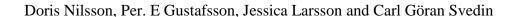
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Evaluation of the Linkoping Youth Life Event Scale

Abstract

The objective of this study was to investigate the psychometric properties of a newly developed instrument for potentially traumatic life events, the Linköping Youth Life Event Scale (LYLES) and determine the benefits of including adverse childhood circumstances (ACCs) as factors in the evaluation. In addition we wanted to investigate the difference between interpersonal and non - interpersonal traumatic events, the impact of ACCs and the cumulative effects of these events on self-reported symptoms of dissociation, depression and anxiety. Adolescents from the normative population (n=188) answered the questionnaire LYLES and also the Dissociation- Questionnaire - Sweden and Hospital Anxiety and Depression Scale. The results showed that LYLES was stable, with test-retest r=.76 and kappa item per item ranging between k.0.44 -1.0. ACCs contributed independently to the explanation of symptoms explaining them better than potentially traumatic events alone, particularly for boys where the impact of ACCs exceeded the impact of events. The conclusions are that LYLES displayed satisfactory psychometric properties and that ACCs seem to be a valuable addition to an instrument to evaluate potentially traumatic events.

Keywords: Traumatic life events, adverse childhood circumstances, depression, anxiety, dissociation, psychometrics, adolescents.

Introduction

Trauma exposure and cumulative victimization have received increased attention as important risk factors for child and adolescent mental ill health (Finkelhor, et al., 2007; Gustafsson et al., 2009). For example, in a recent study, Cloitre and co-workers (2009) showed that trauma symptom complexity both during childhood and adulthood was due to a history of childhood cumulative trauma. One of the arguments for studying the cumulative trauma exposure is the mutual confounding that appears when traumatic events coincide or for other reasons cluster in incidence (Finkelhor, et al., 2007). However, many potentially traumatic events are also dependent on adverse social environments or other enduring life circumstances, which by themselves can exert negative influences on the mental health of young people (Appelyard, et al., 2004; Schilling, et al., 2007). Another pathway has been taken in the Adverse Childhood Experience Studies (ACE) (www.cdc.gov/nccdphp/ace/index.htm) which have focused on the link between childhood maltreatment and later health and well-being. The ACE score, which is based on the accumulation of single adverse childhood experiences, has been shown to be predictive of different health problems later in life with a strong dose- response relationship. Rutter (1979) identified six environmental risk factors that significantly correlated with childhood psychiatric disorders: severe marital discord, low social status, large family size, parental criminality, maternal mental disorder and foster placement. These findings also revealed the increased effects of an accumulation of risk factors. Other more recent studies (Appleyard, et al., 2005; Schilling, et al., 2007; Schilling, et al., 2008.) have shown that the

cumulative effect of ACE is already detectable during adolescence as concerns symptoms such as depression, drug abuse and delinquency. Schilling and co workers (2008) also demonstrated that the negative cumulative effect of ACE was confounded with more severe adversity experiences, child maltreatment variables including sex abuse/assault, physical assault, physical abuse and serious neglect.

Screening for a history of potentially traumatic life experiences is an important task for Child and Adolescents Psychiatry clinics and other centers where youth seek help for psychological problems. A more comprehensive picture of the individual trauma history could assist the clinician in developing a better understanding leading to better planning for adequate interventions. Moreover, there is also a need for suitable screening instruments which might even be implemented in epidemiological research. Such an instrument should be easy to administer, take little time, and cover a great deal of what we today know are potentially traumatic experiences. So far, research on the mental health consequences of traumatic events usually does not consider the simultaneous impact of more chronic adverse childhood circumstances (ACCs). To include this aspect of childhood in research, there is a need for a checklist covering ACCs as well as potentially traumatic events.

According to Ohan et al. (2002), scales measuring the trauma itself are in their early stages of validation and scales focusing on the frequency, intensity and other characteristics of trauma experienced by young people are new and limited in scope. Goodman, et al. (1998) observed that gathering data about past traumatic exposure is not as straight forward as collecting data on other more, clear cut characteristics, such as demographics. Instead assessment of a traumatic event exposure entails making complex measurements involving issues of definition, assessment methodology, consistency of reporting and validity reports. There are scales designed to measure the number, and kind of traumas an adolescent has experienced, scales such as the Juvenile Victimization Questionnaire (JVQ) (Finkelhor et al, 2005a) that has been used in large samples (Finkelhor et al,

2005b; Finkelhor et al, 2007). Another example is the Harvard - Uppsala Trauma Questionnaire for Children (Ahmad, 1999), developed from the Harvard Trauma questionnaire for adults (Mollica et al, 1992) a scale that covers various kinds of potentially traumatic events, the proximity to the trauma, and that also has several questions about war experiences, torture and various extreme conditions Lifetime Incidence of Traumatic Events (LITE) developed by Greenwald and Rubin (1999) has 16 questions, and asks when the trauma first happened, how many times it was repeated, the reaction experienced at the time of the first incident and the reactions experienced today (Greenwald and Rubin, 1999). This scale has been translated and used in Sweden in a two studies on school children and adolescents (Gustafsson et al., 2009a; Gustafsson et al., 2009b) and has been shown to have good psychometric properties (Nilsson et al., 2010). However, LITE, like JVQ and the Harvard – Uppsala Trauma Questionnaires lacks important questions about, alcohol, and drug abuse in the family of origin, illnesses (both physical and mental), and parents being in prison, events that are all considered to be Adverse Childhood Experiences or what we would like to call Adverse Childhood Circumstances (ACCs). Moreover, some items in LITE are vaguely formulated, making it difficult to specify which events the respondent had actually experienced. Out of our experience in research of the small trauma scale on the Dis-Q- Sweden (7 items) (Nilsson and Svedin, 2006a; Nilsson and Svedin, 2006b; Svedin et al., 2004), the LITE (Gustafsson et al., 2009a; Gustafsson et al., 2009b; Nilsson et al., 2010) and our long experience of meeting and treating adolescents with symptoms associated with earlier experiences of traumatic events and with a background of adverse childhood circumstances, we decided to develop a new trauma history scale. In this new questionnaire we have tried to put together recent knowledge about the impact of: interpersonal events (IPE's), non interpersonal events (nIPE's) and adverse childhood circumstances (ACCs). We have tried to make it as short as possible so that it will be easy to distribute and easy for the subjects to fill in.

