The association between intention to quit school and youth depression

Effects of a group CBT-program

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Abstract

This article-based master's thesis is organized in two parts, beginning with an extended summary ("kappen"), describing the theoretical framework and methodological considerations. Following is the draft for the article manuscript "The association between intention to quit school and youth depression: Effects of a group CBT program", written for submission to The Scandinavian Journal of Educational Research (SJER). The article assesses the relation between depression and intention to quit school, using longitudinal data from the intervention Adolescent Coping with Depression Course (ACDC) from 2016. The ACDC-data were collected via self-report questionnaires and the variables depression and intention to quit where measured with respectively Center for Epidemiologic Studies Depression Scale for Adolescents (CES-D) and Studsrød and Bru's four-item scale on intention to quit school (Radloff, 1977; Studsrød & Bru, 2009). The data were collected from 228 youth (88 % girls, mean age of 16.70 years, *SD*= 1.14), 113 of whom allocated to the 10-week ACDC intervention and with 95 allocated to the usual care (UC) control condition. This Master's Thesis explores whether the ACDC-intervention will reduce youths' intention to quit school over time through initially reducing their depressive symptoms.

The data were analysed using structural equation modelling in the statistical software Mplus. The findings of this study indicate that there was a moderate and positive prediction from depression at posttest to intention to quit school at 6-month follow up after the intervention ended (β=.291, p<.001), and that the ACDC had a moderate indirect effect on intention to quit school through reducing depressive symptoms (indirect β= -.117, p= .018). The results further suggest that implementing the ACDC-intervention could be one way to reduce intention to quit school in upper secondary school, but further research on the ACDC-material should investigate whether the ACDC prevents actual drop out.

Preface

First, many thanks to my workplace that gave me the opportunity to move to Oslo and study for two years. It has been a great experience in so many ways. Big thanks also to my classmates, what a great bunch of people we are!

Thank you, Julie and Linn, for your help and input. Dear Kai, thank you for your support, love, and patience.

Serap Keles, thank you very much for your support, guidance and help through this journey. Your skills, patience, calmness, and positivity have been vital for my learning process.

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Article manuscript

Number of words in extended summary: 5876

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1 Introduction

1.1 The two parts and the relationship between them

This article-based master's thesis is organized in two parts, as per the requirements of the University of Oslo. First, the extended summary, "kappen", includes a wider scope of the theoretical background of the research problem and an elaboration of methodological issues and ethical considerations which were not included in the article draft. The extended summary is meant to contextualize the choices made in the research for the article manuscript. The elaboration of the theoretical framework for this study includes a presentation of Becks Cognitive Theory of Depression and Theory of Planned Behaviour. After this, ethical and methodological concerns are discussed. Details pertaining the journal submission requirements can also be found in the extended summary (see Appendix). Second follows the article draft, that assesses the relation between depression and intention to quit school, by exploring data from the intervention Adolescent Coping with Depression Course (ACDC) from 2016, and whether the ACDC-intervention reduces youths' intention to quit school through reducing their depressive symptoms. The dataset assessed includes self-reported measures of 228 adolescents scores on items measuring depression and intention to quit school. After introducing the present study, methods and measures are presented before a presentation of technical aspects of the analyses and the structural model tested. Followed by this, this thesis also includes a presentation of the results as well as a discussion of possible implications for practical and theoretical work and research.

1.1.1 Scandinavian Journal of Educational Research

The article draft was written in line with the criteria of the Scandinavian Journal of Educational Research (SJER) in mind, which is a peer-reviewed journal, published by Routledge since 1971. SJER was a natural choice given its wide focus on education amongst Scandinavian researchers, and because SJER has previously published different research on the ACDC-material (Garvik, Idsoe & Bru, 2016; Tvedt, Bru & Idsøe, 2019).

1.1.2 Choice of data

For my master thesis, I used data collected for The Adolescent Coping with Depression Course (ACDC), a randomized control trial (RCT) conducted in 2016 and 2017 (Idsoe & Keles, 2016). The ACDC project captured my interest after a presentation of the data in class, and I got in contact with The Norwegian Center for Child Behavioural Development (NUBU) and signed a data processing agreement to get access to the data-material. This study aims to investigate potential changes in depressive symptoms and intention to quit school after ACDC, which is an early group cognitive behavioural therapy (CBT)-intervention. The primary target group for the intervention was 16-19 years old adolescents with subclinical or mild-to-moderate depression. Data were collected from 228 youth (88 % girls, mean age of 16.70 years, *SD*= 1.14), 113 of whom allocated to the 10-week ACDC intervention and with 95 allocated to the usual care (UC) control condition. The research design was a two-arm parallel cluster randomized controlled trial (RCT) with a pre-post-follow-up design. The data were collected via questionnaires at pretest, posttest and at 6-month follow-up. The ACDC data fit well for a quantitative analysis at a graduate level. Because the data were already collected, organized, and coded, I had more time to familiarize myself with the dataset extensively.

1.1.3 The importance of research into school absence, intentions to quit school, and depression for special education practice

As a student of special needs and inclusive education with social/emotional difficulties as a chosen specialization and as a counsellor in the Norwegian Educational Psychological Service (EPS), I wanted to write a thesis that would help elucidate an important challenge for a larger group of pupils and students I meet in my day-to-day work. Social and emotional difficulties and mental illnesses such as depression are common and serious problems among youth (Haugen, Haavet, Sirpal & Christensen, 2016, p. 65) and poor mental health and school dropout are closely linked (Haynes, 2002, p. 111; Stoep, Weiss, Kuo, Cheney & Cohen, 2003, p. 119). When a student is absent from school over time, it is essential for their return that the reason for their absence is understood, also in order to prevent school dropout: Understanding reasons for the individual's absenteeism is crucial in light of the difference in treatments or measures (Honjo et al., 2001, p. 629).

Earlier studies on the ACDC-data showed a decrease in depressive symptoms after the ACDC-intervention (Idsoe, Keles, Olseth & Ogden, 2019). By examining information and statistics from the mentioned RCT study, this study aims to investigate whether a decline in depressive symptoms through a CBT-based group intervention can predict a lower intention to quit school, especially considering how depression can be an (invisible) affliction for many adolescents struggling with school absence and intentions to quit school. The analysis of the data material from the ACDC showed a significant indirect effect of the intervention, through a decline in depression, on intention to quit school. The ACDC-intervention can therefore be helpful for practitioners in preventing dropout from upper secondary schools in Norway.

1.2 The research problem

In Norway, school is obligatory and free for the first ten years, starting with first grade at 5-6 years old and graduation in 10th grade at 15-16 years old. After this, youth can proceed to upper secondary school, which is free, but not mandatory. Completion of upper secondary school, on the other hand, is mandatory for qualifying for further studies, and fundamental to qualifying for a job and developing further important life skills (Garvik et al., 2016, p. 220). Attending school and receiving support from the educational system is important for children's academic, social and emotional development. Our children and adolescents are our most important and greatest resource, and by law Norwegian schools obliged to organize and facilitate for every child's needs and development in the best way possible (Havik, 2018, p. 16; Opplæringslova, 1998). If a child shows difficulties in learning or in other areas that may affect their development, Norwegian schools are by law obliged to implement the right measures as early as possible (Meld.St. 6 (2019-2020)). For many years, upper secondary schools in Norway and their support systems (like EPS) have reported high numbers of attendance problems and school refusal behaviour, and the absence rate is high (Havik, 2018, p. 13; Utdanningsforbundet, u. å.). The group of students who do not attend school are a heterogenous group, and the reasons for school absence are often very complex (Gonzalvez et al., 2018, p. 1).

World Health Organization (WHO) ranks depression as one of the most disabling clinical problems among the age group between 15 and 44 years old and has its peak for first onset between the ages of 15 and 21 years old (Hankin et al., 1998, p. 128). Depression, therefore, is especially important to be aware of in upper secondary school aged youth. If left untreated, depression can elevate the risk of dropping out from school and have pervasive effects on

adjustment in social, academic and other areas of life (Hammen, 2005, p. 305). If an adolescent's absence from school runs undiscovered and untreated over time, the complexity of the behaviour problems rises. If discovered, a great deal of professionals have to get involved (e.g., teachers, principals, school nurses, psychologists, and the child welfare system) but still, research show that these measures do not necessarily reduce the amount of absence (Statistisk sentralbyrå, 2020).

Recent national statistics on completion of upper secondary school show that 64 % of students graduate with standard study progression and 78.1 % graduate within 5 years (Utdanningsdirektoratet, 2020), despite the long-term policy priority on drop-out amongst students in Norway (Frostad, Pijl & Mjaavatn, 2014, p. 110). Non-completion of upper secondary school has, like depression, negative effects on future employment and education, health, and later welfare dependency (Frostad et al., 2014, p. 110; Tvedt et al., 2019, p. 1). Hence, it is important to reach youth before the actual dropout behaviour occurs. Research in this field shows that intentions to quit school can depend on various reasons, such as individual background, previous experience with school or socio-economic background (Tvedt et al., 2019, p. 1). Some studies have also shown that there is a relation between depression and intentions to quit school, but more research is needed to examine to which extent (Garvik et al., 2016; Honjo et al., 2001). Through researching the relations between depression and intention to quit school, we may understand the process of drop out and manage to detect the students before they quit school with the implementation of effective preventative measures.

By use of data from the ACDC intervention, two research questions were explored:

1) Does depression measured at posttest after the end of the intervention positively predict intentions to quit school at 6-months follow-up? That is, will youth with higher depressive symptoms at posttest have higher intention to quit school at 6-month follow-up?

2) Will the ACDC-intervention reduce youth's intention to quit school measured at 6-month follow-up through reducing their depressive symptoms in the intervention period?

1.3 Mediation analysis: The proposed model

Mediation analyses are used to understand underlying processes of a known relationship between variables under interest by investigating how one variable influence another through a third, mediating variable.

