

Søren Holm, PhD Thesis

Development and effect evaluation of a High School-Based Cannabis Prevention Program

Summary

Background: Cannabis use in adolescent is a public health concern associated with high prevalence rates and a range of cognitive, mental and physical health harms. Attitudes towards cannabis can change dramatically during middle and high school and misperceptions of peer use, low risk perceptions and positive attitudes towards cannabis are relatively common among high school students. Reviewing qualitative studies, it became apparent that three discourses were frequently used within the cannabis culture to justify cannabis use. These discourses were defined as “normalization”, “neutralization” and “glorification”, each representing an attitudinal factor associated with adolescent cannabis use: high perception of peer use (normalization), low risk perception (neutralization) and positive attitudes towards cannabis (glorification).

Objectives: The overall aim of this thesis has to explore the hypotheses that beliefs disseminated by the cannabis culture influence adolescent cannabis use, and that adolescence cannabis use could be prevented by addressing such beliefs.

We explored the two hypotheses based on the five objectives in paper I-IV:

- Develop a measure of neutralization and glorification (Paper I).
- Identify whether higher scores on neutralization and glorification were associated with adolescent cannabis use in a cross-sectional study (Paper I).
- Present the rationale, theoretical model and content of the PASS program (Paper II)
- Identify if high scores on normalization, neutralization and glorification were associated with adolescent cannabis use initiation in a prospective study (Paper III)
- Evaluate the effectiveness of the PASS prevention program (Paper IV)

Methods: This thesis was based on three studies: a cross-sectional study (Paper I) and two prospective studies (Paper III and Paper IV). The study conducted in Paper III was based on control-group data from the effect evaluation study conducted in Paper IV. Data in all studies were obtained through self-reported online questionnaires.

The cross-sectional study (Paper I) was conducted among 1519 students enrolled at 10 high schools in the region of Central Jutland. Based on factor analyses we constructed two scales measuring neutralization and glorification. After scale construction, multinomial logistic regression was conducted to assess whether higher scores on the neutralization scale and the glorification scale were associated with three categories of cannabis use (lifetime, monthly and weekly).

The study in Paper III included first-year students enrolled at 12 high schools in the regions of Central and Northern Jutland. Only the 925 students, who had never used cannabis at baseline, were included in the study. We used ordered logistic regression based on a multilevel modelling approach to predict whether high scores on normalization, neutralization and glorification were associated with cannabis use initiation at the 6- and 12-month follow-up.

The effect evaluation in Paper IV was conducted as a non-randomized controlled design with three follow-ups at 6, 12 and 18 month. The study included 21 high schools divided into 9 intervention schools and 12 control schools. A total of 1,995 students constituted the baseline sample. To estimate program effect on normalization, neutralization and glorification, three 4-level linear regression models were successfully fitted. The intended multilevel logistic regression models for analyzing cannabis use outcomes did not converge. Program effect on initiated cannabis use was analyzed using simple logistic models (i.e. non-multilevel model), while a model with repeated measurements as the only level was fitted in relation to past 30-day cannabis use.

Results

Paper I: The factor analysis supported the development of two separate scales. A negative effect scale with nine items presumably measuring neutralization, and a positive effect scale with eight items presumably measuring glorification. In the first analysis in which neutralization and glorification were entered alone, both were statistically significantly associated with lifetime, monthly and weekly cannabis use. When neutralization and glorification were entered together in the regression model, only glorification remained statistically significantly associated with all categories of cannabis use. Neutralization was associated with monthly and weekly use, but not lifetime use.

Paper III: At the 6-month follow-up, higher scores on normalization and glorification were associated with initiated cannabis use. At the 12-month follow-up, higher scores on normalization, neutralization, and glorification were associated with initiated cannabis use.

Paper IV: Students in the intervention group had statistically significant lower scores on normalization, neutralization and glorification measured across all follow-ups during the 18-month period. However, we found no statistically significant effects of the PASS prevention program for either initiated cannabis use or past 30-day cannabis use. The prevalence of cannabis use initiation was lower among students in the intervention group at all follow-ups, but the difference was not statistically significant.

Conclusion: The cannabis culture could influence adolescent cannabis use through the dissemination of normative misperceptions (normalization), risk denial (neutralization) and glorifying attitudes towards cannabis (glorification). Normalization, neutralization and glorification were all found to predict cannabis use initiation at 12-month follow-up. These findings indicated that it could be meaningful to address normalization, neutralization and glorification through school-based prevention. The prevention program PASS (preventive attitudes and social skills) did have a preventive effect on normalization, neutralization and glorification, but the program was not effective in preventing adolescent cannabis use. These results lend further support to research highlighting the importance of comprehensive social skill training in school-based prevention and indicate that refusal skill training could be of key importance in order to obtain program effects on behavioral outcomes.

Resumé (Danish summary)

Baggrund: Cannabis forbrug blandt unge er et folkesundhedsproblem, der er både udbredt og forbundet med en række kognitive, mentale og fysiske sundhedsskader. Holdninger til cannabis kan ændre sig dramatisk gennem de sidste år i folkeskolen og de første år på ungdomsuddannelserne og overdrevne forestillinger om forbrug blandt jævnaldrende, lav risikovurdering ved forbrug, samt positive holdninger til cannabis er relativt udbredt blandt elever på ungdomsuddannelserne. En gennemgang af kvalitative studier viste, at tre diskurser ofte anvendes indenfor cannabiskulturen til at retfærdiggøre cannabisforbrug. Disse diskurser blev defineret som ”normalisering”, ”neutralisering” og ”glorificering”. Hver diskurs repræsenterer en holdningskomponent forbundet med unges forbrug af cannabis: overdrevne forestillinger om forbrug blandt jævnaldrende (normalisering), lav risikovurdering ved forbrug (neutralisering) og positive holdninger til cannabis (glorificering).