The result is a 41-item questionnaire, the Linköping Youth Life Experience Scale (*LYLES*), identifying experiences of non- interpersonal and interpersonal traumas and adverse childhood circumstances. The purpose of this study was to investigate the psychometric properties of LYLES, and more specifically test-retest reliability and to make an initial examination of validity by studying

associations with symptoms of anxiety, depression and dissociation. Furthermore, we aimed at examining if the novel addition of adverse childhood circumstances could be related to traumatic events and to symptoms, independently of the effect of potentially traumatic events.

Method

Participants

The participants were adolescent from ten classes from the second grade of the secondary school, sampled from three schools in the cities of Linköping and Norrköping in Sweden. The secondary school is an optional continuation of the nine-year compulsory school and consists of three grades. We decided to sample pupils between 15-19 years old from all the grades, in order to cover a wide range and to ensure that the sample represented different educational programs. A total of 220 pupils were asked to participate in the study. Drop-out was n=32 mostly due to illness, and two pupils declined participation without giving any reason why. Thus, a total of 188 adolescents, 106 girls and 82 boys (86.4 %), agreed to participate in the study and completed LYLES, HAD and Dis-Q-Sweden, see below.

The mean age in this normative group was M=17.0 (SD=1.01) years old. For the purpose of test-retest 31 pupils (drop outs 3) filled in LYLES a second time, two weeks after the initial assessment. Two weeks between the two tests occasions was considered to be a reasonable time in order to capture the degree of stability in the answers.

Procedures

The headmaster from each school was first contacted by e-mail, and after approving the study, supplied a contact with a teacher. Written information was given to pupils and parents. After informed consent was obtained one researcher (J.L.) went to the class and administrated the questionnaires.

All questionnaires were answered anonymously. In the 2 classes that were involved in the test-retest procedure, coded questionnaires were distributed to make certain that all were kept anonymous to the

researcher. All questions were taken care of directly. Anybody who wanted help or felt upset while answering the questionnaires was offered counseling. Nobody used that opportunity.

Questionnaires

LYLES

LYLES (Linköping Youth Life Experience Scale) is a trauma history inventory developed out of Life Incidence of Traumatic Experiences (Greenwald and Rubin, 1999; Larsson, 2003). LYLES contains 23 main questions with more detailed secondary items; 18 items are considered as non-interpersonal (nIPE's), 13 items interpersonal (IPE's) and 10 items ask questions about more longstanding adverse childhood circumstances, ACCs. (See table1 for the whole scale). LYLES is intended to cover several important types of potentially traumatic events and circumstances during an adolescent's lifespan. There are sub-questions on several items to cover the respondent's proximity to the event, i.e., whether the person has experienced the event him- or her- self, seen it or just has only heard about it.

The scores for the different non-interpersonal and interpersonal events are added and the sum represents the content of the total scale *Sum of events or polytraumatization*. Adding up the number of times an adverse circumstance has occurred provides the sum used in the subscale *Sum of times*, and the sum of years reported provides the sum in the subscale *Sum of years*.

Table 1. Frequencies of reported potentially traumatic events on LYLES. IPE is an interpersonal event, and nIPE is a non-interpersonal event. ACC is Adverse Childhood Circumstances

