Development and Validation of the Cannabis Refusal Self-Efficacy Questionnaire (CRSEQ) in adult cannabis users in treatment

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ABSTRACT

Background: There are few valid clinical assessment instruments for cannabis. Self-Efficacy, or the ability of users to resist temptation, is a central feature of social cognitive theory. This study outlines the development and validation of the Cannabis Refusal Self-Efficacy Questionnaire (CRSEQ), which measures the situational confidence to refuse cannabis. *Method:* One thousand two hundred and forty-six patients referred for cannabis assessment completed the CRSEQ including measures of cannabis consumption and dependence severity (Severity of Dependence Scale-Cannabis, SDS-C). The CRSEQ was subject to independent exploratory (*n*= 621, mean age 26.88, 78.6% male) and confirmatory (*n*= 625, mean age 27.51, 76.8% male) factor analysis. *Results:* Three factors: Emotional Relief, Opportunistic and Social Facilitation were identified. They provided a good statistical and conceptual fit for the data. *Emotional Relief* cannabis refusal self-efficacy was identified as most predictive of cannabis dependence, after controlling for cannabis consumption. *Conclusions:* The CRSEQ is recommended as a psychometrically sound and clinically useful measure for cannabis misuse treatment planning and assessment.

Key words: cannabis; marijuana; self-efficacy; psychometric; validation

1. Introduction

Cannabis remains the most commonly used illicit substance. One-third of the adult Australian population have tried cannabis (Australian Institute of Health and Welfare, 2011) with 1 in 10 reporting use during the past year (Roxburgh et al., 2010). The subjective reinforcing effects of cannabis include relaxation, positive mood and sensory enhancement, but these effects show considerable inter-individual situational variability (Green, et al., 2003). Significant adverse effects include injury, possible reduced birthweight with use in pregnancy and cognitive impairment and depression (Hall and Degenhardt, 2009). Chronic use incurs a significant risk of dependence with associated psychosocial morbidity (Copeland, et al., 2001; Feeney, et.al., 2005). A high prevalence of cannabis use occurs amongst presentations with psychosis (Green, et al. 2005; Hides, et al., 2006).

Social cognitive theory continues as a useful theoretical framework to study substance use (Bandura, 1977a, 1977b, 1997). It includes the confidence of users to resist temptation. This is typically conceptualized as the ability to resist or refuse a substance in specific situations, described as 'drug refusal self-efficacy' (e.g. Young, et al., 2007). Other subtypes of self-efficacy include the ability to avoid relapse (Litt, et al., 2005), coping self-efficacy (Sklar and Turner, 1999) and anticipatory efficacy to deal with relapse crisis situations (Sklar, et al., 1997). Additionally, judgments made generic to all drugs of abuse (Schell, et al., 2005), or a focus on self-efficacy for therapeutic goal attainment (Lozano, et al., 2006) have been described. These definitions have both strengths and weaknesses particularly with lower levels of dependence or abuse. Drug refusal self-efficacy (Young et al., 1991) makes fewer assumptions about the nature of drug use as it is not defined by relapse risk. This has broad applicability as a construct in survey work, prevention initiatives and also as a

clinical tool. The Drinking Refusal Self-efficacy Questionnaire (DRSEQ: Young, et al., 1991; Young and Oei, 1996) has three factors (Social Pressure self-efficacy, Opportunistic self-efficacy, Emotional Relief self-efficacy) with good validity and reliability (Oei, et al., 2005). The DRSEQ has been used widely in investigating the association between drinking refusal self-efficacy and drinking behavior. DRSEQ factors are associated with frequency of alcohol consumption in university students (Baldwin et al., 1993) and there is a confirmed association between DRSEQ factor scores and both frequency and volume of consumption (Connor et al., 2000; Young, et al., 2006). These findings are maintained across prospective studies (Connor, et al., 2011; Young and Oei, 2000) .The DRSEQ differentiates problem/non-problem drinkers (Oei et al., 1998; Young, 1994) and high/ low risk community drinkers (Lee et al., 1999; Ricciardelli et al., 2001). It mediates the relationship between impulsivity and alcohol use in patients undergoing residential treatment (Gullo, et al., 2010).