The data were examined using a mediation analysis which – instead of investigating the direct relation between the ACDC intervention and intention to quit school – allows us to analyse how a mediating variable (depression) influenced the dependent variable (intention to quit) at a subsequent time point.

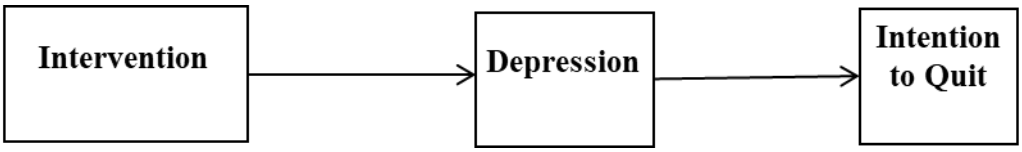

Figure 1. Proposed path diagram

Figure 1 illustrates how I suggest that the intervention has an indirect effect on intention to quit school through reducing depressive symptoms. A working hypothesis is therefore that the degree of intention to quit school is explained by A) if you received the intervention or not and B) your level of depressive symptoms after the exposure to the intervention. The model above is made simpler, and do not reflect the repeated measures of depression throughout the intervention period. However, this is reflected in the structural equation model (SEM) in chapter 1.3.1.

1.3.1 Structural Equation Modelling

Structural equation modelling (SEM) is a group of techniques that enable researchers to construct models of considered relations and to test those models against data (Cohen, Manion & Morrison, 2018, p. 833). Within SEM, path-analysis is one kind of modelling. Path analysis attempts to describe a particular path that explains the relationship among the variables well and precisely, by estimating and testing the magnitude and significance of relationships between the chosen variables (Howitt & Cramer, 1997, p. 394). SEM therefore enables us to determine how well a multivariate set of data fits our particular model. Further information regarding the proposed model is elaborated in the article-draft.

1.4 Statistical analyses

The primary analyses were based on the principle of intention to treat (ITT). ITT-analysis is a method for analysing results from a randomized study, where all participants are included in the analysis and analysed according to the group they were originally assigned, regardless of what treatment they received (McCoy, 2017, p. 1076). With ITT-analysis, the principle of randomization is kept and the groups stay comparable at a group level (Romundstad, 2021). ITT is in accordance with the Consolidated Standards of Reporting Trials (CONSORT) (CONSORT, 2021). The statistical software SPSS 21 was used for descriptive analyses, reliability analysis and correlations, while Mplus 7.3 was used for path analysis (see Figure 2 for an illustration of the conceptual model tested).

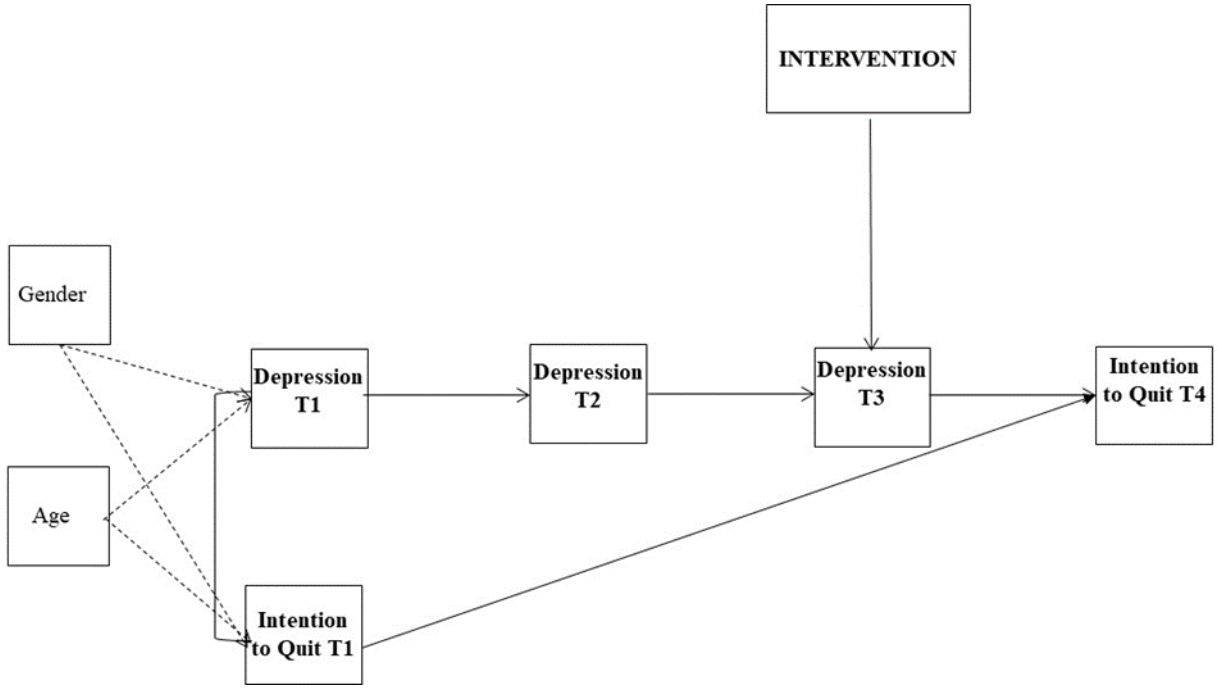

Figure 2. Conceptual autoregressive model

Note. The paths from the control variables to other variables in the model were not displayed in the figure for ease of presentation, but included in the initial model testing.

Figure 2 illustrates how the intervention is suggested to have an indirect effect on intention to quit school through reducing depressive symptoms. More specifically, the path analysis was conducted by analysing the repeated data by examining autoregressive models of observed variables at pretest, posttest and a 6-month follow-up stages (because of the sample size restrictions, we were not able to run latent models). The robust maximum likelihood (MLR)

estimator was preferred to accommodate non-normal item distributions and missing data. To assess how sensitive the effects were to missing data, the models were run with bootstrapping, with 1000 samples to describe the 95 % confidence interval (CI) for the mediating effect. Since bootstrapping estimation can be employed neither with MLR or with auxiliary variables in Mplus, ML estimation without auxiliary variables in bootstrapping were used. We employed the full information maximum likelihood (FIML) procedure which uses all available datapoints and is consistent with the ITT-approach. We consulted additional fit indices in accordance with the recommendations of West et al, that suggest that CFI > .95, NNFI > .90, and RMSEA <.05 represent a well-fitting model, while CFI >.90, NNFI >.85 and RMSEA <.08 represent an adequately fitting model (West, Taylor & Wu, 2012, p. 215).

2 Depression

2.1 What is depression and how is mental health linked to dropout?

Depression is a common mental health issue and is the leading cause of disability worldwide (World Health Organization, 2020) with increased rates in adolescent years (Costello, Copeland & Angold, 2011, p. 1019). The same trend is also observed in Norway: Depression is one of the most common forms of mental health problems amongst children and young people, and the number of adolescents being disabled by depression is increasing. In general, up to 15-20 % of Norwegian adolescents report clinical range mental health problems including depression, but only 16-17 % of these adolescents consult mental health services to get help with their mental health problems (Helland & Mathiesen, 2009, p. 35; Sund, Larsson & Wichstrom, 2011, p. 2).

Depression is a severe mental illness that can be difficult to define and to measure. The illness can lead to different intensities of recurring and disabling behaviour such as lower ability to concentrate, losing interest and pleasure in activities they previously enjoyed, feeling low levels of initiative and self-esteem, and social withdrawal (Derdikman-Eiron, Hjemdal, Lydersen, Bratberg & Indredavik, 2013, p. 98). The various difficulties that follow depression can consequently lead to less cognitive capacity for academic achievements and initiative in learning (Derdikman-Eiron et al., 2011, p. 265). Other features of depression which are related to academic achievements are fatigue or loss of energy. The loss of energy can reduce the ability to sustain work over longer periods of time, which is crucial for pupils and students so that they can reach their academic expectations or goals. Over time, experiences of not answering to their teachers, their parents, or their own expectations of themselves can lead to a lack of belief in their ability to influence events in their own life (Garvik et al., 2016, p. 220).

When experiencing difficult situations, relations or activities, an adolescent with depressive tendencies can interpret these difficulties as a product of their own abilities (internal reason) which they believe will never change (a stable situation), and that these difficulties negatively influence other social interactions (global effects), which eventually lead to developing depressive symptoms and/or depression (Liu, Kleiman, Nestor & Cheek, 2015, p. 346). Hence, if mental illnesses, like depression, are allowed to develop without treatment, it can

have considerable effects on social functioning and relations, academic results and other areas of life over time (Garvik, Idsoe & Bru, 2013a, p. 592). Several studies have previously investigated the relation between mental health and school performance, and these studies established clear links between depression and academic achievements, social problems, poor social wellbeing, and increased rates of dropping out of school (Frojd et al., 2008; Masi et al., 2001; Rose et al., 2011). Out of almost 30 % of students who do not complete their education in upper secondary school in Norway, about 20 % report mental health problems as their reason for quitting school (Markussen & Seland, 2012, p. 42). Hence, targeting depression and implementing effective preventative programs for adolescent with depression is suggested to prevent school dropout.

2.2 Beck's Cognitive Theory

American psychiatrist Aaron T. Beck is considered the father of cognitive theory and cognitive behavioral theory, which is the most widely acknowledged theoretical model that explains anxiety and depression. According to Beck's cognitive theory emotional disturbances, such as depression, are caused by cognitive structural errors. The theoretical framework for cognitive theory suggests three levels of cognition which explain the persistence of anxiety and depression: *Schemas, biased information processing* and *negative automatic thoughts* (Clark & Beck, 2010, p. 419).