| Item | Kat | | All N % | Girls N % | Boys N % |
|------------|--------|---|---------------|-----------------|----------------|
| | IDD | W 1 : : : : : : : : : : : : : : : : : : | | | |
| 1:1 | nIPE | Have you been in a car accident? | 45 | 21 | 24 |
| 1.0 | IDE | TT '- 1 '- 1 '- 1 | 23.9 | 19.8 | 29.3 |
| 1:2 | nIPE | Have you witnessed a car accident where you were not | 86 45.7 | 48 45.2 | 38 |
| 1:3 | "IDE | involved? | 80 | 45.2 | 46.3 |
| 1:3 | nIPE | Has anyone in your family been in a car accident (without you being there) | 42.6 | | 43.9 |
| 1.1 | nIPE | Has anybody else close to you been in a car accident (without | 70 | 41.5 | 28 |
| 1:4 | IIIPE | you being there)? | 37.2 | 42 39.6 | 28 34.1 |
| 2:1 | nIPE | Have you been in another accident? | 78 | 39.0 | 40 |
| 4.1 | IIII L | Trave you been in another accident: | 41.5 | 35.8 | 48.8 |
| 2:2 | nIPE | Have you witnessed another accident where you were not | 92 | 47 | 45 |
| | IIII L | involved? | 48.9 | 44.3 | 54.9 |
| 2:3 | nIPE | Has anyone in your family been in another accident (without | 82 | 44 | 38 |
| | 2 | you being there)? | 43.6 | 41.5 | 46.3 |
| 2:4 | nIPE | Has anybody else close to you been in another accident | 89 | 46 | 43 |
| | L | (without you being there)? | 47.3 | 43.4 | 52.4 |
| 3:1 | nIPE | Have you been in hospital? | 73 | 40 | 33 |
| | 2 | | 38.8 | 37.7 | 40.2 |
| 3:2 | nIPE | Has anyone in your family been in hospital? | 134 | 74 | 60 |
| | | yyy | 71.3 | 69.8 | 73.2 |
| 3:3 | nIPE | Has anybody close to you been in hospital? | 140 | 79 | 61 |
| | | | 74.5 | 74.5 | 74.4 |
| 4:1 | nIPE | Has anybody in your family died? | 28 | 22 | 6 |
| | | | 14.9 | 20.8 | 7.3 |
| 4:2 | nIPE | Has anybody close to you died? | 134 | 77 | 57 |
| | | | 71.3 | 72.6 | 69.5 |
| 5:1 | nIPE | Have you been in a fire? | 11 | 2 | 9 |
| | | • | 5.9 | 1.9 | 11.0 |
| 5:2 | nIPE | Have you witnessed a fire in another house? | 58 | 29 | 29 |
| | | | 30.9 | 27.4 | 35.4 |
| 6 | nIPE | Have you experienced a natural disaster? | 15 | 5 | 10 |
| | | | _8.0 | 4.7 | 12.2 |
| 7:1 | IPE | Have you been beaten or wounded by an adult in your family? | 16 | 12 | 4 |
| | | | 8.5 | 11.3 | 4.9 |
| 7:2 | IPE | Have you been beaten or wounded by another person? | 61 | 28 | 33 |
| | | | 32.4 | 26.4 | 40.2 |
| 8:1 | IPE | Have you witnessed anyone in your family (mother, sibling) | 21 | 19 | 2 |
| | | been beaten or wounded by an adult in your family? | 11.2 | 17.9 | 2.4 |
| 8:2 | IPE | Have you witnessed anybody else been beaten or wounded? | 93 | 49 | 44 |
| | *** | | 49.5 | 46.2 | 53.7 |
| 9 | IPE | Have you been bound or locked up against your will? | 20 | 17 | 3 |
| 10 - | TD- | *** | 10.6 | 16.0 | 3.7 |
| 10:1 | IPE | Have you been exposed sexual acts against your will by an | 1 | 0 | 1 |
| 10. | IDE | adult in your family? | 0.5 | 0 | 1.2 |
| 10:2 | IPE | Have you been exposed to sexual acts against your will by | 15 | 15 | 0 |
| 10.2 | IDE | another person? | 8.0 | 14.2 | 0 |
| 10:3 | IPE | Have you witnessed anybody else get exposed to sexual acts | 3 | 3 | 0 |
| | IDE | against their will? | 1.6 | 2.8 | 0 |
| 11 | IPE | Have you been threatened that anybody should harm you or | 79 | 40 | 39 |
| 10 1 | IDE | somebody you care for? | 42.0 | 37.7 | 47.6 |
| 12:1 | IPE | Have you been robbed? | 12 | 4 | 8 |
| 10.0 | IDE | II. 10 | 6.4 | 3.8 | 9.8 |
| 12:2 | IPE | Have you been present when anybody else has been robbed? | 20 | 12 | 8 |

| | | | 10.6 | 11.3 | 9.8 |
|------|-------|--|----------|----------|----------|
| 13:1 | IPE | Have you been home when anybody committed burglary? | 3 | 2 | 1 |
| | | | 1.6 | 1.9 | 1.2 |
| 13:2 | IPE | Have you come home after a burglary? | 16 | 8 | 8 |
| | | | 8.5 | 7.5 | 9.8 |
| 14 | nIPE | Have you been in a war where you have heard or seen bombings or firings? | 5 2.7 | 1 0.9 | 4 4.9 |
| 15 | nIPE | Have you escaped from your native country? | 11 | 6 | 5 |
| 13 | IIIFE | Trave you escaped from your native country? | 5.9 | 5.7 | 6.1 |
| 16 | ACC | Have you been exposed to bulling? | 62 | 38 | 24 |
| 10 | 7100 | That's you seen emposed to building. | 33.0 | 35,8 | 29.3 |
| 17 | ACC | Have you against your will, been separated from your parents | 7 | 5 | 2 |
| | | to live in another place? | 3.7 | 4,7 | 2.4 |
| 18 | ACC | Have you been emotionally abused (e.g. disparaged, | 57 | 34 | 23 |
| | | humiliated)? | 30.3 | 32.1 | 28.0 |
| 19:1 | ACC | Have your parents got a divorce during your upbringing? | 53 | 35 | 18 |
| | | | 28.2 | 33.0 | 22.0 |
| 19:2 | ACC | Have your parents quarreled a lot after the divorce? | 19 | 15 | 4 |
| | | | 10.1 | 14.2 | 4.9 |
| 20 | ACC | Have your parents had problems with alcohol or other drugs | 13 | 9 | 4 |
| | | during your upbringing? | 6.9 | 8.5 | 4.9 |
| 21 | ACC | Have your parents had mental problems health problems | 24 | 20 | 4 |
| 22:1 | A C C | during your upbringing? | 12.8 | 18.9 | 4.9 |
| 22:1 | ACC | Do you, or have you had, a prolonged illness or handicap during your upbringing? | 5.9 | 7 6.6 | 4 4.9 |
| 22:2 | ACC | Do your parents have, or have they had, a prolonged illness or | 18 | 10 | 8 |
| 44.4 | ACC | handicap? | 9.6 | 9.4 | 9.8 |
| 23 | ACC | Has anyone of your parents been in jail during your | 7 | 7 | 0 |
| | nee | upbringing? | 3.7 | 6.6 | 0 |

