaining why the scores on knowledge went down. It also caused more missing values as students skipped questions and sometimes (unintentionally) full pages as a result of lack of interest and attention and a urge to finish quickly.

What this study does show however is that the use of alcohol and tobacco among ID adolescents is comparable to (alcohol) or higher then (smoking) their peers in the general population. As there were no numbers available on this subject beforehand there were no real expectations but the results were seen as shocking. There is a definite need of proper, well developed prevention intervention programmes for this targetgroup. E-learning proofed to be a well workable program for ID students and is seen as a good component in a larger scale prevention intervention programme.

## 7.3 TOPICS FOR FUTURE RESEARCH

The first recommendation for future research is a larger scale epidemiological study into the use of alcohol, tobacco and drugs among intellectually disabled adolescents. If the results of this study are a reliable indicator of use among this group in all parts of the Netherlands, the substance use and misuse problems are bigger and more worrying then most people expect.

This study also showed that the parents of the students in special needs schools smoke more then would be expected based on national averages. This is in line with research done by Fidler, Mitchell, Raab & Charleston (1992) who found similar results. Their research also showed a relationship between the smoking behaviour of parents en the smoking behaviour of their children (Fidler et.al., 1992). However there is not much research in this topic among the intellectual disabled population and it is unknown if ID adolescents are more or less influences by parents, familymembers and friends.

To protect the ID adolescents from healthdamage and future addiction problems a prevention intervention programme should be developed and tested in the hope of not only increasing their knowledge but also change intention and, more importantly, the attitudes on alcohol and tobacco. As this study shows e-learning could be a good component in this programme. Also skills training and role play are seen as a good addition as these are parts in treatment programmes that work for ID adults (Kelman et.al. 1997; Degenhardt, 2000; McGillicuddy, 2006). It is known that most students in special needs schools come from a low social-economical status background. A lot of parents did not have much education themselves and are not fully aware of the dangers of smoking and alcohol and the influence their behaviour has on their children. Developing a programme to teach them about these subjects and help them support their children might help decrease the use of tobacco and alcohol among both parents and their children.

As some teachers felt that students were more willing to cooperate, seemed to concentrate longer than in ‘normal’ classes and seemed to show a longer attentionspan it might be interesting to do a study into the concentration levels and intake of knowledge with e-learning in comparison to normal teaching and guest-teacher classes. If there observations were correct it might provide a great way of supporting the teaching system in special needs schools.

## ACKNOWLEDGEMENTS

After working on this study for nearly a year there are a few people I would like to thank for making this research project possible. First of all the 5 schools and their students that participated in this study: OSG Erasmus Almelo, Bonhoeffer Praktijkonderwijs Enschede, De Maat Ommen, Praktijkonderwijs Zutphen and Thomas a Kempiscollege Zwolle. Without their enthousiasm and willingness to cooperate none of this would have been possible. Thanks again for all your time and efforts!

Secondly I would like to thank my supervisors at the University of Twente, Stans and Marcel. They had some doubts at the start of this project about the achievability but have always been supportive and helpfull. Your help on the statistical analysis was very needed and welcome and the general feedback always usefull.

I would also like to thank Mieke Platenkamp at Tactus, for her help during this last year and making it possible to use the wonderful 'Prepared in time' program and to Marike van Dijk for helping me out on the SPSS department Another great help at Tactus has been Joanneke van der Nagel who's feedback has been of great value and who's enthousiasm and knowledge inspired me to try and better myself. Together with Marion Kiewik, she gave me the oppurtunity to present at a European Congress which was amazing and a lot of fun. Thank you for making this possible!

Another thank you goes to the collegues at departement Zorgondersteuning en Behandeling at AveleijnSDT who, throughout the year, have always been interested in and supportive of this project and helpful during my placement. I would also like to thank my family for their support, for graciously giving up computertime and for helping with all the small bits and bobs that needed to be done throughout the year.

And last but certainly not least I would like to thank Marion Kiewik. From the moment I asked 'Do you think the topics e-learning and intellectual disabillity are interesting for my final research project?' she has been nothing but enthousiatic and supportive. Her belief in me and this project made working on it a lot easier and definitly helped in times when things were not running as smoothly as planned. All the conversations and feedback kept me sharp and helped me to write this paper. Thank you for all your help!