2.2.1 Schemas

The first and fundamental factor in Becks theoretical framework is schemas. A schema is a cognitive structure used for screening, categorizing, and evaluating obtained stimuli. Schemas store, process and interpret information (Wright & Beck, 1983, p. 1119). As we gather new experiences and impulses as we grow older, new schemas are made and schemas are modified and developed. Adults appear to have a combination of simple and mature schemas (Wright & Beck, 1983, p. 1119). Beck theorizes that in depression, primitive or simple schemas from negative past life experiences can be dominant in the individual's cognitive thought-processes (Wright & Beck, 1983, p. 1119). These maladaptive schemas are often absolute and judgemental, and lead individuals to draw both negative and false conclusions about their surroundings, their peers or themselves. At the same time, the primitive schemas support the negative process, filtering out information which would support an alternative, positive, understanding or conclusion (Wright & Beck, 1983, p. 1119).

Negative experiences like stress or burdens experienced in the childhood-years can contribute to the development of maladaptive cognitive schemas. If these schemas are activated when the child is faced with impulses, situations or experiences, the maladaptive schemas can generate thoughts and beliefs that may lead to emotional and behavioral symptoms of depression, such as sadness, hopelessness, motivational problems and regressive behaviour (Weeland, Nijhof, Otten, Vermaes & Buitelaar, 2017, p. 40).

2.2.2 Biased information processing

The cognitive processes that may cause the maladaptive development of schemas are called biased information processing or errors in information processing in cognitive theory (Clark & Beck, 2010, p. 419; Wright & Beck, 1983, p. 1120). This negative bias interrupts information processing of new, and potentially positive, information and turns it negative (Clark & Beck, 2010, p. 419) often without the depressed individual's knowledge or awareness of these processes. Among depressed individuals, the most common automatic processes are *selective abstraction*, *arbitrary inference*, *absolustic thinking* and *personalization* (Wright & Beck, 1983, p. 1120). First, selective abstraction refers to the process by which an individual draws conclusion based on a small detail, without taking into account the context of the wider "picture". Secondly, Wright and Beck (1983) theorise that individuals draw conclusions despite there being a lack of evidence or even contradictory evidence; this process is called arbitrary inference. Third, absolutist thinking is when an individual seems to categorise their experiences and expectations of upcoming events into rigid dichotomies, e.g., "no one likes me". Lastly, personalization is when depressed patients blame themselves for external events even when there is no proof for this connection. An example of this would be: "There are few people in the library today because people knew I would be here". (Wright & Beck, 1983, p. 1120).

2.2.3 Negative automatic thoughts

Negative automatic thoughts are developed by the activated negative schemas and biased information processing (REF). Automatic thoughts are characterized by illogical reasoning. The negative and underlying schemas become templates for interpretation of impulses, experiences, and events. Depressed individuals often and characteristically think negatively of themselves, their surroundings and also their future prospects, and distorted thinking in these areas has been termed the negative cognitive triad by Beck (Wright & Beck, 1983, p.

1121). The negative thoughts consequently reinforce a sad mood and/or other depressive thoughts and behaviours, such as loss of concentration and motivation (Wright & Beck, 1983, p. 1121). Cognitive distortions are related to depressive symptoms in children and are predictive of further development of symptoms (Weeland et al., 2017, p. 40). Early detection of depressive tendencies and symptoms is therefore crucial, in order to implement the right measures to avoid severe depression in adolescence.

2.3 Cognitive Behavioral Therapy

Even though depressed individuals often are able question their own rationale, they rarely do so or find it difficult to change their way of thinking. With cognitive therapy, depressive mood and behaviour are improved by helping the individuals to access their own thought-processes and learn how to them modify them (Wright & Beck, 1983, p. 1120). Cognitive therapy is often organized as short-term therapy, and together with the therapist/course-leader the individuals work as a team with focus on increasing rationality thinking and finding strategies to improve maladaptive behaviours (Wright & Beck, 1983, p. 1121). The ACDC-intervention used perspectives from CBT to help the adolescents to both improve their way of dealing with negative thoughts and to modify dysfunctional thoughts (Idsoe & Keles, 2016, p. 3).

2.3.1 The ACDC

The ACDC intervention is a group course for adolescents with mild to moderate clinical symptoms of depression and contains different approaches and methods: The theoretical framework for the ACDC is taken primarily from rational emotive behaviour therapy and cognitive behaviour therapy, but also from mega-cognitive theory, positive psychology and modern neurobiological perspectives (Keles & Idsoe, 2020, p. 410). Further information about the intervention is elaborated in the article-draft.

3 Intention to quit school

3.1 The link between intention to quit school and school refusal behaviour

Intention to quit school as a behaviour can be expressed and understood in different ways. In previous research and literature focusing on school attendance problems or drop out, school refusal behaviour is a term used to describe a heterogeneous set of behaviours that can be expressed with both internal and external symptoms, (like anxiety and depression) and can lead to intention to quit school. The adolescent can experience difficulty with coming to, or staying in, classes for an entire day. School refusal behaviour is common in Norway and other countries and affects 5-28 % of pupils (Kearney, 2002, p. 235) There are many different reasons for attendance-problems among adolescents, such as various degrees of anxiety, depression and somatic nuisance, or other challenges like tantrums, defiance, running away from school or misbehaviour/aggression in school.

Kearney and Silverman (1990) have developed a classification model of school refusal behaviour. The model proposes four functional conditions that describe the different reasons for school refusal behaviour: The first two refer to when low school attendance is a way to avoid negative feelings or situations, the latter two refer to when low school attendance results in positive reinforcements or something positive outside school.

1) avoidance of school-based stimuli that provoke negative affectivity (like distress, anxiety or depression)	2) escape from aversive social and/or evaluative situations (e.g. tests, peer interactions).
3) pursuit of attention from significant others or peers	4) pursuit of tangible reinforces outside of school

Figure 3. Kearney and Silverman's Classification Model, (C. Kearney, 2001, p. 17)

With the study in the present thesis, the aim is to investigate if a reduction of depression could have an indirect effect on intention to quit school at subsequent time point, with the hypothesis that depression could be related to aversion to be in school. The adolescent's

degree of intention to quit school is believed to, in some degree, predict actual school dropout (Garvik, Idsoe & Bru, 2015, p. 221).

3.2 Theory of planned behaviour

Theory of planned behaviour (TPB) is a model that explains human behaviour by three conceptually independent determinants of intention (Ajzen, 2011, p. 1113). The model is developed by the social psychologists Icek Ajzen and Martin Fishbein and is an extension of the Theory of Reasoned Action (TRA) (Ajzen, 1991, p. 181). The original model (TRA) did not take into account behaviours where people have incomplete volitational control. In other words; even though a person shows tremendous effort in achieving a specific behaviour, factors beyond their will and effort can influence the performance of their behaviour, like skills, money, cooperation of others and so on (Ajzen, 1991, p. 182). This perspective is taken account for in the newer model, TPB.

The first predictor of intention, originally described in TRA, is *attitude* towards the behaviour in question. With attitude, Ajzen refers to in which degree the person has a positive or negative evaluation of a specific behaviour (Beck & Ajzen, 1991, p. 286) and how the attitude towards a behaviour contributes to intention (and therefore behaviour). The second determinant of intention is a social factor, called *subjective norm* (Beck & Ajzen, 1991, p. 286). Subjective norm refers to in which degree an individual believes their peers or significant others will approve, disapprove or like/dislike the behaviour in question; they are our own beliefs of how others will perceive or respond to our behaviour. This can lead to a perceived social pressure to perform or not perform a specific behaviour. If we believe our peers to respond positively to our behaviour, this perceived social pressure will, according to Ajzen, result in a higher motivation (*intention*) to perform the behaviour (Ajzen, 2011, p. 1113).Third is the determinant called *perceived behavioural control*. This determinant explains the importance of the individuals awareness or reflection on how impulses or factors beyond their motivation or control can influence the performance of a behaviour (Beck & Ajzen, 1991, p. 286). In other words, perceived behavioral control refers to how the individual believe they will succeed in performing a specific behaviour, despite possible obstacles. Perceived behavioural control also takes into account an individual's past experiences with specific behaviours and how this affects the consideration of the behaviour (Ajzen, 1991, p. 183). With this determinant of behaviour Ajzen and Fishbein (1985) mean

that perceived behavioural control is more important than actual behavioral control, but they do not consider actual behavioral control to be unimportant: Actual control and the resources and opportunities available to a person can to some extent dictate the likelihood of behavioural achievement (Ajzen, 1991, p. 183)

These three determinants are what construct the term *intention* in the TBP-model. Intention is, according to Ajzen and Fishbein (1985) the factor that best describes how hard people are willing to try, or, in other words, how much effort they are willing to exert to perform a specific behaviour. As a rule, the more favourable attitude and subjective norm a person have are connected to a specific behaviour, and the greater the perceived behavioural control, the stronger an individual's intention to perform the behaviour is. That is, in other words, performance of a behaviour is a joint function of attitudes, subjective norms and perceived behavioral control and the model can therefore be used to directly predict behavioral achievement (Beck & Ajzen, 1991, p. 185).

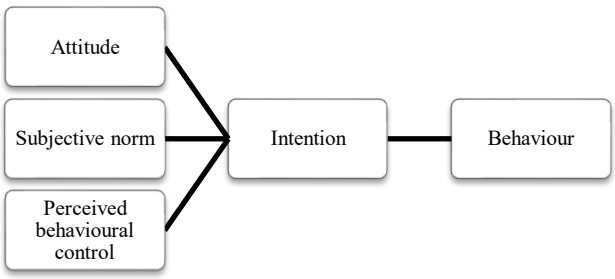

Figure 4. Theory of Planned Behaviour (Ajzen, 1991, p. 182)

The TPB-model describes the cognitive processes behind intention and actual behavioural expression. Since the TPB-model argues that intention predicts behaviour, intention to quit school is considered to be a good predictor of actual dropout. The further analyses of the association between the ACDC-intervention, depression, and intention to quit school could provide valuable information for future research and measures regarding school absence and drop out in upper secondary school.