HAD

The HAD (Hospital Anxiety and Depression Scale) is a self report instrument that was developed by Ziegmond and Snaith (1983) as a short and easy instrument to be used in identifying emotional distress among patients at general medical out-patients clinics. The instrument has 14, 4-point Likert items divided between two clinical scales designed to measure degree of depression and anxiety. In order to be able to identify depression and anxiety the cut—off is set at 8-10 points in doubtful cases and 11 in more clear cases. The instrument has displayed acceptable to good psychometric properties across a wide range of populations (Bjelland et al., 2002), in normal populations of both adults and adolescents (Jörngarden et al., 2006; Lisspers et al, 1997).

The HAD has been used extensively; Bjelland and co-workers (2002) found 747 studies were the scale had been used. Reliability, *Cronbach's alpha*, has been reported as ranging between

.68-.93 (M= .83). Only three of the studies were conducted in normal populations, two of these in Sweden and only one of them focused on adolescents (Jörngarden et al., 2006; Lisspers et al, 1997). Jörngården et al., studied n=585 adolescents ages 13-23 years old, the adolescents were asked by post or telephone. They reported *Cronbach's alpha* to be .70 for the two clinical scales except for the depression scale for which the participants had been asked to answer over telephone, and for this scale, *Cronbach's alpha* was reported to be .54. Internal consistency in our study were acceptable to good with *Crohnbach's alpha*, α = .77 (HADS-A), α = .66 (HADS-D).

Dis-Q-Sweden

The Dis-Q is an instrument for the assessment/screening of dissociative symptoms and that was originally developed by Vanderlinden and co-workers 1993 (Vanderlinden, 1993; Vanderlinden et al, 1993). Dis-Q –Sweden in common with the original Dis-Q is composed of 63 items with a 5-point Likert scale. The scale is designed to contain 4 subscales all of which are intended to measure different aspects of dissociation. The subscales are: 1) identity confusion/fragmentation, 25 items, 2) loss of control, 18 items; 3) amnesia, 14 items; and 4) absorption 6 items.

A total score and 4 subscales scores are obtained by dividing the total raw score by the number of included items. The Dis-Q is suitable for young people between the ages 13 and 14 and upwards.

After the first pilot-study was carried out in Sweden in 1998 the version of the Dis-Q used in Sweden has been called Dis-Q-Sweden (Svedin et al, 2004). Dis-Q-Sweden has been used in two more studies in Sweden since the 2004 study (Nilsson and Svedin, 2006a; Nilsson and Svedin, 2006b). *Cronbach's alpha* for the questionnaire has been found to be .97 for the total sum of Dis-Q-Sweden and for the four subscales (identity fragmentation, loss of control,

amnesia and absorption) ranging between .95-.65 (n = 400). Test-retest (n = 79) with Pearson's Correlation was found to be r= .79 (p<.001), and for the four subscales: ranging between r = .80-.51 (all p<.001). Validity has been tested such as construct, concurrent and criterion related. In our study *Cronbach's alpha* was .96.

Statistical analyses

The occurrence of traumatic events is reported as absolute and relative frequencies. Pearson's correlation was used for test- retest reliability of the total scale. *Cohen's kappa* to measure the agreement between the two test occasions, item per item. To examine differences between boys and girls Fischer's exact test was used and also Chi-squared test.

Pearson correlation was used to examine bivariate linear relationships. Hierarchical linear regression analysis was used to examine the simultaneous contribution of the LYLES dimensions to psychiatric symptoms and to examine any independent contribution of ACC beyond that of potentially traumatic interpersonal and non-interpersonal events. Analyses were performed on the total sample and separately for girls and boys. SPSS 15.0 and 17.0 were used for all analyses.

Ethical considerations

The study was approved by the Human Research Ethics Committee, Faculty of Health Sciences, Linköping University, 970225 (Dnr. 97046) and 020514 (Dnr. 02-196). Written informed consent was given by all participants.

Results

Reliability

LYLES test -retest

The stability of the LYLES scale in this sample measured by test-retest reliability using Kappa statistics (*Cohen's kappa*) item per item is shown in Table 2. The results range from moderate

to very good. Of the 41 answers to questions more than half of them were judged substantial or good. Ten of them are judged as moderate.

Sum of Events (r=.79, p<.01) and Total length of time (r=.82, p<.01) showed a significant high test-retest correlation between both test occasions. The subscale Amount of times gave a non significant result.

Table 2. Test-retest kappa statistic item per item LYLES (n=31).