Louise

# REFERENCES


Annand G.N. & Ruff, G. (1998) Overcoming barriers to effective treatment for persons with mental retardation and substance abuse problems, *NADD Bulletin,* Vol. 1, No. 2, 14-17

Barrett, N. & Paschos, D. (2006) Alcohol-related problems in adolescents and adults with intellectual disabilities, *Current Opinion in Psychiatry,* 19:481-485

Beitchman, J.H., Wilson, B., Douglas, L., Young, A. & Adlaf, E. (2001) Substance use disorders in young adults with and without LD, *Journal of Learning Disabilitiy,* Vol. 34, No. 4, 317-332

Bershin, J. (2003) E-learning analytics, obtained on: 23-01-2009 http://www.astd.org/LC/2003/0603_bershin.htm

Branden-Muller, L.R. & Elias, M.J. (1991) Catalyzing the primary prevention pevolution in the schools: The role of school psychologists, *Journal of Educational and Psychological Consultation*, Vol. 2, No.1, p. 73-88

Bransen, E.M., Schipper, H.C., Mutsaers, K., Haverman, M. & Blekman, J.W. (2008) Aard en omvang van middelengebruik bij licht verstandelijk gehandicapte jongeren, *Trimbos-Instituut Utrecht, Kenniscentrum VOBC/LVG, 's Heerenloo/Kwadrant*

Bridges Robertson, S. & Jackson, C. (1996) Initiation of cigarette smoking among children with and without learning disabilities, *Developmental and Behavioral Pediatrics,* Vol. 17, No. 4, 248-252

Burgard, J.F.,Donohue, B., Azrin, N.H. & Teichner, G. (2000) Prevalence and treatment of substance abuse in the mentally retarded population: an empirical review, *Journal of Psychoactive Drugs,* Vol. 32, No.3, p. 23-296

CBS (1999) – Centraal Bureau voor de Statistiek – Standaard definitie allochtonen, obtained on: 18-08-2009 http://www.cbs.nl/NR/rdonlyres/26785779-AAFE-4B39-AD07-59F34DCD44C8/0/index1119.pdf

CBS (2009) – Centraal Bureau voor de Statistiek - Zelfgerapporteerde medische consumptie, gezondheid en leefstijl – Roken en Alcohol, obtained on: 13-08-2009 http://statline.cbs.nl/StatWeb/publication/?VW=T&DM=SLNL&PA=03799&D1=202-206,210-214&D2=0-7&D3=0&D4=1,4-8&HD=090527-1553&HDR=G2,T&STB=G1,G3

Christian, L. & Poling, A. (1997) Drug abuse in persons with MR; a review, *American Journal on Mental Retardation,* Vol. 102, No.2, 126-136

Clarke, J.J. & Wilson, D.N. (1999) Alcohol problems and intellectual disability, *Journal of Intellectual Disability Research,* Vol. 43, P2., p135-139

Cocco, K.M. & Harper, D.C. (2002) Substance use in people with mental retardation: Assessing potential problem areas, *Mental Health Aspects of Developmental Disabilities,* Vol 5., No. 4, 101-108

Connor, M. & Norman, P. (2005) *Predicting health behaviour*, Maidenhead Berkshire, Open University Press

Cosden, M. (2001) Risk and resilience for substance abuse among adolescents and adults with learning Disabilities, *Journal of Learning Disabilities,* 34, 352-358.

Cowen, E.L., Hightower, A.D., Pedro-Carroll, J.A. & Work,W.C. (1990) School-based models for primary prevention programming with children, *Prevention in Human Services*, Volume 7, Issue 1, p. 133 – 160 Obtained on 31-07-2009 on http://books.google.nl/books?hl=nl&lr=&id=R2fO6iQbv7YC&oi=fnd&pg=PA133&ots= 9m5ifkA_wM&sig=gPW0KSM0ytrZqLLwG2kFpGhroiE#v=onepage&q=&f=false

Degenhardt, L. (2000) Interventions for people with alcohol use disorders and an intellectual disability: A review of the literature, *Journal of Intellectual & Developmental Disability, Vol. 25, No. 2, p.135-146*

Fidler, W., Michell, L., Raab, G & Charlton, A. (1992) Smoking: a special need?, *British Journal of Addiction,* Vol. 87, p. 1583-1591

Finlay, W.M.L. & Lyons, E. (2001) Methodological issues in interviewing and using self-report questionnaires with people with mental retardation, *Psychological Assessment,* Vol. 13, No.3, p.319-335

Kelman, L.V., Lindsay, W.R., McPherson, F.M. & Mathewson, Z. (1997) Smoking education for people with learning disabilities, *British Journal of Learning Disabilities,* Vol. 25, 95-99

Kress, J.S. & Elias, M.J. (1993) Substance abuse prevention in special education populations: Review and recommendations, *The Journal of Special Education,* Vol. 27, No. 1, 35-51

Krishef, C.H. & DiNitto, D.M. (1981) Alcohol abuse among mentally retarded individuals, *Mental Retardation*, Vol. 19, No. 4, 151-155

