Running Head: assessing classroom climate in special education delivered in (secure) residential facilities for (justice-involved) adolescents.

Back to school, assessing classroom climate in special education: a validation study of the Special Education Classroom Climate Inventory (SECCI)

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Abstract

There is ample scientific evidence showing that classroom climate matters for the educational outcomes of children and adolescents, but little research on classroom climate has been conducted in schools for special education. The present study examined the construct and concurrent validity and reliability of the Special Education Classroom Climate Inventory (SECCI), which aims to assess classroom climate in special education delivered in (secure) residential facilities for (justice-involved) adolescents. The SECCI student self-report instrument was examined using a sample of 325 students attending special education classes in six (semi) secure residential settings and in two youth prisons. Confirmatory Factor Analysis (CFA) of a four-factor model—with 'teacher support', 'positive student affiliation', 'negative peer interactions', and 'structured classroom environment' as factors—showed an adequate fit to the data, indicating construct validity of the SECCI. Evidence for concurrent validity was found in associations between classroom climate and academic self-concept. Cronbach's alpha reliability coefficients were good for all factors. We conclude that the SECCI can be used to assess and target a problematic classroom climate in schools for special education for students in secure institutional and correctional youth care.

Introduction

In the Netherlands, when children between the ages of 12-18 years cannot live at home or in foster care, mostly due to severe psychiatric and behavioral problems and/or criminal behavior, they are treated in (secure) residential youth care facilities. All juveniles are required by Dutch law to attend school for 7-8 hours a day and for 5 days a week (Hair, 2005; Smeets, 2011). Special education in secure residential youth care is considered a predictor of positive treatment outcomes and successful participation in society (Christle, Nelson, & Jolivette, 2003; Leone et al., 2003). Formal education can also reduce delinquency and criminal offense recidivism and may function as a means for socialization and crime prevention (Brunner, 1993; Pinker, 2011; Steurer, Linton, Nally, & Lockwood, 2010; Theimann, 2016; Vacca, 2008). Notably, Cho and Tyler (2010) also found that basic education for adults in prisons was associated with higher post-release earnings and employment rates.

Special education structures the institutional days for young people in detention and can help prepare them for a job or further vocational training or education and thereby facilitate rehabilitation. Such structure also facilitates achievement of treatment goals, such as the development of social skills, moral reasoning and reduction of aggression (Christle, Nelson, & Jolivette, 2003; Gover, MacKenzie, & Armstrong, 2000; Gordon & Weldon, 2003; Jancic, 1998; Jenkins, Streurer, & Pendry, 1995; MacKenzie, 2000; Wilson, Gallagher, & MacKenzie, 2000).

However, formal education in (semi) secure institutions is not without difficulties. As a result of the complex and multiple problems and aversive child-rearing history of many students, meaningful education that recognizes and addresses the unique emotional and learning requirements of each student is hard to realize (Carman, Dorta, Kon, Martin, & Zarrilli, 2004; Quinn, Rutherford, Leone, Osher, & Poirier, 2005). Furthermore, without proper education, which matches the learning potential and interest of children and fosters their learning motivation, these youngsters are in danger of getting further away from successful participation in society (Carman et al.*,* 2004; Leone & Weinberg, 2012; Maras, Demetre, Moon, & Tolmie, 2012).

It is assumed that a positive classroom climate can increase learning motivation of juveniles attending special education in residential youth care (Van der Helm & Austmann, 2011). It can also improve their academic effort and competence

(Maras et al., 2012) as well as the instruction quality of the teachers (Hattie & Timperly, 2007). By giving students the opportunity to express their opinion about their experiences with other students and teachers, this could open the way for a dialogue about improvement of the classroom climate (Syvertsen, Flanagan, & Stout, 2009). Although various observational measures have been developed, a self-report questionnaire for measuring classroom climate for students in residential schools for special education has yet to be developed (McEvoy & Welker, 2000; Voight & Hanson, 2012).

The present study therefore describes the development of the Special Education Classroom Climate Inventory (SECCI), which is a student self-report questionnaire designed to assess the climate in the classrooms of residential schools for special education, and examines the construct and concurrent validity of the SECCI.