4 Study limitations and strengths

There are several limitations with this study, which should be taken into account, and the results should be interpreted with caution. The present study in this thesis has limitations due to self-reported measures; it relies on people reporting their own depressive symptoms and behaviour, and therefore there is a chance for both under- and over-reporting of their perceived symptoms of depression and intention, depending on what the subjects consider as a desirable behaviour.

Collection of longitudinal data lends itself to the likelihood that some participants will drop out of the study before all the data is collected (Barry, 2005, p. 267). These dropouts can distort the accuracy of the results. To take precautions to diminish attrition effects, ITT-principles were implemented. However, this also depends on what missing data mechanisms that are plausible for the data. As will be described later, data were assumed to be missing at random (MAR), allowing for the application of a full information procedure when analysing data in accordance with the ITT-principles.

The study also has limited power due to a small sample, with girls overrepresented. Possible cluster effects must be accounted for when calculating appropriate sample sizes for a single-centre cluster-randomized effectiveness trials with active control, because the groups rather than individuals are randomized (Hayes & Bennett, 1999, p. 320). Cluster effects of the main outcome (intention to quit school) was estimated by using data from earlier studies on the ACDC-material (Garvik, Idsoe & Bru, 2013b, p. 201; Idsoe & Keles, 2016, p. 7) and calculated intraclass correlations (ICC's) with the course groups as cluster.

In studies with depression as one variable under study, it can be difficult to find participants because depression itself can lead to lack of motivation for seeking help. The specific challenge of recruiting male participants can also indicate that boys specifically can have problems admitting to needing help with their mental health problems (Idsoe et al., 2019, p. 13) or that the course leaders used recruitment-strategies that appealed more to girls. Further research on effects of the ACDC on boys are necessary. The strengths of this study were mainly discussed in terms of the reliability and validity issues.

4.1 Reliability and validity

4.1.1 Internal validity

Randomized Controlled Trials (RCT) are considered as the "golden standard" in quantitative research and RCT's is one of the most reliable methods of determining the effects of treatment, i.e., establish causation (Rothwell, 2005, p. 82). In quantitative research, internal validity refers to whether one can make causal statements about the relationship between variables, and when evaluating RCT's, to which degree the effects can be attributed to the treatment, and not because of confounding (Cohen et al., 2018, p. 247; Elmes, Kantowitz & Roediger, 2012, p. 183). Randomization of participants is a powerful tool to ensure validity in parallel-designed studies. Before the intervention started, the participants were blind to treatment. RCT decreases selection bias because of proper randomization and minimizing the chance of confounding due to unequal distribution in a chosen population. In addition, baseline scores were controlled in the analyses. By following the principles for ITT in the analyses, the treatment groups remained similar in baseline characteristics, and therefore minimized the possibility for confounding.

In intervention research, a careful and thorough approach to dropout and missing data is very important. To reduce potential bias due to missing data, the FIML approach was implemented to the analytical software Mplus. These procedures are recommended in the leading modern methodological literature as well as by the Panel on Handling Missing Data in Clinical Trials and how missing data were handled in the original RCT has been described in detail in other articles (Idsoe et al., 2019). Pretest variables that were associated with missingness were entered to the model as auxiliary variables. The robust ML (maximum likelihood) estimator was preferred to accommodate non-normal item distributions and missing data, to be able to employ the full information maximum likelihood (FIML) procedure, which uses all available datapoints and which is consistent with the ITT-approach, missingness were considered completely at random – MAR (Idsoe et al., 2019, p. 14). By assuming that missingness is random because attrition is associated with baseline values on several variables, and by entering those as either predictors or auxiliary variables, we will come closer to randomness. Additional fit indices in accordance with the recommendations of West et al, were consulted in model testing (which suggests that CFI > .95, NNFI > .90, and RMSEA <.05 represent a well-fitting model, while CFI >.90, NNFI >.85 and RMSEA <.08 represent an adequately fitting model) (West et al., 2012, p. 215).

When measuring variables that are not directly observable, such as depression or intention (to quit school), researchers must often simplify complex terms into simpler theoretical concepts so that they can be measured and/or quantified. Therefore, it is especially important to discuss the study's construct validity. Construct validity concerns the meaning, definition and operationalization of factors (Cohen et al., 2018, p. 256) and tells us that if we measure what we wish to measure, in other words whether what the measures grasp is reflecting our conceptual understanding of the phenomena. Established scales were used to measure the variables that were studied (Radloff, 1977; Studsrød & Bru, 2009).

4.1.2 External validity

External validity refers to in which degree results can be generalized to the wider population, or in other words, the transferability of the findings (Cohen et al., 2018, p. 254). Lack of external validity is the most frequent criticism of RCT's. The result must be relevant to a definable group of depressed youth in a particular clinical setting. In the present study, the participants were from different schools and different parts of Norway, which may make the results representative for the population. Following ITT-principles also strengthened the external validity of the research: The pragmatic approach for the effectiveness of the intervention. Some meta-analyses of earlier group-based CBT-programs on depression show that effects disappeared one to two years after the intervention. In order to say more about the generalizability of the findings in this study, longer follow-up studies are needed (Keles & Idsoe, 2020, p. 416).

4.1.3 Reliability

As earlier mentioned, the variables analysed consist of several items added together to provide a total score on the measure of depression and intention to quit school. To make sure that the variables measured the same aspect/factor, the measures were investigated by calculating Cronbach's alpha (Howitt & Cramer, 1997, p. 444). The reliabilities for the scales were acceptable.

4.2 Ethical considerations

Both data-management and storage were administrated in a safe manner by scientific and administrative personnel at NUBU, and there were two separate databases for storing the research data and the contact information. Only scientific and administrative personnel in the project can access the original material. The anonymous data is stored in TSD (tjeneste for sensitive data) as required by the law for storage and management of sensitive research-data. The researchers involved in the project, including myself, only accessed the anonymised data. During the data collection and intervention in 2016, the filled-out paper version of the questionnaire was sent to NUBU in a safe manner and handled by the administrative personnel. At the other points of data collection, data collection was carried out in a secure environment by sending the participants an e-mail with a link to the questionnaire. Contact information for the participants, such as their e-mail-address, was kept in a separate database and were only accessed by the administrative personnel at NUBU. The database which held the research-material used in this thesis is protected by a two-factor authentication, where both a personal password and a unique password must be used every time you log in. The study has been approved by REK (Regional komite for medisinsk og helsefaglig forskningsetikk).

Conflict of Interest: The authors declare that they have no conflict of interest.

Informed Consent: Non applicable. No details, images, or videos relating to individual participants will be published.

4.3 Main findings and implementations

The study aimed to explore the relations between depression and intention to quit school by examining the repeated data from an early group-based CBT-intervention for depressed adolescents. The results show a significant indirect effect of depression on intention to quit school, indirect β= -.117 (p= .018). The study has many strengths that allow us to consider the possibility of generalization of the results, but further research with a larger sample size is necessary. The results indicate that early detection of depression and implementation of measures can have a positive effect on adolescents' intention to quit school.

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Updated 16-04-2020

The association between intention to quit school and youth depression

Effects of a group CBT-program

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Dato: 16.06.21

Abstract

National statistics on dropout in upper secondary school in Norway show that 64 % of students graduate with standard study progression (Utdanningsdirektoratet, 2020). Earlier studies also show that 20 % of adolescents who dropout of upper secondary school report their mental health as a cause for their dropout (Garvik et al., 2016, p. 220; Markussen & Seland, 2012, p. 31). Depression is one of the most common forms of mental health issues worldwide with increased rates in adolescent years (Costello et al., 2011, p. 1019).

The present study aimed to investigate changes in youth's intention to quit school after following a group-based CBT intervention for depressed adolescents in upper secondary school: The Adolescent Coping with Depression Course (ACDC). Data were collected from 228 youth, 133 of whom allocated to the 14-week ACDC intervention and 95 to the usual care. The ACDC-data were collected via self-report questionnaires and the variables depression and intention to quit where measured with Center for Epidemiologic Studies Depression Scale for Adolescents (CES-D) and Studsrød and Bru's four-item scale on intention to quit school, respectively (Radloff, 1977; Studsrød & Bru, 2009). Through a mediation analysis in a path model, we examined how ACDC intervention had an indirect effect on intention to quit school after 6-month from the end of intervention via reducing their depressive symptoms. Results showed that symptoms of depression at posttest positively predicted intention to quit school at 6-month follow up after the intervention ended (β=.291, p<.001). Furthermore, ACDC intervention which had a decrease in depressive symptoms at posttest, had an indirect effect on adolescents' intention to quit school at 6-month follow up (indirect β= -.117 (p= .018). Targeting depression and implementing effective preventative programs hence may have a potential effect to prevent dropout from upper secondary school, which should be investigated in future studies.

Keywords

CBT group intervention, depression, intention to quit school, randomized control trial.

Table of Contents

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1 Introduction

For many years, dropout from upper secondary school has been considered to be a serious problem in the Scandinavian countries and already ten years ago, the European Union set the objective of a dropout rate less than 10 % for all upper secondary schools in the EU. (Markussen, 2010, p. 9). In contrast to this goal, numbers from 2019 show that 78.1 % of all students in upper secondary school in Norway complete their study program within 5 years and 59 % finish with standard study progression (three years for study-preparational studies and four years for vocational studies). Although there has been a long-term policy priority on drop-out in upper secondary schools in Norway, the high drop-out rates have stayed at the same high levels, with some minor variations, for many years (Statistisk sentralbyrå, 2020). Completing upper secondary school is mandatory for further studies and essential for qualifying for a job and for developing important life skills (Frostad et al., 2014, p. 110; Markussen, 2010, p. 11).