*=p<.05, **=p<.01, ***=p<.001, n.s.=non- significant, a=Kappa not reported because of low frequency

| LYLES item | Cohens kappa | P value |
|------------|--------------|---------|
| 1:1 | 0.71 | *** |
| 1:2 | 0.71 | *** |
| 1:2 | 0.70 | *** |
| 1:4 | 0.55 | ** |
| 2:1 | 0.42 | * |
| 2:2 | 0.59 | *** |
| 2:3 | 0.78 | *** |
| 2:4 | 0.52 | ** |
| 3:1 | 0.72 | *** |
| 3:2 | 0.83 | *** |
| 3:3 | 0.61 | ** |
| 4:1 | 0.44 | * |
| 4:2 | 0.52 | ** |
| 5:1 | a | |
| 5:2 | 0.44 | * |
| 6 | a | |
| 7:1 | 0.47 | ** |
| 7:2 | 0.78 | *** |
| 8:1 | 0.78 | *** |
| 8:2 | 0.52 | ** |
| 9 | 0.71 | *** |
| 10:1 | a | *** |
| 10:2 | 0.78 | *** |
| 10:3 | a | |
| 11 | 0.52 | ** |
| 12:1 | 1.00 | *** |
| 12:2 | 0.19 | n.s. |
| 13 | 1.00 | *** |
| 13:2 | a | |
| 14 | 0.65 | *** |
| 15 | 1.00 | *** |
| 16 | 1.00 | *** |
| 17 | a | |
| 18 | 0.82 | *** |
| 19:1 | 0.84 | *** |
| 19:2 | 0.65 | *** |
| 20 | 1.00 | *** |
| 21 | 1.00 | *** |
| 22:1 | 0.63 | *** |
| 22:2 | a | |
| 23 | 0.65 | *** |

Incidence of potentially traumatic experiences

The results show that having experienced one or several potential traumatic events is very common among Swedish adolescents and 99.5% reports having experienced at least one event. The frequency for the group is presented in Table 1.

The three most common events that youths had experienced concerned non-interpersonal events (nIPE) such as somebody close to them had been in hospital (74.5 %), somebody in the family had been to hospital (71.3 %) and that somebody close to them had died (71.3 %). This applied to both boys and girls.

The interpersonal events (IPE) that were most common, regardless of gender, were to see somebody else being beaten or wounded (49.5 %), to be threatened with being subjected to personal damage (42 %), and to be beaten or wounded by somebody outside the family (32.4 %).

The most frequently experienced ACC was to have experienced bullying (33 %).

The events that the fewest youths had reported exposure to were sexual abuse by an adult in the family (0.5 %), witnessing a sexual abuse incident (1.6 %), being at home when a burglary occured (1.6 %), experiencing acts of war (2.7 %), being separated from your parents against your will (3.7 %) and having had a parent in prison (3.7 %).

Single potentially traumatic events

Six of the single events generated significant correlations on all symptom scales, the HAD (*depression* and *anxiety*), and the *Dis-Q-Sweden*. These events concern being beaten or wounded by somebody, regardless of the nature of the relationship to the perpetrator (items 7:1; r = .15, p < .05 r = .15, p < .05, r = .20 p < .01 and 7:2; r = .18 p < .05, r = .16 p < .05, r = .25 p < 01), and being sexually abused (item 10:2; r = .22 p < .01. r = .28 p < .01, r = .36 p < 01.), threatened that somebody would harm you or somebody you care for (item 11 r = .19 p < .01, r = .20 p < .01,

r=.29, p<.01), and the ACCs being exposed to bullying (item 16, r= .19 p<.01, r=18 p<.05, r=22 p<.01) and having parents with mental health problems (item 21, r= .21p<21, r=.22 p<.01, r=.25 p<.01).

Cumulative events and circumstances

As can be seen in Table 3, the adverse childhood circumstance dimension of LYLES was moderately correlated with the interpersonal (r = .45) and weakly with the non-interpersonal (r = .27) dimensions, indicating that those with a high level of exposure to potentially traumatic events also tended to be exposed to more chronic social adversities (ACCs).

Table 3. Zero-order correlations among scores of Linköping Youth Life Experiences Scale (LYLES), Dissociation Questionnaire (Dis-Q) and Hospital Anxiety and Depression scale (HAD) (N=188).

| Questionnaire | | LYI | LES | | Dis-Q | HAD | |
|--------------------------|--------|--------|--------|--------|--------|--------|--------|
| Measure | | | | | | | |
| | PT | IPE | nIPE | ACC | TOT | TOT | ANX |
| LYLES | | | | | | | |
| Polytraumatization | _ | | | | | | |
| Interpersonal events | .75*** | _ | | | | | |
| Non-interpersonal events | .90*** | .38*** | _ | | | | |
| Adverse Childhood | .41*** | .45*** | .27*** | _ | | | |
| Circumstances | | | | | | | |
| Dis-Q | | | | | | | |
| Total score | .32*** | .38*** | .19** | .31*** | _ | | |
| HAD | | | | | | | |
| Total score | .21*** | .28*** | .11 | .29*** | .67*** | _ | |
| Anxiety | .20** | .26*** | .11 | .26*** | .65*** | .92*** | _ |
| Depression | .16** | .22** | .08 | .24** | .47*** | .79*** | .48*** |

To examine the contribution of adversity to the estimation of HAD and Dis-Q, a two-step hierarchical multiple regression model was employed, see Table 4. In the first step with IPE and nIPE as predictors, only IPE was significantly related to HAD, similarly to Dis-Q to which nIPE had displayed significant bivariate associations (Table 3). In the second step ACC was added. ACC contributed significantly to the models, beyond the influence of IPE and nIPE, to both HAD (p change = .009) and

Table 4. Summary of hierarchical multiple regression analyses with Hospital Anxiety and Depression scale (HAD) and Dissociation Questionnaire (Dis-Q) (separate models) on dimensions of Linköping Youth Life Experiences Scale (LYLES). Model 1=interpersonal events (IPE) and non-interpersonal events (nIPE), Model 2 = adding adversity (ACC).