Cannabis specific self-efficacy scales are available. Stephens, et al., (1993) developed a self-efficacy measure for avoiding cannabis on 167 cannabis using adults. The scale was based on Marlatt and Gordon's (1985) categories of relapse. The 19-item scale applied a summary score with an internal reliability of .89. No further psychometric assessment was undertaken. After controlling for demographics and consumption, the total score was not associated with cannabis problems at baseline or post-treatment. A subsequent study (Stephens, et al., 1995) in 210 treatment seeking cannabis users confirmed the single factor solution of the measure. The cognitive-behavioral based treatment improved reported self-efficacy beliefs post-intervention.

The Cannabis Situational Confidence Questionnaire (modeled on Annis and Graham's [1988] Smoking Situational Confidence Questionnaire) was purpose-built for a cannabis intervention study (n=229) by Copeland et al. (2001). Although no

psychometric testing was undertaken, the scale did demonstrate a significant proportion of patients used cannabis for stress relief. Adapting the smoking Situational Confidence Questionnaire, Burleson and Kaminer (2005) applied the same smoking factor structure as Annis and Graham. This structure was not validated through either exploratory or confirmatory factor analyses. Increased self-efficacy predicted cannabis abstinence. Litt and colleagues (2008) found that increasing self-efficacy was the primary mechanism through which most effective treatments for cannabis dependence operate, irrespective of the specific approach (e.g., motivational interviewing, contingency management).

A rigorously validated measure of cannabis refusal self-efficacy would benefit treatment evaluation and research. Recognizing the advantages of the DRSEQ (Young and Oei, 1996; Oei, et al, 2005), this study develops and validates a parallel Cannabis Refusal Self-Efficacy Questionnaire (CRSEQ).

Cannabis-related self-efficacy measures have not previously undergone comprehensive psychometric evaluation. Here we include both exploratory factor analysis and confirmatory factor analysis using structural equation modeling (Hopwood and Donellan, 2010; Tabachnick, and Fidell, 2007). Concurrent validity testing with levels of cannabis consumption and dependence severity is conducted to assess the clinical utility of the CRSEQ.

2. Method

2.1 Participants

Data were obtained from 1250 consecutive adult individuals who were referred for cannabis assessment as part of the Queensland Illicit Drug Diversion Initiative (QIDDI). The QIDDI is a Queensland Police diversion program for

individuals charged with cannabis-related offences. The program involves a two-hour comprehensive assessment of substance use and psychosocial functioning and incorporates a motivational interviewing component. Referral to further treatment is provided if indicated.

The mean age of the sample was 27.21 years (*SD* = 8.56). There were 971 (77.7%) males and 279 (22.3%) females. The majority of participants were born in Australia (1012; 81.0%) or New Zealand (94; 7.5%), with 42 (3.4%) identifying themselves as Indigenous Australians. In order to conduct exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) on the new measure, data were randomly split (via SPSS select random cases function) into half with data from 625 participants used for the EFA, and 625 participants for the CFA. Descriptive data regarding drug and alcohol use are reported separately for each sample below.

2.2 Measures

2.2.1Demographics. Information regarding age, gender, martial status, level of education, employment, and country of origin were recorded.

2.2.2 Cannabis Refusal Self-Efficacy Questionnaire (CRSEQ) (Young and Kavanagh, 1997). The CRSEQ is a 28-item questionnaire assessing an individual's belief in their ability to resist smoking cannabis across a range of situations. Participants are asked to rate their ability to resist smoking cannabis on a 6-point Likert-type scale ranging from 1 (*I am very sure I could NOT resist smoking cannabis*) to 6 (*I am very sure I could resist smoking cannabis*). Item content was adapted from the DRSEQ) (Young et al., 1991), a reliable and valid measure of self-efficacy regarding refusal of alcohol in cued situations. The adaptation primarily involved substituting the word "drinking" for "smoking," as well as removing items

deemed inappropriate when applied to cannabis, given its status as an illicit substance, or deemed to be of low relevance to cannabis use.

2.2.3 Severity of Dependence Scale-Cannabis (SDS-C) (Gossop et al., 1995). The SDS-C is a 5-item scale that measures the degree of dependence experienced by individuals who use different types of substances. The SDS-C is sensitive to severity of cannabis dependence (Swift et al., 2000). Using Australian normative data, the SDS-C cut-off for likely cannabis dependence is ≥ 2 (Swift et al., 1998).

2.3.4 Cannabis Consumption was clinically assessed by Masters and PhD qualified clinical psychologists (with between 2 and 25 years alcohol and drug treatment experience; M = 10.5 years) using a retrospective diary approach over the past week. If cannabis was not consumed in the past week, clinical staff assessed the typical weekly level of consumption for the respondent. For the purposes of this study, 'joints' (cannabis cigarette) were quantified as 0.25 grams of cannabis and 'cones' (use of 'bong' or 'pipe'), 0.10 grams of cannabis.