Studies suggests that mental health issues are risk factors for educational nonachievement and dropout, and depression is one of the most common forms of mental health issues amongst adolescents with a peak for first onset between the ages of 15 and 21 years (Frostad et al., 2014, p. 110; Idsoe et al., 2019, p. 2). Depression is characterized as a common, recurring and disabling condition and is the leading cause of disability worldwide today (World Health Organization, 2020) and is associated with a range of problems, such as impaired ability to concentrate, poor levels of initiative, behavioral difficulties, and low self-esteem. These problems can cause considerable academic and social problems in the adolescent's school- and daily life, but depression in adolescents can also increase the recurrence of depressive episodes in adulthood (Garvik et al., 2016, p. 220; Horowitz & Garber, 2006, p. 401). Because of the prevalence and long-term impact of depression, it is essential to identify and implement effective measures.

Different studies have examined the relation between depression and school performance (Derdikman-Eiron et al., 2011; Garvik et al., 2016) and depression has been linked to poor academic achievement and increased rates of dropping out of school (Kearney, 2008, p. 460). As depression, dropping out of school can have pervasive effects on adjustment in social, academic, and other areas of life. Even though international studies show that mental health

is a factor for school dropout (Haynes, 2002, p. 110) measures and interventions in Norway have only taken this to account to a limited extent (Idsoe & Keles, 2016, p. 1). Since intention to quit school is a significant predictor of dropout in the current study (Beck & Ajzen, 1991), we examined whether we could reduce intention to quit school via reducing youth depression. By use of data from the ACDC intervention, two research questions were explored:

1) Does depression measured at posttest after the end of the intervention positively predict intentions to quit school at 6-months follow-up? That is, will youth with higher depressive symptoms at posttest have higher intention to quit school at 6-month follow-up?

2) Will the ACDC-intervention reduce youth's intention to quit school measured at 6-month follow-up through reducing their depressive symptoms in the intervention period?

The "Adolescent Coping with Depression Course" (ACDC) is a CBT-based group intervention developed for adolescents with subclinical or mild- to moderate depressive symptoms in a Norwegian context (Keles & Idsoe, 2020, p. 409). In the present study, we examined if depression is related to intentions to quit school among youth with mild to moderate depression in upper secondary school in Norway and if the ACDC can also reduce adolescents' intention to quit school after reducing youth depression.

1.1 The relation between depression and intention to quit

Research in this field shows that intentions to quit school can depend on various reasons, such as individual background, previous experience with school or socio-economic background (Tvedt et al., 2019, p. 1). Several studies have established that there is a clear link between mental health and school performance; depression is linked to less degree of academic achievements, social problems, poor wellbeing and drop out from school (Frojd et al., 2008; Masi et al., 2001; Rose et al., 2011) and some studies shows that there is a relation between depression and intentions to quit school (Garvik et al., 2016; Honjo et al., 2001). To understand the process of dropping out of school, the intention of quitting school is examined: Intention is the factor that describes how much effort an individual is willing to

give to perform a specific behaviour. As a rule, the more favourable attitude and subjective norm a person has connected to a specific behaviour, and the greater the perceived behavioural control, the stronger an individual's intention to perform the behaviour is. By examining intention, the theory of planned behaviour let us predict behavioral achievement (Beck & Ajzen, 1991, p. 185).

1.1.1 Adolescents at risk

The group of students who do not attend school is a heterogenous group that attend different study programs, but we know that the dropout rates are higher in vocational studies than study preparing educational programs; 87.5 % of adolescents attending study preparational complete their studies within 5 years vs. 67.5 % of students attending vocational studies complete their studies within 6 years (Statistisk sentralbyrå, 2020) in Norway. School absence is understood as a multifaceted behaviour, and the reasons behind this behaviour are often very complex (Gonzalvez et al., 2018, p. 1). Children and adolescents who struggle with school absence have different individual background, their own and their parents previous experience with school vary, and school absence is a problem amongst adolescent different social classes (Tvedt et al., 2019, p. 1). The great variations in the group of students who struggle with school absence or is in the risk of dropping are one of the challenges for the different support systems to find and implement the right preventive measures. By researching the relation between depression and intention to quit school, we aim at understanding the behaviour and process of dropping out of school and being able to capture the adolescents with preventive measures before they quit school. Among other factors, youth depression is associated with drop out, and in this article, we first explore the relation between depression and intention to quit school and second, examine whether the ACDC-intervention reduces youths' intention to quit school through reducing their depressive symptoms; Indirect effects of the ACDC reducing intention to quit school via reducing their depressive symptoms.

2 Method

2.1 The ACDC-Data

In this article, we investigated the data of The Adolescent Coping with Depression Course (ACDC), two-armed parallel cluster randomized control trial (RCT) with course leaders as the unit of allocation and youth participants as the unit of analysis (Idsoe et al., 2019, p. 3; Keles & Idsoe, 2020, p. 410), conducted in 2016. Data were collected from youth in Norway, through a self-report questionnaire at timepoints before, and after the ACDC-intervention (i.e., pre-, post-, follow-up design). This study aims to investigate changes in depressive symptoms and intention to quit school after an early group CBT intervention, analysing the variables intention to quit school and depression. With few exceptions, the prevalence of depression and depressive disorders, are higher among girls than boys amongst adolescents (Langvik, Saksvik-Lehouillier, Kennair, Sørengaard & Bendixen, 2019, p. 182; Piccinelli & Wilkinson, 2000, p. 486). To control for alternative correlations/relations between depression and intention to quit school, there were two demographic control variables in the statistical models: Age and gender.

2.2 Participants

Participants were 228 youth attending upper secondary school in Norway, aging from 16 to 19 years (88 % girls; with mean age of 16.70 years, *SD*=1.14), who reported mild to moderate depressive symptoms and attended 1st or 2nd grade of upper secondary school (Idsøe et al., 2019, p. 5). All participants provided informed consent. The participants were recruited by the course leaders, who were allocated to the intervention (ACDC) or control (usual care-UC) group. The ACDC/UC leaders were employed in a place with a referral system such as community health clinics, public health services, or schools. By presenting information about the intervention through different channels (posters, websites, newspapers etc.), the course leaders made contact with possible participants. The ACDC-course leaders who had a minimum of 3 years university/university-college education in child/adolescent mental health were certified after attendance of a 5-day ACDC certification course (Idsoe et al., 2019, p. 4; Keles & Idsoe, 2020, p. 410) In total, there were 35 course leaders/facilitators who participated in the study (18 for the experimental condition - ACDC and 17 for the control condition - UC) (Keles & Idsoe, 2020, p. 410).

The ACDC participants were invited to the study after a screening interview by the ACDC/UC leaders. The screening consisted of a screening with the Beck Depression Inventory (BDI) followed by a semi-structured interview. This interview also contributed to determine if the potential participants met any exclusion criteria, such as bipolar disorders, psychosis, substance-abuse, ADHD, ADD (or other criteria that are listed in the ACDC manual) (Idsoe & Keles, 2016, p. 4; Keles & Idsoe, 2020, p. 410). After informing the participants about both conditions, without knowing which condition they were going to be assigned to, the participants signed a consent-form (Idsoe et al., 2019, p. 5). The 35 course leaders in total recruited 228 adolescents that were included in the study (Keles & Idsoe, 2020, p. 410) Figure 2 shows the flowchart of the participants recruited to the study.