Krishef, C.H. (1986) Do the mentally retarded drink? A study of their alcohol usage, *Journal of Alcohol and Drug Education*, Vol.31 No.3 p64-70

Kruse, K. (2002) The benefits and drawbacks of e-learning, obtained on date: 23-01-2009 on http://www.e-learningguru.com/articles/art1_3.htm

Leventhal, Fleming & Glynn (1988) A cognitive-developmental approach to smoking intervention, *Proceedings of The First Annual Expert Conference in Health Psychology,* p. 79-105

Longo, L.P. (1997) Alcohol abuse in persons with developmental disabilities, *Habilitative Mental Healthcare Newsletter,* Vol. 16, No.4, p. 1-5

McCuster,C.G., Clare, I.C.H., Cullen, C. & Reep. J. (1993) Alcohol-related knowledge and attitudes in people with a mild learning disability: The effects of a 'sensible drinking' group, *Journal of Community & Applied Social Psychology,* Vol 3., 29-40

McGillicuddy, N.B. & Blane, H.T. (1999) Substance use in individuals with mental retardation, *Addictive behavior*, Vol. 24, No.6, p. 869-878

McGillicuddy, N.B. (2006) A review of substance use research among those with mental retardation, *Mental Retardation and Developmental Disabilities Research Reviews,* Vol. 12, p41-47

Ministerie van Onderwijs, Cultuur en Wetenschap – Kerncijfers 2004- 2008m, obtained on 30-07-2009 on: http://www.minocw.nl/onderwijs/1094/Database-feiten-en-cijfers.html

Monshouwer, K., Verdurmen, J., van Dorsselaer, S., Smit, E., Gorter, A. & Vollebergh, W. (2008) Jeugd en riskant gedrag, kerngegevens uit het peilstationsonderzoek scholieren, roken, drinken, drugsgebruik en gokken, Trimbos-instituut Utrecht, obtained on 20-10-2009: http://www.trimbos.nl/Downloads/Producten/11939-TB-Jeugd%20en%20Riskant%20gedrag%20(AF0814).pdf

Mutsaers, K., Blekman, J.W. & Schipper, H.C. (2007) Licht verstandelijk gehandicapten en middelengebruik, wat is er tot op heden bekend?, *Trimbos Instituut, Utrecht.*

Pianta R.C. (1990) Widening the debate on educational reform: Prevention as a viable alternative. *Exceptional Children*, 56 (4), pp. 306-313

Postel, M.G., de Haan, H.A. & De Jong, C.A.J. (2008) E-therapy for mental health problems: A systematic review, *Telemedicine and E-Health,* Vol. 14, No. 7 p. 707-714

Rubens, W. (2003) Omzien in verwondering; De (prille) geschiedenis van e-learning, obtained on 23-01-2009 on http://www.te-learning.nl/omzieninverwondering.pdf

STIVORO – Rookgedrag jongeren 1999-2009, obtained on 18-08-2009 on http://customers.tns-nipo.com/stivoro/jongeren_start.asp

Tactus (2009) – Nieuwsbrief SumID 2009, Nr.2 obtained on 10-11-2009 on: http://www.tactus.nl/upload/sitecontent/Nieuwsbrief2009-2.pdf

Taylor, N.S., Standen, P.J., Cutajar, P., Fox, D. & Wilson, D.N. (2004) Smoking prevalence and knowledge of associated sisks in adult attenders at day centres for people with learning disabilities, *Journal of Intellectual Disability Research*, Vol. 48, part 3, p. 239-244

Ter Huurne, E. (2006) Op tijd voorbereid, een onderzoek naar het gebruik van e-learning bij genotmiddelenpreventie voor het basisonderwijs, Universiteit Twente, 2006

Trimbos Instituut – Nationale Drug Monitor Jaarverslag 2007, obtained on 18-08-2009 http://www.trimbos.nl/Downloads/Producten/AF0809%20NDM%20Jaarbericht%202007%20compleet.pdf

# APPENDIX

| | |
|---|---|
| Appendix 1 | List of Tables |
| Appendix 2 | Baseline questionnaire |
| Appendix 3 | Proces-evaluation questionnaire |
| Appendix 4 | Follow-up questionniare experiment group |
| Appendix 5 | Follow-up questionnaire control group |

## APPENDIX 1 – LIST OF TABLES

## APPENDIX 2 – BASELINE QUESTIONNAIRE

## APPENDIX 3 – PROCES-EVALUATION QUESTIONNAIRE

## APPENDIX 4 - FOLLOW-UP QUESTIONNIARE EXPERIMENT GROUP

## APPENDIX 5 - FOLLOW-UP QUESTIONNAIRE CONTROL GROUP