2.3 Procedure

As part of the assessment protocol, individuals participating in the QIDDI program completed the CRSEQ and SDS-C. Human ethics approval was obtained for this study.

3. Study 1: Exploratory Factor Analysis (EFA) of the Cannabis Refusal Self-Efficacy Questionnaire (CRSEQ) (n= 625)

All analyses were performed in SPSS (version 17). Of the original sample, 4 (0.6%) participants did not respond to at least 50% of CRSEQ items and were excluded, leaving 621 cases for analysis. The average age of participants was 26.88 (SD = 8.48)

years. There were 488 (78.6%) males and 133 (21.4%) females. Average weekly cannabis consumption was reported at 3.45 (*SD* = 5.28) grams and the average SDS-C score was 3.35 (*SD* = 3.25). Approximately 64% of participants met the SDS-C dependence criteria (≥ 2, Swift et al., 1998). The majority of participants (80.2%) reported alcohol use in the previous month. Participants reported an average of 7.08 (*SD* = 8.31) drinking days in the past month, consuming an average of 85.69 (*SD* = 146.83) grams of alcohol on each drinking day. A total of 367 (59.1%) participants were also current tobacco smokers, smoking an average of 11.55 (*SD* = 9.71) cigarettes per day.

3.1 Principal Components Analysis

Each of the 28 CRSEQ items had 17 (2.7%) or fewer cases with missing data. Therefore, the missing data (pairwise) correlation matrix was analyzed (Tabachnick and Fidell, 2007). An initial principal components analysis (PCA) with oblique (direct oblimin) rotation was used to estimate number of principal components and factorability of the correlation matrices. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was .97, suggesting suitable factorability of correlation matrices. This parallels the initial analysis of the DRSEQ (Young, et al., 1991).

Three components with eigenvalues > 1 were identified and examination of the scree plot also suggested the presence of three principal components. Therefore, PCAs specifying 2, 3, and 4 components were conducted. Of these PCAs, the three-component analysis provided the optimal solution in terms of percentage of variance explained, number of items per factor, and absence of cross-loadings. Extracted components were moderately-to-highly correlated, confirming the use of oblique rotation (direct oblimin; *r*s ranged from .47 to .67).

In total, the three extracted components accounted for 73.80% of the variance. Communalities suggested the three-component solution accounted for more than 50% of the variance in each item (range = .55 - .89). Component loadings revealed 11 items significantly cross-loaded (≥ .30) on more than one component and were excluded from the final solution. Item 22 ("Within 30 minutes of getting out of bed") and 23 ("When my medication side effects are bad") were also removed because of poor response discrimination, and theoretical considerations.

The PCAs were then re-run on the remaining 15 items. The result of these analyses also suggested a three-factor solution with oblique (direct oblimin) rotation was optimal. In total, the three extracted components accounted for 80.12% of the variance. Communalities suggested the three-component solution accounted for more than 60% variance in each item (ranging from .63 - .90). Item loadings are presented in Table 1. Based on the item loadings, the first component was labeled *Emotional Relief* self-efficacy, the second labeled *Opportunistic* self-efficacy, and the third labeled *Social Facilitation* self-efficacy. Table 1 also shows the three components were found to have high internal consistency. As with the DRSEQ, the three components of the CRSEQ were significantly inter-correlated (*r*s range from .55 to .71). In summary, initial validation of the CRSEQ suggests a three-component structure similar to the DRSEQ. Each of the extracted components has high internal reliability.

Insert Table 1 here

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4. Study 2: Confirmatory Factor Analysis (CFA) of the Cannabis Refusal Self-Efficacy Questionnaire (CRSEQ) (n=625)

Study 2 aimed to confirm the factor structure of the 15-item CRSEQ on an independent sample of cannabis users in treatment. The study also sought to establish the clinical utility of the measure by exploring its application to current cannabis use and dependence.

All analyses were performed in SPSS and AMOS (version 17). Of the total 625 participants, 480 (76.8%) were male and 145 (23.2%) female. The average age of participants was 27.51 (*SD* = 8.62) years. Average weekly cannabis consumption was reported at 3.89 (*SD* = 5.15) grams and the average SDS-C score was 3.16 (*SD* = 3.17). Approximately 60% of participants met SDS-C criteria for cannabis dependence (≥ 2, Swift et al., 1998). The majority of participants (87.8%) reported alcohol use within the last month. Participants reported an average of 7.22 (*SD* = 8.59) drinking days in the past month, consuming an average of 83.16 (*SD* = 84.86) grams of alcohol on each drinking day. A total of 360 (57.6%) participants were also current tobacco smokers, smoking an average of 11.77 (*SD* = 10.14) cigarettes per day.