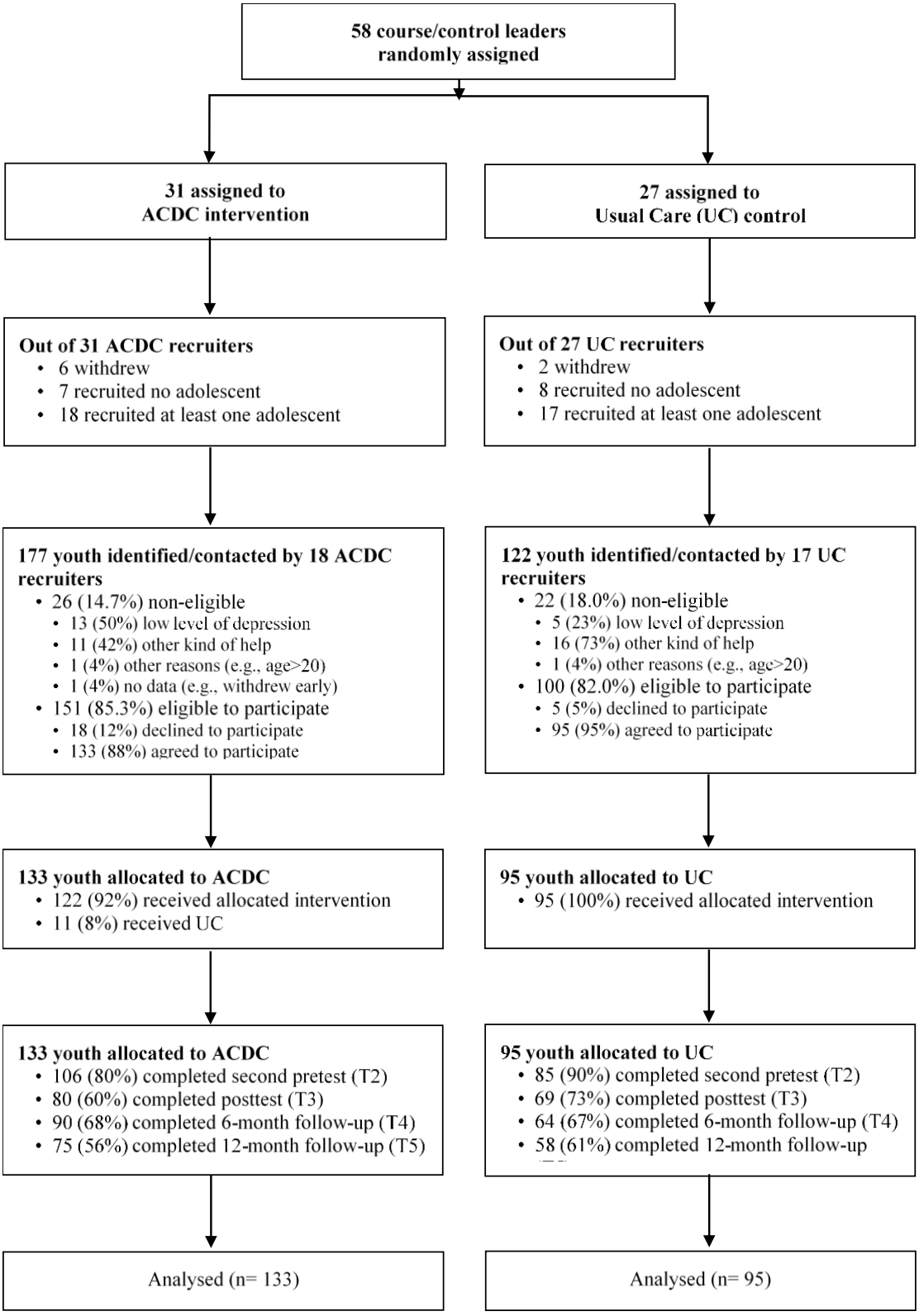

Figure 1: Participant flowchart

2.3 Intervention vs. control group

2.3.1 The intervention group: Adolescent Coping with Depression Course (ACDC)

The ACDC intervention is a course for adolescents with mild to moderate clinical symptoms of depression. During the intervention period, the ACDC-participants learned to reflect on their own thinking style, in other words to think of their own thoughts with a meta-perspective. By learning different skills and techniques, the course aimed that the adolescents would be able to cope better with their depressive symptoms in the future (Idsoe & Keles, 2016, p. 5). The "toolbox" of skills and techniques the adolescents learned during the intervention (Idsoe et al., 2019, p. 5) is based on a wide theoretical framework; from rational emotive behaviour therapy and cognitive behaviour therapy, but also from mega-cognitive theory, positive psychology and modern neurobiological perspectives (Keles & Idsoe, 2020, p. 410). The ACDC-course consisted of 10 sessions, where the sessions usually were delivered in a group format over eight weekly sessions. After the main eight weeks, follow-up sessions were conducted about three and six weeks after the last session. Each session lasted about two hours including breaks (Idsoe et al., 2019, p. 5; Keles & Idsoe, 2020, p. 411).

2.3.2 The control group: Usual Care (UC)

The UC-group received the usual care they would normally receive at the site from where they were recruited, with no restrictions. The usual care could involve the participants receiving a spectre of different treatments from different care providers, such as psychologists, doctors, school nurses or others. The different measures or type of therapy could consist of use of pharmacotherapy, conversations-therapy, or no therapy. None of the participants in the UC-group received therapy from a CBT-based group program that could overlap with the ACDC (Idsoe et al., 2019, p. 5).

2.4 Measures

2.4.1 Independent variable

A dummy variable was used for condition to evaluate the intervention effect, coded 0 for usual care and 1 for the ACDC-intervention.

2.4.2 Outcome variable

Intention to quit school were measured with a four-item scale developed by Studsrød and Bru (2009). Sample items included "If I could, I would have dropped out of school", "I would rather work than go to school , "I am tired of school" and "I am considering quitting school" The scale has the following response categories: "*strongly agree*", "*agree a little*", "*disagree a little*" and "*strongly disagree*" (Studsrød & Bru, 2009, p. 534) In the original scale, higher scores indicated lower intention to quit. For the ease of interpretation, the items were reverse coded for this article. That is, higher scores here indicate higher intention to quit school. The Cronbach's alphas for the total scale in the current study was .79 both for pretest (T1) and the 6-month follow-up (T4).

2.4.3 Mediating variable

Depressive symptoms were assessed by the Center for Epidemiologic Studies Depression Scale for Adolescents (CES-D) (Radloff, 1977, p. 385), which is a self-report measure of depression. CES-D asks for the frequency of symptoms during the last week of; depressed affect (7 items), lack of positive affect (4 items), somatic and retarded activity (7 items) and interpersonal problems (2 items). To fill out the form, the participants chose one answer from four different levels of severity at each item; "*rarely or none of the time*", "*some or a little of the time*", "*occasionally or a moderate amount of time*" or "*most or all of the time*" (Radloff, 1977, p. 387) with a total score ranging from 0 (*no symptoms*) to 60 (*high level of and frequent symptoms*) (Idsøe et al., 2019, p. 6). Higher scores indicated higher levels and frequency of depressive symptoms. The Cronbach's alphas for the total symptom scale in the current study varied between .88 and .92 across waves.

2.4.4 Control variables

Age and gender of the participants were collected at the screening interviews.

2.5 Procedure

The data were collected by self-reporting questionnaires. The first collection was a pretest of baseline measures for both variables (T1) and were collected at the screening interviews. Depression was also measured a second time just before the intervention started (T2). After the intervention ended, depression was measured at posttest (T3) and intention to quit school were measured at a 6 month follow up (T4). The first questionnaire was delivered in a paper-pencil format, while the measures at the second pretest (T2) and the later time points were delivered in a digital format to all participants.

2.5.1 Study ethics and consent to participate

In the first screening interview, all participants went through written information about the background and purpose of the project, knowing that they could be in the ACDC intervention or the usual care group. The participants were also informed that their responses would be recorded in a safe way without name or other recognizable information. Lastly, all the participants were informed that participation in the original study was voluntary and that they at any time could withdraw their consent or participation.

3 Statistical analyses

3.1 Statistical analyses

The primary analyses were based on the principle of intention to treat (ITT), which both keep the principle of randomization and the groups comparable at a group level (Romundstad, 2021). ITT is in accordance with the Consolidated Standards of Reporting Trials (CONSORT) (CONSORT, 2021). The statistical software SPSS 21 was used for descriptive analyses, reliability analysis, correlations, while Mplus 7.3 was used for analysing the repeated data by examining autoregressive models of observed variables at a pretest, posttest and a 6-month follow-up stages (because of the sample size restrictions, we were not able to run latent models). The robust ML (maximum likelihood) estimator was preferred to accommodate non-normal item distributions and missing data (Idsoe et al., 2019, p. 7). We employed the full information maximum likelihood (FIML) procedure, which uses all available datapoints, and is consistent with the ITT-approach. We consulted additional fit indices in accordance with the recommendations of West et al., and they suggest that CFI > .95, NNFI > .90, and RMSEA <.05 represent a well-fitting model, while >.90, NNFI >.85 and RMSEA <.08 represent an adequately fitting model (West et al., 2012, p. 215). Possible cluster effects must be accounted for when calculating appropriate sample sizes for a single-center cluster-randomized effectiveness trial with an active control group, because the groups rather than individuals are randomized (Hayes & Bennett, 1999, p. 320). Cluster effects of the main outcome (intention to quit school) was estimated by using data from earlier studies on the ACDC-material (Garvik et al., 2013b, p. 201; Idsoe & Keles, 2016, p. 7) and calculated intraclass correlations (ICC's) with the course groups as cluster. The calculated design effects smaller than 2 indicated no practical influence of clustering for our analyses, so the results of the analyses without correction for clustering is reported. The bootstrapping procedure with 1000 resamples was also employed to derive the 95% confidence interval (CI) for the mediating effect.

3.1.1 Non-response and missing values

A careful and thorough approach to dropout and missing data is very important in intervention research (Idsoe et al., 2019, p. 7). The self-reporting questionnaires are compromised by the number of non-respondents; 60 % of the ACDC-group and 73 % of the

UC-group completed the posttest (T3). To reduce dropout at the next timepoint, measures were implemented to increase the response rate at the 6 month follow up (T4). The FIML-approach were implemented to reduce potential bias due to missing data.

4 Results

4.1 Descriptive statistics

Table 1 show descriptive statistics for each variable with the means and standard deviations for both ACDC and UC conditions. Depression is measured in three different timepoints, while intention to quit is measured at two different timepoints. The means and variations of both groups are approximately alike at pretest T1 for both variables. The sample mean age is 16.55 for the ACDC-group and 16.92 for the UC group and a large majority of the sample were girls. The descriptive statistics in Table 1 show that the ACDC-group is somewhat larger than the UC group, and this could influence the outcome of the analyses.

Table 1.

Descriptive statistics of the measures for intervention (ACDC) and control group (UC)

	ACDC intervention (N=133)		**UC control (N=95)**	
	M	*SD*	*M*	*SD*
1. Depression T1- pretest	33.08	9.97	32.01	9.75
2. Depression T2- 2nd pretest	32.77	8.80	30.28	10.67
3. Depression T3- posttest	26.85	11.82	29.55	10.77
4. Intention to quit school T1- pretest	2.45	.85	2.48	.77
5. Intention to quit school T4- 6-month follow-up	2.52	.87	2.71	.93
6. Gender (% female)	91.0		83.2	
7. Age	16.55	1.09	16.92	1.16

Notes. Ranges and anchors: Depressive symptoms (0 = *No symptoms*, 60 = *High level of and frequent symptoms*); Intention to quit school (1 = *strongly disagree*, 4= *Strongly agree*).

Table 2.
Intercorrelations among the variables for the overall sample (N= 228).

	1	**2**	**3**	**4**	**5**	**6**	**7**
1. Depression T1- pretest	(.881)	.65***	.43***	.35***	.22**	.21***	-.07
2. Depression T2- 2nd pretest		(.881)	.47***	.31***	.27**	.13	-.16*
3. Depression T3- posttest			(.921)	.21*	.34***	.07	-.00
4. Intention to quit school T1- pretest				(.791)	.39***	.08	.04
5. Intention to quit school T4- 6-month follow-up					(.786)	-.08	.10
6. Gender						(-)	-.16*
7. Age							(-)

Notes. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$. Gender = Males are coded as 1 and females as 2. Cronbach alphas in the parentheses.