Classroom climate and its assessment

Most research in (regular) education has focused on *school* climate instead of *classroom* climate (Anderson, 1982; Clifford, Menon, Gangi, Condon, & Hornung, 2012; Freiberg, 1998; Gangi, 2010; Haggerty, Elgin, & Woolley, 2011, Libbey, 2004; McEvoy & Welker, 2000; Nwankwo, 1979; Thapa, Cohen, Guffey, & Higgins-D'Alessandro, 2013; Voight & Hanson, 2012). Clifford et al. (2012, p. 3) defined school climate as 'the quality and the characteristics of school life'. In their review Thapa et al. (2013) defined the essential dimensions of school climate, including safety, teacher-student relationships and relationships among students, teaching and learning, institutional environment (e.g., physical surrounding and resources), and the school improvement process (the results of school reform programs). These dimensions of school climate may be subsumed under the two main dimensions 'support' and 'structure' (see Stockard & Mayberry, 1992).

Where school climate refers to the quality and character of school life, classroom climate refers to the *students' perception* of their proximal social classroom environment (McRobbie & Fraser, 1993). In schools for special education, it might not be the communication among teachers and students in the school that matters most, but the communication among students (and their teacher) in the classroom (Anderson, 1970; Anderson, Hamilton, & Hattie, 2004). Often students in special education not only have problems with cognitive (i.e., executive) functioning, but also

with social-emotional functioning, affective functioning (i.e., trusting others) and developing an identity (Carman et al., 2004; MacAulay, 1990; Quinn et al., 2005). In special education classes, in particular those within residential settings, teachers provide rather individualized instruction, paying increased attention to socio-emotional and identity-development of their students (Carman et al., 2004). Students in special education settings regularly participate in only one class, enter only one classroom room, and encounter only one or very few teachers, hence the classroom climate is probably more salient compared to the school climate. The quality of education seems to be related to the quality of the 'classroom climate', as reported by these students.

From a worldwide perspective, research is conducted on the classroom climate, but especially in regular education. Already in 1949, Withall searched for a way to measure classroom climate, and suggested that meaningful learning of students can only occur in safe, non-threatening situations, and that knowledge about the psychological atmosphere in the classroom is very important. Research in regular schools shows that the psychosocial quality in the classroom is one of the most important factors influencing social emotional behavior and learning motivation of students (Steffgen, Recchia, & Viechtbauer, 2013).

There is ample research on students' perceptions of classroom climate or the classroom environment, but most of this research has been directed at regular education. The dimensions assessed in most research on classroom climate (see Altaf, 2015 for an overview) pertain to three broad domains of classroom experiences (Moos, 1979): (a) Interpersonal Relationships (involvement, affiliation and support) (b) Goal Orientation (task orientation and competition), and (c) System Maintenance and Change (order and organization, rule clarity, teacher control and innovation).

Only limited research has been conducted on classroom climate in special education classes and not, or hardly any, on education in residential settings for young people between the ages of 12 and 25 with severe behavioral problems. As far as we know, there is only one validated instrument for classroom climate in special education, namely, the revisited version of the Classroom Environment Scale (CES-SP; Baek & Choi, 2002), which assesses the three broad dimensions identified by Tricket and Moos (1972, 1974) by means of student self-report. However, the CES-SP proved to be only marginally reliable, with only one scale showing a satisfactory

reliability (teacher support, Cronbach's alpha = .70), but three scales yielding insufficient alpha's below .60 (affiliation, task orientation, and teacher control).

Given the rather low reliabilities of the CES-SP and the particular context of special education classrooms in secure residential institutions, dealing with justice-involved adolescents showing high levels of psychopathology, we decided to develop a new (briefer) student self-report instrument assessing classroom climate based on the available literature: the Special Education Classroom Climate Inventory (SECCI). At present there is no validated Dutch instrument to measure reliably the climate in these schools.

Given the major importance of the interpersonal relationship dimension with the teacher and peers for educational and treatment outcomes (Altaf, 2015; Carman et al., 2004; MacAulay, 1990; Trickett et al., 1993), we developed two scales that purport to measure positive and negative peer interactions, and one scale that purports to measure support by the teacher. Because the lack of order and classroom disorganization are antagonistic to successful goal orientation and system maintenance (Altaf, 2015; MacAulay, 1990), and since students in special education classes find it difficult to follow the rules and comply with teacher directives (Hocutt, 1996), the SECCI contains a scale that aims to measure (un)structured classroom environment.