4.1 Model Estimation and Evaluation

Confirmatory factor analysis (CFA) was conducted using maximum likelihood estimation. Model fit was evaluated in several ways. In accordance with the recommendations of Hu and Bentler (Bentler, 2007; Hu and Bentler, 1999), χ^2 test was selected as a statistical test of model fit (α = .05). However, given the sensitivity of this test to trivial deviations from fit in large samples, the "normed" χ^2 (χ^2/df) was also utilized. Values of χ^2/df between 1.00 and 3.00 are indicative of good fit. However, some researchers have argued values as high as 5.00 are acceptable (Kline,

2005). The comparative fit index (CFI) and root mean-square error of approximation (RMSEA) were also used to evaluate fit (Bentler, 2007). The following cut-offs were used for "good" fit: CFI ≥ .95 and RMSEA ≤ .06 (Hu and Bentler, 1999). For "acceptable" fit, cut-offs used were CFI ≥ .90 and RMSEA ≤ .10 (Hu and Bentler, 1999). However, it should be noted that it is difficult to set specific criteria for the evaluation of model fit as fit indices are not equally effective across different conditions (Hu and Bentler, 1999; Marsh, et al., 2004). Therefore, the hypothesized model was compared to a non-hypothesized alternative. The Akaike Information Criterion (AIC) was examined to assist model comparison (Akaike, 1987). The AIC has no conventional cut-off. Instead, smaller values indicate a model is better-fitting and more parsimonious.

4.2 Confirmatory Factor Analysis (CFA)

Based on the results of exploratory factor analysis in Study 1, the hypothesized measurement model included Emotional Relief self-efficacy as latent variable with seven items as indicators, Opportunistic self-efficacy as a latent variable with five items as indicators, and Social Facilitation self-efficacy as a latent variable with three items as indicators (see Table 1 for item listing). The three latent variables were hypothesized to "load" or serve as indicators of a higher-order Cannabis Refusal Self-Efficacy latent factor.

No variable was missing more than 5% data (range: 0.32 – 3.04%). Missing data was imputed using Full Information Maximum Likelihood (FIML) estimation, an optimal strategy for handling missing data (Graham, 2009). Six items were found to have significantly skewed distributions and were transformed using square-root or log transformation before testing the model (Kline, 2005). The hypothesized

measurement model was found to provide an overall "acceptable-to-poor" fit to the data (see Table 2, Model 1). Closer inspection of model output suggested the fit of the model could be improved by specifying a residual covariance between item 14 ("When I am feeling lonely") and item 15 ("When I feel sad"). That is, variance in these two items not explained by the latent Emotional Relief self-efficacy variable was significantly related. Given the relatively low standardized loading of item 14 (.87), and its skewed distribution, this item was removed from the model.

The revised model, presented in Figure 1, was found to provide an overall "acceptable-to-good" fit to the data (see Table 2, Model 2) and change in AIC scores suggested it provided a better fit than the originally specified model. All items loaded highly on their respective factors. As post-hoc model modifications were made, a correlation between the item loadings of the original and revised models was conducted, r (623) = .997, $p < .001$. This showed that the model parameters were only marginally changed. The revised measurement model was compared to a non-hypothesized, alternative model in which all items were specified to serve as indicators of a single Cannabis Refusal Self-Efficacy factor. This model was found to provide a poor fit to the data (see Table 2, Model 3). This result, combined with the revised model's lower AIC, suggested the revised three-factor model provided a better fit to the data.

Insert Table 2 here

Insert Figure 1 here

4.3 Gender Invariance

The influence of gender on parameter estimates and model fit was examined in a multi-group CFA. The revised three-factor multi-group model provided a "moderately good" fit to the data (see Table 2, Model 4). Invariance testing was conducted to evaluate whether there were any gender differences in the measurement model (e.g., smaller factor loadings in males). This was performed by constraining all parameters, factor variances, and error variances to equality across gender. The fit of the constrained (invariance) model was not significantly different to the unconstrained model ($\Delta\chi^2$ [31] = 40.15, $p > .05$), suggesting invariance across gender. That is, there were no significant differences in the factor structure of the CRSEQ between male and female cannabis users. Similarly, independent-groups *t* test revealed no mean differences on any of the subscales across gender ($\alpha = .05$). Normative data for the 14-item CRSEQ are presented in Table 3. This table also shows that the internal reliability of the CRSEQ subscales and total score were good-to-excellent.