| Criterion Predictor | | Mo | del 1 estimate | es | | | | Model 2 | estimates | | | | |
|------------------------|----------------|-------|----------------|-----|-------|----------|----------------|-----------|-------------|-----|-------|--|--|
| | Model | | Predictor | | Model | | | Predictor | | | | | |
| | R ² | р | b (SE) | β | р | p change | R ² | р | b (SE) | β | р | | |
| HAD | .08 | .001 | | | | .009 | .11 | <.001 | | | | | |
| IPE | | | 0.75(0.21) | .28 | <.001 | | | | 0.52(0.22) | .19 | .020 | | |
| nIPE | | | 0.02(0.14) | .01 | .903 | | | | -0.03(0.14) | 01 | .849 | | |
| ACC | | | _ | - | _ | | | | 0.72(0.27) | .21 | .009 | | |
| Dis-Q | .14 | <.001 | | | | .028 | .17 | <.001 | | | | | |
| IPE | | | 0.11(0.02) | .35 | <.001 | | | | 0.09(0.02) | .28 | <.001 | | |
| nIPE | | | 0.01(0.02) | .06 | .403 | | | | 0.01(0.02) | .04 | .564 | | |
| ACC | | | _ | - | _ | | | | 0.06(0.03) | .17 | .028 | | |

Dis-Q (p change = .028). For HAD, the independent contribution of ACC was slightly larger than that of IPE, while for Dis-Q IPE seemed to be of greater importance. The coefficients for IPE were attenuated by the addition of ACC especially substantially in the HAD model.

Similar analyses made separately for girls and boys (Table 5) indicated a dominant influence of IPE in girls, with little contribution from either nIPE or ACC, in both the HAD and Dis-Q models. For boys on the other hand, ACC was the single most influential predictor of symptoms in both models, while nIPE and IPE independent contributions were non significant and similar in magnitude. Table 5.

Gender differences were found on reported symptom of anxiety on the HAD, were girls reported significantly higher symptoms scores (*t*186= 5.3, p<.001) girls M=8.25 and boys M= 5.66. On the depression scale there were no gender differences.

Significant gender differences were also found on Dis-Q-Sweden, the total scale scores for girls had 2.0 and for boys 1.7 (t186=4.2p<.001).

Discussion

The results have shown that the newly developed trauma history scale LYLES has good psychometrics such as test –retest and kappa statistics, and, in addition the initial establishment of validity, i.e., associations with symptoms, seems promising. To have a statistically sound instrument to measure both potentially traumatic life events and ACCs, must be considered an important achievement, as recent research has underlined the cumulative effects of childhood trauma on different symptoms in child and adulthood (Cloitre, et al., 2009).

The test-retest reliability for the LYLES in this study was shown to be a little bit better than in our study on LITE were Pearson was r = .76 and for LYLES r = .79, and so also for the kappa

Table 5. Summary of hierarchical multiple regression analyses in girls and boys, with Hospital Anxiety and Depression scale (HAD) and Dissociation Questionnaire (Dis-Q) (separate models) on dimensions of Linköping Youth Life Experiences Scale (LYLES). Model 1=interpersonal events (IPE) and non-interpersonal events (nIPE), Model 2 = adding adversity (ACC).

| Criterion Predictor | | Mo | del 1 estimate | es | | | | Model 2 | estimates | | | | |
|------------------------|-------|-------|----------------|-----|-------|----------|----------------|---------|-------------|-------|-------|--|--|
| | Мо | del | Predictor | | | Model | | | Predictor | | | | |
| Only girls | R^2 | р | b (SE) | β | р | p change | R ² | р | b (SE) | β | р | | |
| HAD | .10 | .005 | | | | .331 | .11 | .009 | | | | | |
| IPE | | | 0.69(0.24) | .29 | .005 | | | | 0.58(0.26) | .24 | .028 | | |
| nIPE | | | 0.11(0.18) | .06 | .552 | | | | 0.09(0.18) | .05 | .628 | | |
| ACC | | | | | | | | | 0.32(0.32) | .11 | .311 | | |
| Dis-Q | .19 | <.001 | | | | .908 | .19 | <.001 | | | | | |
| IPE | | | 0.12(0.03) | .41 | <.001 | | | | 0.12(0.03) | .40 | <.001 | | |
| nIPE | | | 0.02(0.02) | .07 | .446 | | | | 0.02(0.02) | .07 | .458 | | |
| ACC | | | | | | | | | 0.00(0.04) | .01 | .908 | | |
| Only boys | | | | | | | | | | | | | |
| HAD | .06 | .086 | | | | .035 | .11 | .024 | | | | | |
| IPE | | | 0.76(0.39) | .24 | .055 | | | | 0.44(0.41) | .14 | .278 | | |
| nIPE | | | 0.03(0.21) | .02 | .905 | | | | -0.08(0.21) | -0.05 | .693 | | |
| ACC | | | | | | | | | 1.15(0.54) | .27 | .035 | | |
| Dis-Q | .11 | .010 | | | | .008 | .19 | .001 | | | | | |
| IPE | | | 0.06(0.04) | .19 | .108 | | | | 0.02(0.04) | .08 | .452 | | |
| nIPE | | | 0.03(0.02) | .19 | .109 | | | | 0.02(0.02) | .12 | .326 | | |
| ACC | | | | | | | | | 0.13(0.05) | .32 | .008 | | |

statistics item per item which in this study ranged between .44-1.0 and for LITE between .33-.86 (Nilsson et al., 2009).