The goal of the present study is to validate an instrument targeting key factors that are thought to characterize the classroom climate in secure residential special education settings, that is, the SECCI. This student self-report instrument contains four scales: positive student affiliation, negative peer interactions, teacher support, and structured classroom environment.

We use Confirmatory Factor Analysis (CFA) to examine construct validity. To test criterion (concurrent) validity we also examined the associations between classroom climate and student's academic self-concept in terms of perception of academic importance, academic effort and academic competence (Maras, Moon, & Zhu, 2012). This is because in particular academic self-concept arises from social-environmental rather than personal factors and affects both academic achievement and classroom behavior (Guay, Marsh, & Boivin, 2003; Koller, 2000; Maras, Carmichael, Patel, & Wills, 2007). Reliability is tested by computing Cronbach's alpha for each subscale of the SECCI.

Method

For the present study, the SECCI was, along with one other instrument, the 'about me' questionnaire, administered to a selected group of schools representative of education in residential settings (closed).

Participants

A statistically representative sample was used in order to permit confident generalization from the sample to a larger population. A combination of Maximum Variation sampling and Criterion sampling was used. Maximum Variation sampling was used in order to capture and describe the results for the schools for special education of the two types of secure youth care in the Netherlands. This very special group of young people (12-26 years old) in the Netherlands are residing in (secure) residential youth care settings or juvenile prison institutions. Two of the 10 schools in youth prisons (5.1% of the total population: 41 students of the total 800), and 6 of the 30 schools in residential youth care settings (17.8% of the total population: 284 students of the total 1598) were included. Criterion sampling was used in order to study all cases that meet the predetermined criterion of importance (Patton, 1990). The predetermined criteria were age of the students, reason of secure care and graduation profile (day care, labour or further education).

The schools were selected to represent a wide range of schools in Dutch secure special education in order to enhance generalizability of results. Some schools were located in the same building as the living groups and other schools were located in separate buildings. The sample consisted of 56 classes and 325 pupils. At the residential settings for secure intensive care, 284 pupils were placed under civil law and 41 under criminal law. These pupils are in need of prolonged secure care in a secure setting; admission at a non-residential mental health clinic proved to be unsuitable due to (a combination of) severe behavior problems, multiple psychiatric problems and/or substance abuse. The main treatment goals include stabilization and return to home, foster care or readmission in regular mental health care. Both criminal- and non-criminal groups have been shown to be comparable in terms of required intensity of treatment and special educational needs (Boendermaker & Bruinsma, 2007).

Students of the schools for special education were all asked to participate voluntarily and signed an informed consent declaration, which guaranteed anonymity.

The sample consisted of 465 students who were asked to fill in the SECCI questionnaire. A total of $N = 325$ pupils (63% boys, 37% girls) participated in the study; the mean age of respondents was 16.1 years ($SD = 2.0$, age range 12-25 years), which reflects secure education in the Netherlands. The study was performed between February and May 2013. The non-response rate was 30.1%. The reasons for not filling in the questionnaires were severe and acute psychotic problems, going to court that day, placement in a separation unit, and lack of trust in the anonymity guaranteed by the researcher.

The questionnaires were given a number in order to guarantee anonymity of the participants. All measurements were carried out by one trained researcher, who signed a written statement of confidentiality. Questionnaires were either filled in by students themselves or they were assisted by the researcher at the classroom or in an office at the school of the respondent. Respondents had one day available to fill in the questionnaire and handed in the questionnaire in a blank envelope. Teachers were instructed to support and motivate the respondents if necessary.

Questionnaires

Special Education Classroom Climate Inventory (SECCI).

The present study used the SECCI, which was partially derived from existing instruments (i.e., Klimaatschaal, Donkers, 2011, Comprehensive School Climate Inventory, Cohen, McCabe, Michelli, & Pickeral, 2009, Schoolvragenlijst, SVL, Smits &Vorst,2008), measuring classroom climate. The questionnaire was adapted for specific use at a low cognitive level for use with students with a mild intellectual disability and extreme disruptive behavior. Items were shortened and if necessary rephrased in a more simple way. An example was: 'The teachers pay attention to what we have to say and acknowledges our point of view', was changed in: 'The teachers are listening to us'.