Insert Table 3 here

4.4 Prediction of cannabis use and dependence

In order to explore the utility of the CRSEQ in predicting current cannabis use and dependence, a path model was tested in which each of the three CRSEQ subscales were hypothesized to contribute to prediction (see Figure 2). Cannabis use was operationalized as participants' reported average weekly cannabis use (in grams), and

cannabis dependence was operationalized as participants' SDS-C total score. Age and gender were also included in the model as covariates, and weekly cannabis used was also hypothesized to predict level of dependence. The hypothesized model showed a very good fit to the data, χ^2 (7) = 18.68, p = .01, χ^2/df = 2.67, CFI = .99, RMSEA = .05, AIC = 74.68. As predicted, all CRSEQ subscales contributed unique variance to the prediction of weekly cannabis use. In total, the CRSEQ accounted for 22% of the variance in weekly cannabis use, indicating a medium-to-large effect size. Consistent with the findings of Copeland et al. (2001), Emotional Relief Self-Efficacy was the only significant predictor of cannabis dependence (unstandarized coefficient = -0.08, p = .003). However, there was a non-significant trend for Opportunistic Self-Efficacy to predict cannabis dependence as well (unstandarized coefficient = -0.06, p = .06). In total, the model accounted for 20% variance in severity of cannabis dependence.

Insert Figure 2 here

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5. Discussion

These two studies provide strong support for the validity of a new measure of cannabis refusal self-efficacy. The findings of Study 1 revealed a three-factor structure for the Cannabis Refusal Self-Efficacy Questionnaire (CRSEQ): Emotional Relief self-efficacy, Opportunistic self-efficacy, and Social Facilitation self-efficacy. This factor structure is broadly consistent with that of the established Drinking Refusal Self-Efficacy Questionnaire (DRSEQ; Young et al., 1991) and the Heroin Refusal Self-Efficacy Questionnaire (Young, et al.,, 2006). Each of the three factors has good internal reliability.

Study 2 confirmed the three-factor structure of the CRSEQ in an independent sample of cannabis users in treatment. Results of Study 2 showed no gender differences in the structure or mean scores of the measure. This study also demonstrated the predictive value of the measure. Each of the three subscales uniquely predicted weekly cannabis use. Therefore, while the three subcomponents of cannabis refusal self-efficacy are related, they represent distinct constructs. This is supported by results of the EFA and CFA, which suggested a three-factor structure was optimal.

Results of the path analysis also confirm that Emotional Relief refusal self-efficacy plays a more prominent role in severity of cannabis dependence, after controlling for weekly consumption. While low Emotional Relief self-efficacy is also important in predicting early drinking behavior (eg Young, et al., 2007), for those with established alcohol problems, low Opportunistic drinking refusal self-efficacy is a more powerful predictor. This difference may reflect pharmacological and social learning differences as well as the environmental context of substance use given that the opportunities to use an illicit drug in many settings are restricted. Poor self-efficacy to resist cannabis during heightened negative affect is more strongly related to dependence than availability of the drug or its (perceived) ability to facilitate social interactions. These results are consistent with Copeland et al.'s (2001) finding that stress relief is an important motivator of cannabis use in dependent persons. The potential implications for treatment are that increasing an individual's confidence to manage negative affect may be a greater priority in those with more severe cannabis dependence. This could be achieved through behavioral strategies aimed at building a patient's repertoire of coping skills, or focusing treatment on comorbid mood or anxiety disorders (DeMarce, et al., 2005). While the cross-sectional associations

reported here cannot establish that a change in self-efficacy would result in a change in cannabis use or dependence, there is evidence suggesting that effective psychosocial treatments primarily operate through improving self-efficacy (Litt et al., 2008).

This research has some limitations. First, the sample of adult, court-referred cannabis users may not be generalizable to all clinical samples seeking treatment. Second, cannabis use was measured over the past week and monthly consumption or biological drug screening data would have provided a more robust assessment. Third, cross-sectional data limits the extent one can draw casual inferences. Further prospective studies are required to determine the influence of cannabis refusal self-efficacy on consumption and dependence severity. There are also several key advantages to this work relating to a large clinical sample and a robust psychometric evaluation involving CFA and EFA.

