



Well-being, Mental Health Problems, and Alcohol Experiences Among Young Swedish Adolescents: a General Population Study

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Abstract

The aim of this study was to investigate patterns of self-reported emotional and behavioral problems and self-rated well-being in relation to alcohol experiences among Swedish girls and boys in early adolescence. A general sample of 1383 young people aged 12 to 13 years reported their internalizing and externalizing problem styles, and their well-being and alcohol experiences were measured. Person-oriented analyses were applied to the data to determine specific mental health configurations (“types”) that occurred more frequently than expected by chance. Externalizing problems, in contrast to internalizing problems, occurred more commonly in adolescents who reported a high degree of well-being. Girls with low well-being and mental health problems were overrepresented among those with alcohol experiences. Findings suggest that gender and positive psychology perspectives should be taken into account when describing and explaining mental health among adolescents, especially adolescents with an early alcohol debut.

Keywords: alcohol debut, alcohol experiences, externalizing problems, internalizing problems, gender differences, mental well-being, person-oriented analyses, young adolescents

Introduction

A positive perspective on mental health has long been neglected in favor of psychopathological perspectives (Gillham, Reivich, & Shatté, 2002) and mental health is often defined as the presence or absence of mental health problems and/or psychiatric diagnoses. Screening for mental illness is often the focus of researchers and clinicians trying to describe and explain mental health among children and adolescents (Gillham et al., 2002), but the absence

of mental health problems does not necessarily imply a state of well-being (Keyes, 2005, 2006). According to the World Health Organization, “Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (WHO, 2014).

The concept of well-being is multidimensional within the field of positive psychology (Seligman & Csikszentmihalyi, 2000) and can be understood from at least three perspectives: the *subjective* (Diener, 1984; Pavot & Diener, 2008), the *psychological* (Ryff, 1989, 2014; Ryff & Keyes, 1995) and the *social* (Keyes, 1998). The concept of mental

well-being in the present study is inspired by research on both *satisfaction* with life (subjective well-being) and *purpose* in life (one sub-dimension of psychological well-being). Both of these constructs connect to a broader concept of *flourishing*, which includes subjective, psychological, and social perspectives on well-being (Keyes, 2002, 2006, 2013; Keyes & Annas, 2009). The opposite of flourishing is *languishing*, defined as the perception of time and life being wasted to no purpose (Keyes, 2002, 2005). According to Keyes (2002), the risk of developing a major depressive episode is six times higher for languishing people and “anything less than flourishing in adolescents and adults is associated with greater burden both to self and society” (Keyes & Annas, 2009, p. 199).

The two-dimensional model of mental health has been developed to provide a “complete state” model of health (Keyes, 2005). The presence (flourishing) or absence (languishing) of mental well-being works on the y-axis and the presence or absence of mental illness on the x-axis (Keyes, 2005). Studies of this model show that mental illness and mental well-being function on these two related but different continua and that these dimensions should be measured in parallel for a thorough understanding of a person’s general mental health status and functioning (Greenspoon & Saklofske, 2001; Keyes, 2005, 2006). There is, however, a need for studies investigating adolescent populations to assess the applicability of the two-dimensional model across a younger age sample (Proctor, Linley, & Maltby, 2008).

Results from studies investigating subjective well-being conclude that a majority of young people in Western countries, especially boys (11- and 15-year-olds), are satisfied with their lives (Currie *et al.*, 2012). Girls’ scores tend to be lower than boys’, but they do report overall satisfaction with their lives (Currie *et al.*, 2012; Moksnes & Espnes, 2013). The prevalence of life satisfaction has nevertheless been shown to decline for girls from age 11 to 15 (Currie *et al.*, 2012). Studies in Swedish children and adolescents report a high prevalence of well-being, although studies investigating mental health problems have shown that self-reported anxiety and depression have increased in Swedish children and adolescents since the 1980s (Heimersson *et al.*, 2013; Salmi, Berlin, Björkenstam, & Ringbäck Weitoft, 2013). Although many mental health problems have increased in Sweden, serious psychiatric diagnoses (e.g., schizophrenia and bipolarity) among adolescents have not (Bremberg, Hæggenman, & Lager, 2006; Petersen *et al.*, 2010).