Table 2 displays the correlations among study variables. Depression and intention to quit school were significantly positively and moderately correlated across all time points, that is, higher scores on depression covaried with higher scores on intention to quit school. Gender was only correlated with T1-pretest depression (r= -.214, $p< .001$). In other words, girls had higher level of depression at the baseline level before the intervention started. The correlations also tell us that age was correlated with the second pretest T2 depression, which means that older youth had lower degree of depression just before the intervention started. Both the depression and intention to quit school scales display satisfying internal consistency at all time points, i.e., Cronbach's alpha >.70.

4.2 Structural Equation Modelling

We examined the hypothesized associations between the variables (i.e., intervention, depression, and intention to quit school) with an auto-regressive path model (Figure 2). Baseline depressive symptoms and intention to quit school were controlled in the mediation analyses, as well as gender (age was dropped from further analyses since it was not associated with any variables in the model). The post intervention depression (T3) was regressed on the intervention variable, and the 6 month follow up intention to quit school (T4) was regressed on post intervention depression (T3). The path diagram shows the longitudinal effect of the intervention on 6-month follow up intention to quit (T4) via depression at posttest.

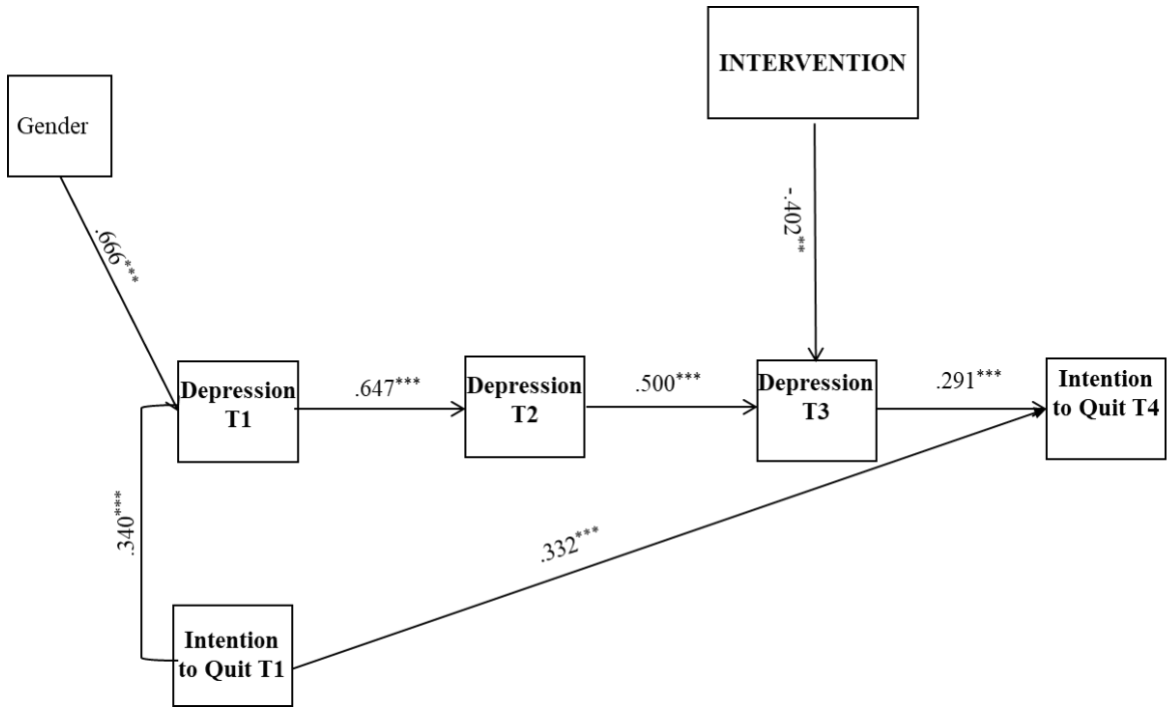

Figure 2. Path diagram. Gender = Males are coded as 1 and females as 2. Intervention = UC control was coded as 0 and ACDC intervention as 1. T1= Pretest, T2= 2nd pretest, T3= Posttest, and T4= 6-month follow up. Standardized parameter estimates are reported only for the significant paths from the covariates. **p < .01, ***p < .001.

The results revealed that the fit indices of the proposed model had a good model fit, SRMR= .050; RMSEA = .040, 90% CI [.000, .084]; CFI = .979; TLI = .964. In accordance with the first hypothesis, depression scores at T3 positively predicted to participants' level of intention to quit school at T4 (β=.291, p<.001). The results revealed the group receiving the ACDC-

intervention had a greater decrease in symptoms of depression *(β*= -.402, *p*= .003). It is not the intervention itself that predicts the intention to quit (T4) score, but the effect between the intervention and the reduced depression score at T3. The indirect effect of the intervention on intention to quit school was *β*= -.117 (*p*= .018). The model explained 22 % of the variance in 6-month follow-up intention to quit school variable. The bias-corrected, bootstrapped indirect unstandardized effects of the intervention to the intention to quit variable were also significant, ranging between 95 % CI [-.037, -.217]. This implies a mediational process in such a way that the ACDC intervention led to a decrease in the adolescent's depressive symptoms at the end of the intervention period, which, in turn, led to a decrease in the adolescent's intention to quit school levels at a 6-months follow up after the intervention.

5 Discussion

The aim of the study was two folded; first, an exploration of the relation between depression and intention to quit school and second, an assessment of whether the ACDC-intervention reduces youths' intention to quit school through reducing their depressive symptoms: Indirect effects of the ACDC reducing intention to quit school via reducing their depressive symptoms, through the research-questions 1) Does depression measured at posttest after the end of the intervention positively predict intentions to quit school at 6-months follow-up? That is, will youth with higher depressive symptoms at posttest have higher intention to quit school at 6-month follow-up? and 2) Will the ACDC-intervention reduce youth's intention to quit school measured at 6-month follow-up through reducing their depressive symptoms in the intervention period?

With an RCT-design, we assessed self-reported depressive symptoms directly after the intervention and intention to quit school at a posttest 6 months after the intervention. The active control group received usual care during the intervention period. The results from the analyses showed that depression was moderately related to intention to quit school. Further the mediation analysis showed that the ACDC intervention had a negative indirect effect on intention to quit school, through its effect on lowering depression after the intervention. That is, participants receiving the ACDC treatment decreased their intention to quit school at 6-months after the intervention ended, due to their reduction in depressive symptoms. Adolescents receiving the ACDC showed significant lower depression scores at posttest compared to the UC group after controlling for the pretest levels of depression (Idsoe et al., 2019, p. 12).

Intentions are the best predictors of behavioural accomplishment (Beck & Ajzen, 1991), and therefore the adolescents intention to quit school is assessed to be able to better understand their tendency for dropping out of upper secondary school. In the research and analyses examined in this article, it is suggested that depression is a potential precursor for developing intention to quit school, and thus it is considered that reducing depression also may reduce the intention to quit school. This study's findings support this notion. The link between mental health and school performance is established by earlier studies (Frojd et al., 2008; Masi et al., 2001; Rose et al., 2011); the adolescent with depression can show less degree of

academic achievements, higher degrees of social problems, poor wellbeing and further have greater risk of dropping out from school, in other words depression can have great impact in emotional, social and academic development (Hammen, 2005, p. 305). Depression has a peak for first onset between the ages of 15 and 21 (Hankin et al., 1998, p. 128) and is therefore especially important to be aware of in upper secondary school. One of the challenges when researching depression or implementing measures for depressed adolescents, is that possible participants suffering from depression can have difficulty or lack of motivation for seeking help (Idsoe et al., 2019, p. 13). In the ACDC intervention in 2016, few boys attended the course. Boys are also overrepresented in school absence and drop-out statistics (Statistisk sentralbyrå, 2020; Utdanningsforbundet, u. å.)

Intention to quit school is a multifaceted behaviour and is often linked to problems with school attendance. School attendance problems is a common problem in Norway and other countries (Kearney, 2002, p. 235). Too many adolescents leave school with less competence and experience necessary for further studies and work, and in the Norwegian context the principle of early help, early intervention and intensive training (Opplæringslova, 1998; Utdanningsdirektoratet, 2018) has since the implementation of the Norwegian national curriculum LK06 (Meld.St. 16 (2006-2007)) been in focus to secure the rights of children in need of extra help from school and the surrounding support systems. In the latest government document from the Norwegian Ministry of Education, the Norwegian government has established that early help and early intervention is equally important in upper secondary school, especially to prevent drop out (Meld.St. 6 (2019-2020)). The literature show that psychoeducational programs for treatment of mental health problems can be related to school absenteeism (Havik, 2018, p. 150) and the results of this study indicate that it is crucial to implement the right measures for early detection of depression to prevent drop out and avoid severe depression in adolescence and adult life.

5.1 Study limitations

There are several limitations with this study, and which should be taken into account when interpreting the results. First, the present study has limitations due to self-reported measures; it relies on people reporting their own behaviour, and therefor there is a chance for both under- and over-reporting of their behaviour. Second, there was attrition: In longitudinal studies, there is always the likelihood that some participants will drop out of the study before

all the data is collected (Barry, 2005, p. 267) (see figure 1, the participant flowchart for details on drop out during the intervention). These dropouts can distort the accuracy of the results. To take precautions to diminish attrition effects, ITT-principles were implemented. Third, the study also has limited power due to a small sample size, with girls overrepresented. The specific challenge of recruiting male participants can also indicate that boys specifically can have problems admitting needing help with their mental health problems (Idsoe et al., 2019, p. 13) or that the course leaders used recruitment-strategies that appealed more to girls.