The CRSEQ is a clinically useful, validated assessment to assist with treatment planning and pre-and-post treatment measurement. Prospective studies are required to assess the CRSEQ's utility as a prognostic tool for cannabis treatment outcome.

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Figure Legends

Figure 1. Confirmatory Factor Analysis (CFA) of the Cannabis Refusal Self-Efficacy Questionnaire (CRSEQ; $N = 625$).

Note. Ellipses represent latent constructs or factors, and rectangles indicate measured variables (items). Circles (e) reflect residuals or (d) disturbances; numbers above or near endogenous variables represent the amount of variance explained (R^2). Standardized parameter estimates are presented and all are statistically significant at $p < .05$.

Figure 2. Path model of the Cannabis Refusal Self-Efficacy Questionnaire (CRSEQ) predicting current cannabis use and dependence severity ($N = 625$).

Note. Ellipses represent latent constructs or factors, and rectangles indicate measured variables (items). Circles (e) reflect residuals or (d) disturbances; numbers above or near endogenous variables represent the amount of variance explained (R^2). Standardized parameter estimates are presented. SDS-C = Severity of Dependence Scale-Cannabis.

*$p < .05$; **$p < .01$; ***$p < .001$; $^{\dagger}p = .06$.

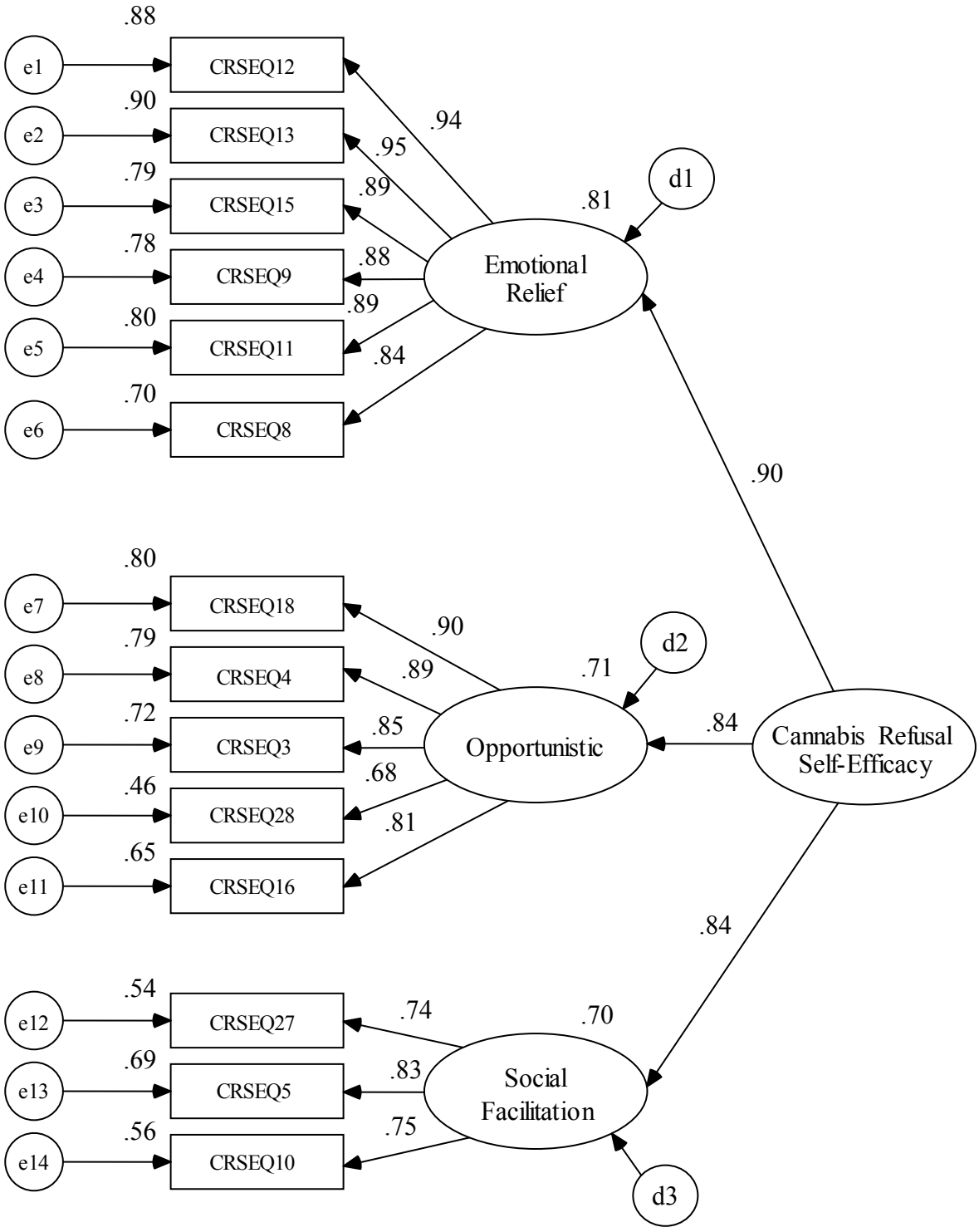
.88
e1
CRSEQ12
.90
e2
CRSEQ13
.79
e3
CRSEQ15
.78
e4
CRSEQ9
.80
e5
CRSEQ11
.70
e6
CRSEQ8
.94
.95
.89
.88
.89
.84
.81
d1
Emotional Relief
.90
.80
e7
CRSEQ18
.79
e8
CRSEQ4
.72
e9
CRSEQ3
.46
e10
CRSEQ28
.65
e11
CRSEQ16
.90
.89
.85
.68
.81
.71
d2
Opportunistic
.84
Cannabis Refusal Self-Efficacy
.84
.54
e12
CRSEQ27
.69
e13
CRSEQ5
.56
e14
CRSEQ10
.74
.83
.75
.70
Social Facilitation
d3