Formål: Det overordnede formål med denne afhandling var at udforske følgende hypoteser: a) at cannabiskulturen påvirker unges holdninger til cannabis og b) at cannabisforbrug i ungdomsårene kan forebygges ved at adressere de holdninger, der formidles af cannabiskulturen.

Vi udforskede de to hypoteser med udgangspunkt i de fem formål beskrevet i artikel I-IV:

- Udvikle en metode til at måle neutralisering og glorificering (Artikel I).
- Undersøge hvorvidt en høj grad af neutralisering og glorificering var forbundet med unges cannabisforbrug i et tværsnitsstudie (Artikel I).
- Præsentere rationalet, den teoretiske model og indholdet i forebyggelsesprogrammet PASS (Artikel II)
- Undersøge hvorvidt en høj grad af normalisering, neutralisering og glorificering var forbundet med unges cannabisforbrug i et prospektivt studie (Artikel III)
- Vurdere effekten af forebyggelsesprogrammet PASS (Artikel IV)

Metode: Denne afhandling er baseret på tre studier: et tværsnitsstudie (Artikel I) og to prospektive studier (Artikel III og Artikel IV). Studiet i Artikel III var baseret på data fra kontrol-gruppen i effekt evalueringen (Artikel IV). I alle studier var dataindsamling baseret på online spørgeskemaer.

Tværsnitsstudiet (Artikel I) blev foretaget blandt 1519 studerende på 10 ungdomsuddannelser i region Midtjylland. Ved hjælp af faktoranalyse konstruerede vi to skalaer til at måle henholdsvis neutralisering og glorificering. Efter konstruktionen af de to skalaer

anvendte vi multinomial logistisk regression til at undersøge om en højere grad af neutralisering og glorificering var forbundet med cannabisforbrug blandt unge.

Studiet beskrevet i Artikel III blev foretaget blandt førsteårsstuderende på 12 ungdomsuddannelser i region Nordjylland og Midtjylland. Kun de 925 studerende, der aldrig havde brugt cannabis ved baseline, blev inkluderet i undersøgelsen. I analyserne brugte vi ordered logistisk regression baseret på multilevel modellering til at undersøge om en høj grad af normalisering, neutralisering og glorificering var forbundet med initieret cannabisforbrug ved henholdsvis 6 og 12 måneder efter baseline.

Effektevalueringen i Artikel IV var baseret på et ikke-randomiseret kontrolleret studiedesign med tre opfølgninger ved henholdsvis 6, 12 og 18 måneder efter baseline. Studiet inkluderede 21 ungdomsuddannelser opdelt på en kontrolgruppe med 12 skoler og en interventionsgruppe med 9 skoler. I alt 1.995 elever blev medtaget i studiet ved baseline. Analyserne af effekt på normalisering, neutralisering og glorificering var baseret på multilevel modellering med 4 niveauer. Det var vores hensigt at estimere effekt på cannabis forbrug ved hjælp af multilevel modellering med 4 niveauer, men modellerne ville ikke konvergere i analyserne. Effekt på initieret cannabis forbrug blev estimeret på baggrund af simple logistiske modeller, mens effekt på sidste 30-dages forbrug blev estimeret på baggrund af en model med gentagende målinger som eneste niveau.

Resultater:

Artikel I: Faktoranalysen understøttede to separate skalaer. En negativ effekt skala med ni spørgsmål, der måler neutralisering, og en positiv effekt skala med otte spørgsmål, der måler glorificering. I den første analyse, hvor neutralisering og glorificering indgik alene, var begge statistisk signifikant forbundet med de tre kategorier af cannabis forbrug (nogensinde, månedligt forbrug og ugeligt forbrug). Når neutralisering og glorificering indgik samlet i analysen, forblev kun glorificering statistisk signifikant forbundet med alle kategorier af cannabisforbrug.

Neutralisering var statistisk signifikant forbundet med månedligt forbrug og ugeligt forbrug.

Papir III: Ved 6-måneders opfølgning var en højere grad af normalisering og glorificering forbundet med initieret cannabisforbrug. Ved 12-måneders opfølgning var en højere grad af normalisering, neutralisering, og glorificering forbundet med initieret cannabisforbrug.

Papir IV: De studerende i interventionsgruppen havde en statistisk signifikant lavere grad af normalisering, neutralisering og glorificering målt henover de tre opfølgninger ved 6, 12 og 18

måneder. Vi fandt dog ingen statistisk signifikant effekt af PASS i forhold til hverken initieret cannabisforbrug eller sidste 30-dages cannabisforbrug. Initiering af cannabisforbrug var lavere i interventionsgruppen ved alle opfølgningerne, men forskellen var ikke statistisk signifikant.

Konklusion: Cannabiskulturen påvirker muligvis unges cannabisforbrug ved at formidle overdrevne forestillinger om forbrug blandt jævnaldrende (normalisering), lav risikovurdering ved forbrug (neutralisering) og positive holdninger til cannabis (glorificering). Normalisering, neutralisering og glorificering var alle statistisk signifikant forbundet med initiering af cannabisforbrug ved 12-måneders opfølgning. Disse resultater indikerede, at cannabisforbrug eventuelt kunne forebygges ved at forebygge normalisering, neutralisering og glorificering gennem undervisning på ungdomsuddannelserne. Forebyggelsesprogrammet PASS var ikke i stand til at forebygge cannabisforbrug, selvom programmet havde en præventiv effekt på normalisering, neutralisering og glorificering. Resultaterne i denne afhandling understøtter tidligere forskningsresultater, der peger på, at social færdighedstræning er et afgørende element i effektiv misbrugsforebyggende undervisning.