We then gave the questionnaire to 20 teachers employed in special education and asked them for advice regarding content and wording of the items. As a result of this about 30% of all items were shortened, rephrased into simpler wording and new items were added. In a test-trial in a Dutch youth prison in 2011, 26 pupils filled in the 40-item questionnaire and commented on the questionnaire. From this research we then drew up a final list of 27 items with 4 scales rated on three-point answering

categories, ranging from 1 = 'I do not agree' to 2 'I neither agree or disagree' and 3 = 'I agree'. Each item belongs to only one of the four scales for classroom climate:

1) Teacher support scale (11 items) assesses professional behavior and in particular the responsiveness of teachers to specific needs of the students. Paying attention to students, taking complaints seriously, respect and trust are important characteristics of teacher support. An example of a support item is: 'the teachers are listening to us'. 2) The negative peer interaction scale (7 items) assesses the negative peer interactions in the classroom. An example for a negative peer interactions item is: 'We call each other names in the class'. 3) The positive student affiliation scale (5 items) assesses positive student affiliations in the classroom. An example of a positive student affiliation item is: 'I like to work together with classmates'. 4) The structured classroom environment scale (4 items) assesses the degree to which students are able to work on their schoolwork in the classroom and the structure in the classroom. An example of a structured classroom environment item is 'The classroom is never quiet'.

About me questionnaire: academic importance, competence and effort

In order to demonstrate concurrent validity with the SECCI, a Dutch translation of the validated 'about me' questionnaire (Maras, Moon, & Zhu, 2012) was used. This measures academic importance, academic competence and academic effort as a positive climate (Maras et al., 2012). An example of an 'academic importance' item was: 'I like working at school'; an example of academic competence was: 'I get good marks at school'; an example of academic effort was 'I work hard at school'. All scales have 4 items. Alpha's were sufficient for all scales (Cronbach's alpha = .76, .78 and .81, for respectively academic importance, competence and effort).

Analyses

As a first stage, construct validity (confirmatory factor analysis) and reliability of the SECCI were assessed. Then, concurrent validity was examined by computing correlations between the SECCI scales and the 3 scales of the 'about me' questionnaire ('academic importance', 'academic effort' and 'academic competence'). All SECCI scales ('positive student affiliation', 'negative peer interactions', 'teacher support', and ' structured classroom environment') show concurrent validity if they

correlate positively with the 3 scales of the 'about me' questionnaire ('academic importance', 'academic effort' and 'academic competence').

Results

Reliability and validity of the SECCI

The construct validity and internal consistency reliability of the SECCI were examined by means of confirmatory factor analysis in Amos 18 (Arbuckle, 2007). A multi-factor model was specified in which each item loaded on only one factor, allowing reverse-worded, very similarly worded items ('the teacher helps us with problems' or 'When I find something difficult the teacher helps') or items prone to social desirability to correlate. Both the model's Chi-Square and fit-indices, which are non-sensitive to sample size (CFI, TLI, and RMSEA[1]), were used to evaluate model fit (Kline, 2005).

The following fit index cut-off values are indicative of good model fit: $NFI > .90$; $CFI > .90$, $TLI > .90$, and $RMSEA < .05$ (Kline, 2005). Whereas a non-significant Chi-Square indicates exact model fit, a ratio between the $X2$ statistic and the degrees of freedom (df) that is lower than 2.5 indicates a close fit to the data (Hu & Bentler, 1999). To account for non-independence (students are nested into school classes) and non-normality, we chose to use the robust MLR maximum likelihood estimation procedure (Muthen & Muthen, 1998). A modification index, giving the expected drop in Chi-Square if a parameter in question is freely estimated, was used to improve model fit. We thus identified parameters that could improve model fit by freeing those parameters. Examples of such parameters were items loading on more than one factor or the wrong factor. Instead of freeing those parameters, we removed them. Further improvement of model fit was achieved by removing items that did not load significantly on their respective factors. Results showed a good fit to the data: *Chi-square = 426.45, df = 294, p = .01; NFI = .900; CFI = .966, TLI = .960*, and *RMSEA = .036*.