Figure 1

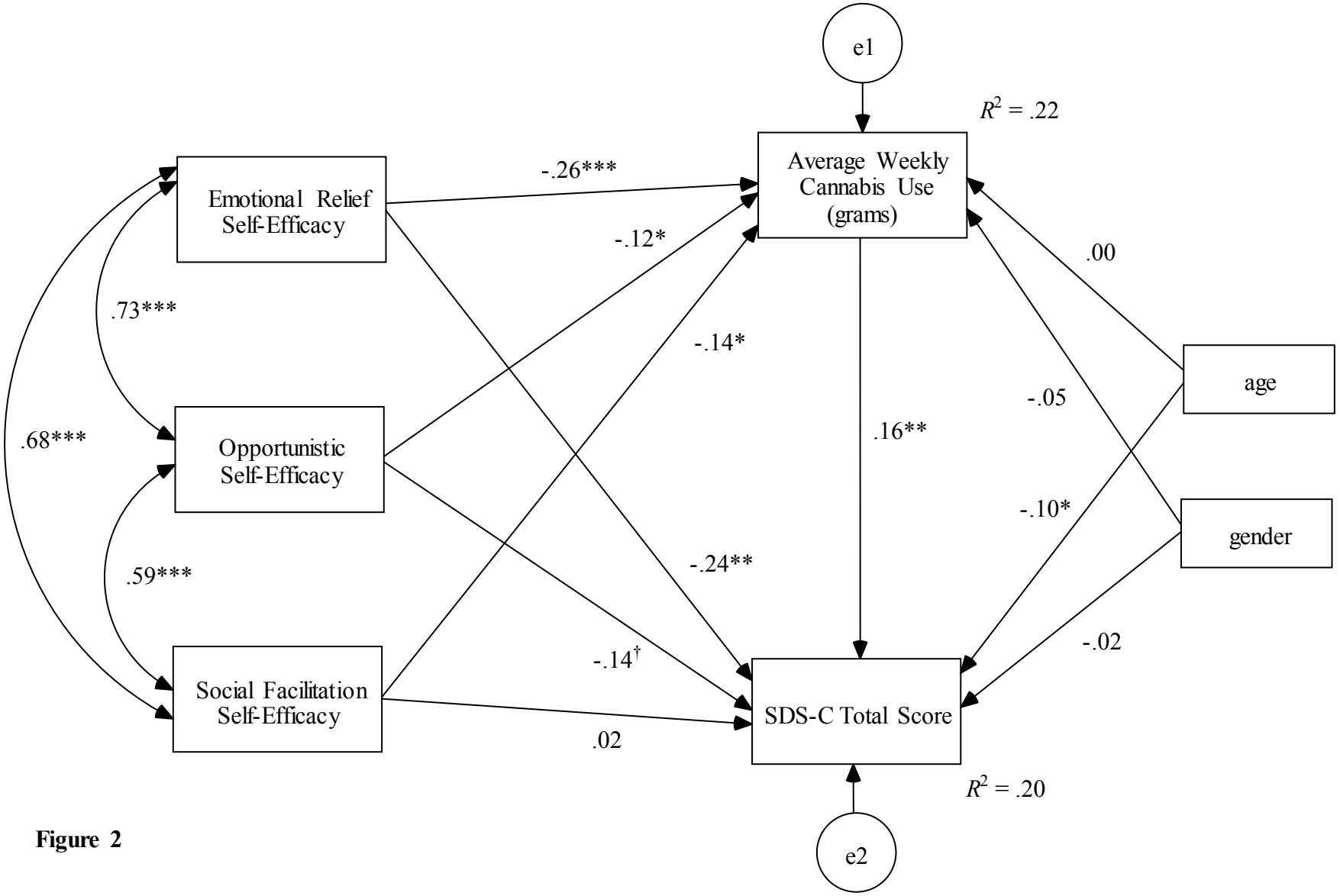
e1
R^2 = .22
Average Weekly Cannabis Use (grams)
Emotional Relief Self-Efficacy
Opportunistic Self-Efficacy
Social Facilitation Self-Efficacy
SDS-C Total Score
R^2 = .20
e2
age
gender
-.26***
-.12*
-.14*
-.24**
-.14†
.02
.16**
.00
-.05
-.10*
-.02
.73***
.68***
.59***