5.2 Implications for future research

The results of analyses of ACDC-material shows significant reductions in depression and intention to quit school. The present study has identified depression as a mediating effect of the intervention on intention to quit school. However, the small sample size and the skewed gender balance (Idsoe et al., 2019, p. 14) need to be solved for further research of the generalizability of the effectiveness of the intervention. The data after the ACDC intervention in 2016 is diverse and can be used for further research on depression in adolescence amongst individuals in upper secondary schools in Norway: If actual drop out rates for the students in the sample from the ACDC in 2016 is collected, its link to intention to quit school and the ACDC's indirect effect on dropout can also be examined.

Disclosure statement

No potential conflict of interest was reported by the author.

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Supplementary material/appendices

Appendix 1: Tables in text

Appendix 2: Figures in text

Tables in text

Table 1.

Descriptive statistics of the measures for intervention (ACDC) and control group (UC)

	ACDC intervention (N=133)		**UC control (N=95)**	
	M	*SD*	*M*	*SD*
1. Depression T1- pretest	33.08	9.97	32.01	9.75
2. Depression T2- 2nd pretest	32.77	8.80	30.28	10.67
3. Depression T3- posttest	26.85	11.82	29.55	10.77
4. Intention to quit school T1- pretest	2.45	.85	2.48	.77
5. Intention to quit school T4- 6-month follow-up	2.52	.87	2.71	.93
6. Gender (% female)	91.0		83.2	
7. Age	16.55	1.09	16.92	1.16

Notes. Ranges and anchors: Depressive symptoms (0 = *No symptoms*, 60 = *High level of and frequent symptoms*); Intention to quit school (1 = *Strongly agree*, 4= *Strongly disagree*).

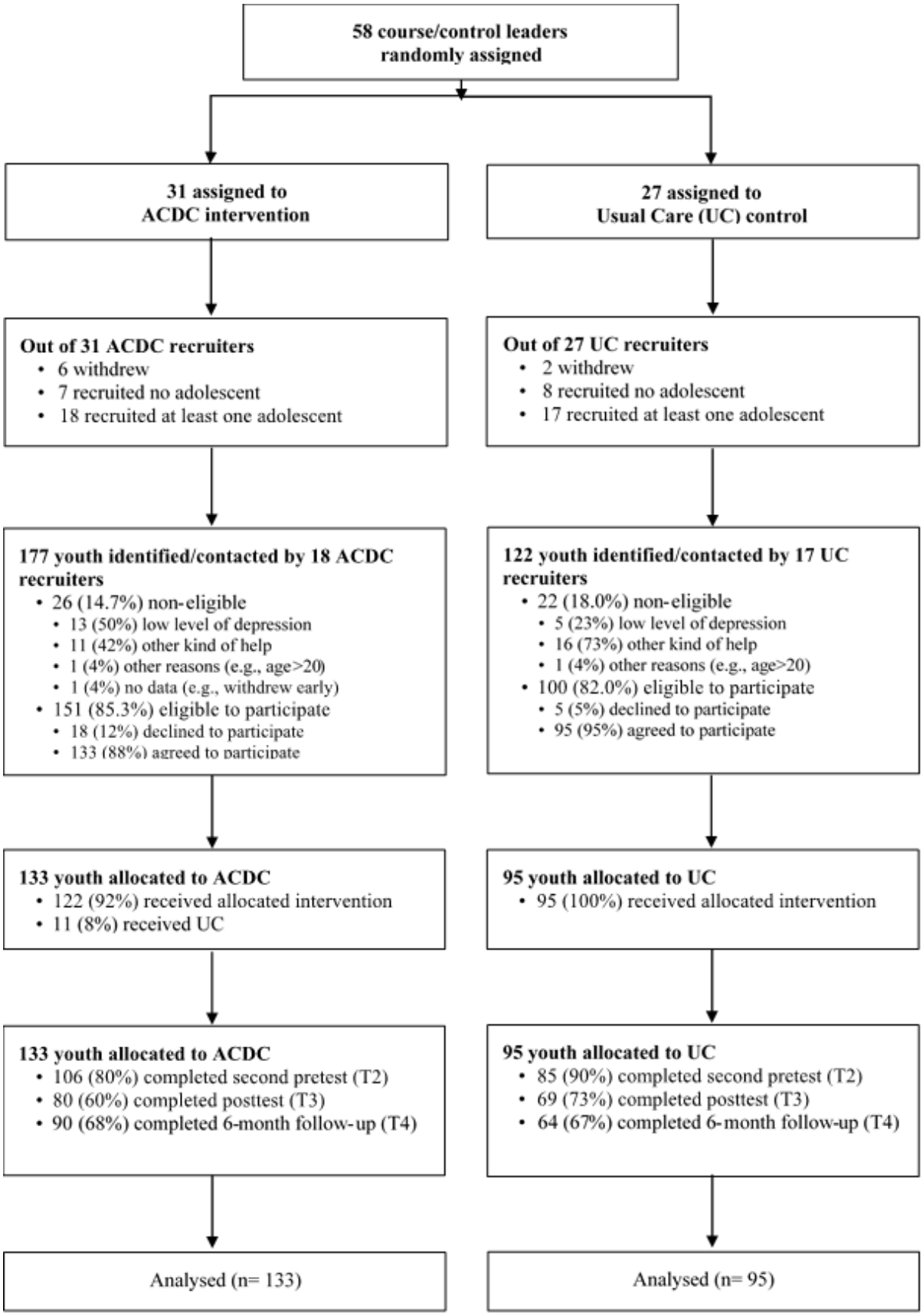
Table 2.

Intercorrelations among the variables for the overall sample (N= 228).

	1	**2**	**3**	**4**	**5**	**6**	**7**
1. Depression T1- pretest	(.881)	.65***	.43***	.35***	.22**	.21***	-.07
2. Depression T2- 2nd pretest		(.881)	.47***	.31***	.27**	.13	-.16*
3. Depression T3- posttest			(.921)	.21*	.34***	.07	-.00
4. Intention to quit school T1- pretest				(.791)	.39***	.08	.04
5. Intention to quit school T4- 6-month follow-up					(.786)	-.08	.10
6. Gender						(-)	-.16*
7. Age							(-)

Notes. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$. Gender = Males are coded as 1 and females as 2. Cronbach alphas in the parentheses.

Figures in text



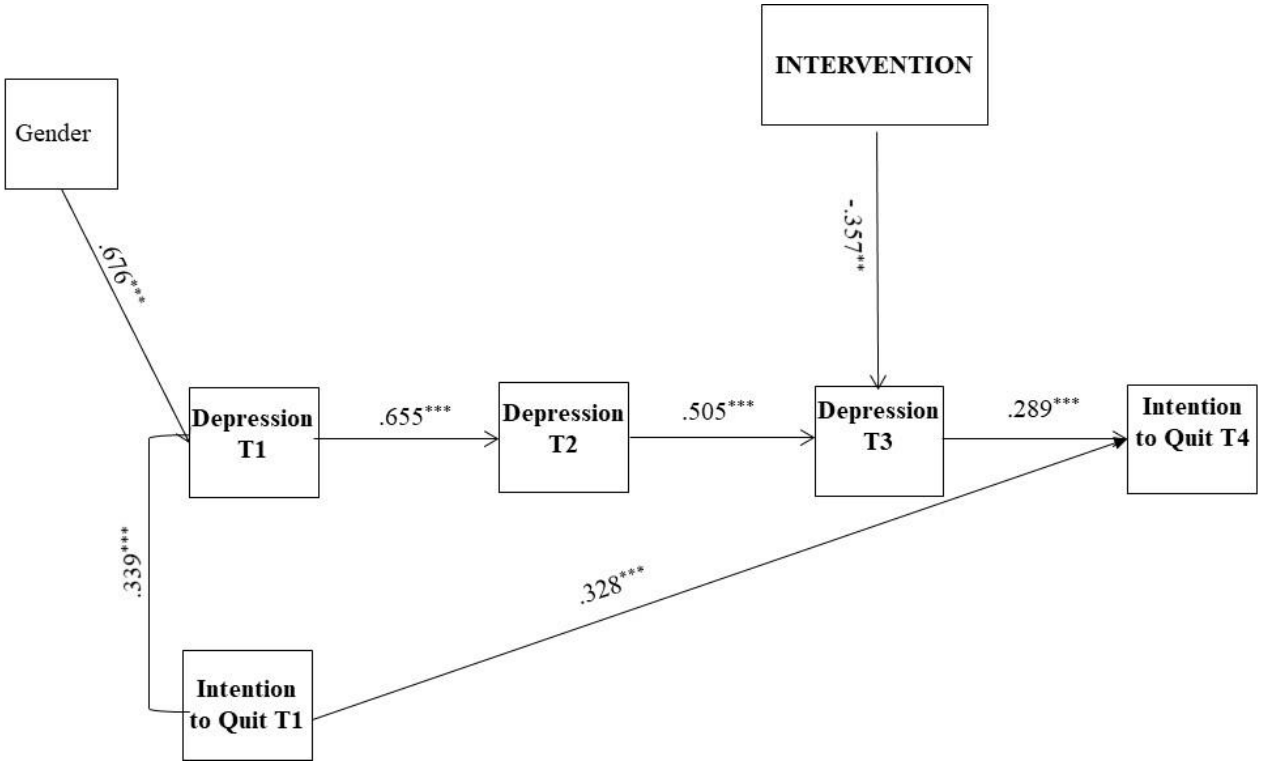


Figure 2. Path diagram of the longitudinal effect of the intervention on 6-month follow up intention to quit via depression at posttest. Gender = Males are coded as 1 and females as 2. Intervention = UC control was coded as 0 and ACDC intervention as 1. T1= Pretest, T2= 2nd pretest, T3= Posttest, and T4= 6-month follow up. Standardized parameter estimates are reported only for the significant paths from the covariates. $^{**}p < .01$, $^{***}p < .001$.

Figure captions

Figure 1:

Header: Participant flowchart

Figure 2:

Header: Path diagram