Cronbach´s Alpha was good for all scales: ´Teacher support´ $\alpha = .901$; ´Negative peer interactions´ $\alpha = .887$; ´Positive student affiliation´ $\alpha = .803$; ´ structured classroom environment´ $\alpha = .744$ (Table 1).

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[1] CFI (Comparative Fit Index), TLI (Tucker-Lewis Index), NFI (Normed Fit Index) and RMSEA (Root Mean Square Error of Approximation) are indices of goodness of fit that are independent of sample size. Models that fit well score favourably on these fit-indices. For further references see Arbuckle (2007).

Concurrent validity: comparisons with academic importance, academic effort, and academic competence

Concurrent validity is demonstrated when teacher support and structured classroom environment have a relation with academic importance, academic effort, and academic competence. Using Pearsons' correlation test we found 'teacher support' to have a positive correlation with academic importance, academic effort and academic competence ($r = .322$; $.347$ and $.278$; $p = 0.00$). Also structured classroom environment had a positive relationship with academic importance, academic effort and academic competence ($r = .260$; $.265$ and $.189$; $p < 0.01$). Absence of negative peer interactions had a positive correlation with academic importance, academic effort and academic competence ($r = .211$; $.254$ and $.202$; $p < 0.01$). These results support convergent validity of the SECCI. For positive peer orientation no significant correlations were found.

Discussion

This study was performed in order to examine the validity and reliability of the SECCI in a group of adolescents and young adults in eight schools for special education in six secure residential settings and two youth prisons. Confirmatory Factor Analysis and reliability analyses supported construct validity and subsequently good internal consistency reliabilities. Evidence for concurrent validity was found in correlational analyses with measures of Maras, Moon, & Zhu (2012): Academic importance, academic effort and academic competence, except for positive peer orientation. These analyses showed that ´teacher support´, ´negative peer interactions´, ´positive student affiliation´ and ´ structured classroom environment´ can be used to assess classroom climate in classrooms of schools for special education in residential care settings. We found no relation between the 'peer relation scale' and scales for 'academic importance', 'academic effort' and 'academic competence'. This can probably be explained by negative peer attitudes towards academic learning, which often play an important role in deviant peer groups (Maras et al., 2012).

Support by group workers and their responsiveness to the personal needs of the adolescents can facilitate a successful rehabilitation during secure care (Souverein Stams, & Van der Helm, 2013). Recent research shows this applies for teacher support too (Van der Helm & Stams, 2012) Van der Helm and Stams (2012) showed

classroom-level variables had a significant impact on misconduct at school. A positive teacher–student relationship was related to less misconduct inside the school, but also had a positive impact on delinquent behavior and vandalism outside the school. Van der Helm and Stams (2012) even concluded: 'the teacher is an important socializing agent for adolescent behavior in general'. Growth related to learning skills and a profession enhances self-esteem end can provide for better perceived future possibilities (Van der Helm et al., 2011b).

The reliability of structured classroom environment was somewhat lower than the reliabilities of teacher support, negative peer interactions and positive student affiliation. This can be explained by the fact that this scale contains fewer items, and may also be related to the fact that there is more heterogeneity among the items of the teacher support and negative peer interactions and positive student affiliation scales in order to adequately capture the multi-faceted nature of these constructs.

The main limitations of this study relate to characteristics of the sample. Although there are ample female students in schools of juvenile prisons, the prison sample consisted to a large extent of male students. Furthermore, there was no other validated classroom climate instrument available in The Netherlands for this population to compare with the SECCI, and it was not possible to conduct behavioral observations of the classroom climate.

The SECCI is already in use as an assessment tool for classroom climate in order to improve safety for students and teachers in approximately 150 schools for special education in the Netherlands, not only in secure facilities, but also in regular schools for special education. Results show the outcomes of the measurement can give teachers feedback they need in order to improve the climate in their classroom. Repeated measures of classroom climate, combined with training teachers shows promising results (Van der Helm et al., 2011a). It is possible that it can also improve team functioning and eventually learning outcomes and rehabilitation of adolescents with MID, severe behavioral and criminal problems who are, to our understanding most in need of education.

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