Figure 2

Table 1

Psychopathology

	Mean	*SD*
Study 1: Exploratory Factor Analysis ($N = 621$)		
GHQ-28 Somatic Symptoms	0.95	1.52
GHQ-28 Anxiety	1.09	1.80
GHQ-28 Social Dysfunction	0.80	1.54
GHQ-28 Depression	1.62	3.72
Brief Psychiatric Rating Scale Total	24.21	6.79
Study 2: Confirmatory Factor Analysis ($N = 625$)		
GHQ-28 Somatic Symptoms	0.92	1.51
GHQ-28 Anxiety	1.07	1.69
GHQ-28 Social Dysfunction	0.72	1.38
GHQ-28 Depression	1.66	3.64
Brief Psychiatric Rating Scale Total	1.91	3.75

Note. GHQ-28 = General Health Questionnaire (28-item version).

Table 2

Item loadings from principal components analysis (PCA) of the Cannabis Refusal Self-Efficacy Questionnaire (N = 621)

Item	Emotional Relief	Opportunistic	Social Facilitation
12. When I feel upset	1.00		
13. When I feel down	.97		
15. When I feel sad	.96		
9. When I am ashamed	.89		
11. When I am worried	.87		
14. When I am feeling lonely	.82		
8. When I feel restless	.77		
18. When my friends are smoking		.92	
4. When someone offers me a smoke		.92	
3. When I am at a party		.83	
28. When I have been drinking		.80	
16. When my spouse or partner is smoking		.73	
27. When I am going to meet or am meeting people for the first time			.87
5. When I want to feel more confident			.83
10. When I want to feel more accepted by friends			.82
% variance	65.14	8.46	6.5
Cronbach's α	.97	.91	.84
Mean	28.52	17.89	14.86
Standard deviation (*SD*)	11.25	7.51	3.71

Note. Item loadings lower than .30 not shown for clarity of exposition.

Table 3

Fit Indices for Confirmatory Factor Analysis of the Cannabis Refusal Self-Efficacy Questionnaire (CRSEQ; N = 625)

Model	χ^2 (*df*)	χ^2/df	CFI	RMSEA	AIC	ΔAIC
1. Hypothesised measurement model	561.45* (87)	6.45	.95	.09	657.45	
2. Revised measurement model	365.96* (74)	4.95	.96	.08	455.96	
3. Non-hypothesized, one-factor alternative model	1481.14* (77)	19.24	.83	.17	1565.14	
4. Multi-group model comparing gender	503.61* (148)	3.40	.96	.06	683.61	
Difference between Model 2 & Model 1						201.49
Difference between Model 3 & Model 2						1109.18

Note. CFI = Comparative Fit Index; RMSEA = Root Mean-Square Error of Approximation; AIC = Akaike Information Criterion

* $p < .05$.

Table 4

Normative data for the Cannabis Refusal Self-Efficacy Questionnaire (CRSEQ; N = 625)

	α	Mean	*SD*
CRSEQ: Emotional Relief (6 items)	.96	23.82	9.61
CRSEQ: Opportunistic (5 items)	.91	17.87	7.63
CRSEQ: Social Facilitation (3 items)	.79	14.94	3.50
CRSEQ Total Score (14 items)	.95	56.88	18.68