In this sample the adolescents had reported a high frequency of experienced potentially traumatic events and also have reported higher symptom scores on Dis-Q- Sweden than what have been found in other studies using Dis-Q- Sweden, something which can be seen as way of beginning to establish the validity for LYLES.

ACCs were correlated with interpersonal, and to a lesser degree to non-interpersonal potentially traumatic events. This indicates that the addition might confound the estimation of the impact of some single potentially traumatic events which is something that Schilling et al., (2008) also points out.

Even if the cumulative effect is big there are some single trauma events that seem to have greater impacts on the mental health of adolescents and therefore are of importance for clinicians to identify. Potentially traumatic events and ACCs that in this study gave reported symptoms on all scales were: being beaten or wounded by somebody, sexually abused, threatened by somebody who might harm you or somebody you care for, exposed to bullying and having parents with mental health problems.

In the multiple regression analyses, ACCs contributed significantly to the estimation of symptoms, beyond the influence of IPE and nIPE and for HAD, more so than either IPE or nIPE. Moreover, the initially highly substantial contribution by IPE in the HAD model was attenuated by the addition of ACCs. This finding suggests that some of the impact of IPE might be explained by social adversity rather than a true effect of interpersonal events, and thus acts as a confounder for the impact of IPEs. Thus, the inclusion of ACC both contributed to the overall estimation of symptoms, and to a degree also indicated that it might confounded the estimation of effects of potentially traumatic events. Our analyses by sex indicated that the

influence of ACCs is especially important in boys, while in girls, IPE was the only important LYLES dimension in the estimation of symptoms.

As expected from our studies on the LITE checklist (Gustafsson, et al., 2009; Nilsson, et al., 2009), the psychological impact of IPE seemed to be substantially stronger than for nIPE.

In this study 13% of the participants had symptoms of dissociation according to Dis-Q Sweden (cut off 2.5) which is higher than has been found in two other Swedish studies where the prevalence rates of 2.3% and 8.8% were found (Nilsson and Svedin, 2006b; Svedin, et al, 2004). The explanation for this could be that there is a higher percentage of reported trauma in this adolescent group than in the groups we previously studied. In our former studies using Dis Q—Sweden got rates of experienced trauma 15% and 24% whereas in the present study we got 27.7%.

LYLES covers a broad range of events and circumstances of different stressors including severity and incidences, which taken all together potentially represent a large fraction of the impact of severe stressors. It seems as if the LYLES is sensitive to events of both high and low frequency, a sensitivity that contributes to making it a useful questionnaire. Our findings indicate that the trauma history and adverse childhood circumstances reported in LYLES can help clinicians and researchers in evaluating the experience of different traumas and ACC. Some single traumatic events affects more than others, and the cumulative effect of different potentially traumatic events, are notable in symptoms scales like the HAD, and the Dis-Q-Sweden. The HAD is a sensitive instrument and has been given Swedish norms and values for adolescents in a study by Jörngården and colleagues (2006). HAD has been proven to have an impact on the reported Health Related Quality of Life (Jörngården et al., 2006).

According to Myers and Winters (2002) it is important that the process of answering a questionnaire should not lead the subject to experience a feeling of being re-traumatized, and,

to our knowledge, this was not the case when the adolescents answered LYLES. None of the adolescents completing the questionnaire asked for help that had been offered by the researcher at the start.

One of the limitations of the study is that the sample is rather small and that there was no clinical sample, to support our conclusion on the validity of LYLES. The cross-sectional design also makes any inferences about causality hazardous, e.g. the mental health of adolescents can influence their risk for experiencing or being exposed to some particular traumatic incidents. Mono-method bias might be a threat to validity since self-reports of both trauma exposure and symptoms were used. Retrospective recall might be subject to both random and systematic error, an issue we have no means to control for. However the results are sufficiently promising to allow us to recommend that LYLES be examined further in lager samples of clinical and non-clinical adolescents, preferably in studies with longitudinal design and with cross-validation by interviews.

Conclusions: The LYLES could be a useful instrument to quickly and easy screen for potentially traumatic events and ACCs. The results underline the importance of clinically taking into consideration the broad spectrum of potentially traumatic events an adolescent can experience, especially interpersonal events including growing up in adverse life circumstances. It can help the clinician to better understand the range feelings their client is experiencing and to better address specific treatment issues and offer suitable treatment programs. LYLES can also help the researcher get a comprehensive picture of adolescents' adverse exposures and contribute to disentangling the impact of traumatic events from the impacts of ACCs, thus avoiding potential confounding effects.

References

- Ahmad A (1999) *Childhood trauma and posttraumatic stress disorder : a developmental and cross-cultural approach.* Comprehensive summaries of Uppsala dissertations from the Faculty of Medicine, 874, pp. [6], 58, [2] s. Uppsala: Acta Universitatis Upsaliensis : Univ.-bibl. [distributör].
- Appleyard K, Egeland B, van Dulmen M H, Sroufe L A (2005). When more is not better: the role of cumulative risk in child behavior outcomes. *Journal of Child Psychology and Psychiatry and Allied dicsiplinces.* 46(3), 235-245.
- Bjelland I, Dahl AA, Haug TT, Neckelmann D (2002) The validity of the Hospital Anxiety and Depression Scale. An updated literature review. *J Psychosom Res*, 52, 69-77.
- Cloitre M,Stolbach, BC., Herman JL,van der Kolk B, Pynoos R, Wang J, Petkova E (2009) A developmental approach to complex PTSD: childhood and adult cumulative trauma as predictors of symptom complexity. *Journal of Traumatic Stress*, 0, 1-10.
- Finkelhor D, Hamby SL, Ormrod R, Turner H (2005a) The Juvenile Victimization Questionnaire: reliability, validity, and national norms. *Child Abuse Negl*, 29, 383-412.
- Finkelhor D, Ormrod R, Turner H, Hamby SL (2005b) The victimization of children and youth: a comprehensive, national survey. *Child Maltreatment*, 10, 5-25.
- Finkelhor D, Ormrod RK, Turner HA (2007) Polyvictimization and trauma in a national longitudinal cohort. *Development and Psychopathology*, 19, 149-66.
- Goodman LA, Corcoran C, Turner K, Yuan N, Green BL (1998) Assessing traumatic event exposure: general issues and preliminary findings for the Stressful Life Events Screening Questionnaire. *J Trauma Stress*, 11, 521-42.
- Greenwald R, Rubin A (1999) Brief assessment of children's post-traumatic symptoms: Development and preliminary validation of parent and child scales. *Research on Social Work Practice*, 9, 61-75.
- Gustafsson PE, Larsson I, Nelson N, Gustafsson PA (2009a) Sociocultural disadvantage, traumatic life events, and psychiatric symptoms in preadolescent children. *Am J Orthopsychiatry*, 79, 387-97
- Gustafsson PE, Nilsson D, Svedin CG (2009b) Polytraumatization and psychological symptoms in children and adolescents. *Eur Child Adolesc Psychiatry*, 18, 274-83.
- Jorngarden A, Wettergen L, von Essen L (2006) Measuring health-related quality of life in adolescents and young adults: Swedish normative data for the SF-36 and the HADS, and the influence of age, gender, and method of administration. *Health Qual Life Outcomes*, 4, 91.
- Larsson I (2003) LITE-S, Life Incidence of Traumatic Events. Translation into Swedish, with permission from the author (Greenwald, R.).
- Lisspers J, Nygren A, Soderman E (1997) Hospital Anxiety and Depression Scale (HAD): some psychometric data for a Swedish sample. *Acta Psychiatr Scand*, 96, 281-6.
- Myers KM, Winters NC (2002). Ten -year review of rating scales I:Overview of scale functioning, psychometric properties, and selection. *Journal of American Academy of Child and Adolescent Psychiatry*, 155, 806-811.
- Mollica RF, Caspi-Yavin Y, Bollini P, Truong T, Tor S, Lavelle J (1992) The Harvard Trauma Questionnaire. Validating a cross-cultural instrument for measuring torture, trauma, and posttraumatic stress disorder in Indochinese refugees. *J Nerv Ment Dis*, 180, 111-6.
- Nijenhuis ER, Spinhoven P, van Dyck R, van der Hart O, Vanderlinden J (1997) The development of the somatoform dissociation questionnaire (SDQ-5) as a screening instrument for dissociative disorders. *Acta Psychiatr Scand*, 96, 311-8.
- Nilsson D, Gustafsson PE, Svedin CG (2009) Self -reported potentially traumatic life events and symptoms of posttraumatic stress and dissociation. *Nordic Journal of Psychiatry*.
- Nilsson D , Svedin CG (2006a) Dissociation among Swedish adolescents and the connection to trauma: an evaluation of the Swedish version of Adolescent Dissociative Experience Scale. *J Nerv Ment Dis*, 194, 684-9.
- Nilsson D , Svedin CG (2006b) Evaluation of the Swedish version of Dissociation Questionnaire (DIS-Q), Dis-Q-Sweden, among adolescents. *J Trauma Dissociation*, 7, 65-89.

- Ohan JL, Myers K, Collett BR (2002) Ten-year review of rating scales. IV: scales assessing trauma and its effects. *J Am Acad Child Adolesc Psychiatry*, 41, 1401-22.
- Rutter, M. (1979) Protective factors in children's responses to stress and disadvantage. In M.W. Kent & J.E.Rolfs (Eds.) *Primary prevention of psychopsthology, Vol.3: Social competence in children* (pp.49-74). Hanvoer, NH: University Press.
- Schilling EA, Aseltine Jr RH, Gore S (2007). Averse childhood experiences and mental health in young adults: a longitudinal survey. *BioMedCentral Public Heath*, 7:30, http://www.biomedcentral.com/147-2458/7/30/prepub.
- Schilling A, Aseltin RH, Gore S (2008). The impact of cumultive childhood adversity on young adult mental health: Measures, models, and interpretations. *Social Science & Medicine*, 66; 1140-1151.
- Svedin CG, Nilsson D, Lindell C (2004) Traumatic experiences and dissociative symptoms among Swedish adolescents. A pilot study using Dis-Q-Sweden. *Nord J Psychiatry*, 58, 349-55.
- Vanderlinden J (1993) Dissociative experiences, trauma and hypnosis. Eburon: Delft.
- Vanderlinden J, van Dyck R, Vandereycken W, Vertnommen H, Verkes RJ (1993) The Dissociation Questionnaire (Dis-Q): Development and characteristics of a new self-report questionnaire. *Clinical Psychology & Psychotherapy*, 1, 21-27.
- Zigmond AS, Snaith RP (1983) The hospital anxiety and depression scale. *Acta Psychiatr Scand*, 67, 361-70.