Consistent gender differences in mental health problems have been reported among adolescents both in Sweden and internationally, with boys having more externalizing (behavioral) problems and girls having more internalizing (emotional) problems (Berlin, Modin, Gustafsson, Hjern, & Bergström, 2012; Currie *et al.*, 2012; Koskelainen, Sourander, & Vauras, 2001; Lundh, Wångby-Lundh, &

Bjärehed, 2008; Ronning, Handegaard, Sourander, & Morch, 2004). However, the total of reported symptoms of mental health problems (both externalizing and internalizing), does not usually differ between the sexes in early adolescence (Berlin *et al.*, 2012; Koskelainen *et al.*, 2001; Lundh *et al.*, 2008; Ronning *et al.*, 2004). Studies investigating the relationship between mental health problems and well-being among young adolescents are still lacking, however. The most common practice is to investigate these two dimensions separately, but the results are then often contradictory and difficult to understand.

Adolescence is the time when alcohol consumption is typically initiated and sharply increases (Duncan, Duncan, & Strycker, 2006; Young *et al.*, 2002). An early debut of alcohol consumption is a well-known risk-factor for later alcohol abuse/dependence, especially among adolescents with mental health problems (Kessler *et al.*, 1996). Reduced satisfaction with life has also been associated with alcohol use among children and adolescents as young as 11 to 14 years old (Proctor & Linley, 2014).

It is known that there is a reciprocal relationship between mental health problems and alcohol consumption in adolescence (Kessler *et al.*, 1996; Malmgren, Ljungdahl, & Bremberg, 2008). For example, alcohol use at a young age predicts depressive problems later in life, and depressive problems at a young age predict an increased use of alcohol in adulthood (Malmgren *et al.*, 2008).

Externalizing problems in 8-year-olds are associated with the use of substances (tobacco, alcohol, cannabis, and others) in both boys and girls at the age of 15 to 16 (Young *et al.*, 2002). However, externalizing behavior has not been shown to predict how often girls have been inebriated.

The difference between girls and boys in prevalence of alcohol consumption in early adolescence (ages 12–14) is not substantial, but tends to emerge later, with males showing significantly higher rates of alcohol abuse/dependence (Young *et al.*, 2002). Van Der Vorst, Vermulst, Meeus, Dekovic, and Engels (2009) also investigated alcohol consumption and drinking trajectories for boys and girls in early through middle adolescence. That study did not include mental health profiles, but concluded that being a boy, having a close friend or a father who drinks heavily, and parents who are permissive toward alcohol use increases the risk of a trajectory toward heavy drinking in adolescence.

Another longitudinal study by Willoughby and Fortner (2015) explored the co-occurrence of depression symptoms and alcohol use in adolescents aged 14 to 17. They found that 10% to 14% exhibited a high co-occurrence of depressive symptoms and alcohol use; 14% to 15% reported a high prevalence of depressive symptoms only, and 32% to 37% reported at-risk alcohol use only.

Despite those studies, there remains a lack of research *combining* the variables of well-being, mental health problems, gender, and alcohol initiation among adolescents, and

especially on how these variables are related to each other in girls and boys as young as 12 to 13 years.

Aim and purposes

The aim of this study was to investigate the relationships between mental health problems (patterns of self-reported internalizing and externalizing problems), mental well-being, and alcohol experience among Swedish girls and boys aged 12 to 13 years. Using a person-oriented approach, this study explored the presence of specific configurations that were more frequent (“types”) or less frequent (“anti-types”) than expected by chance.

Four configurations of the combinations of mental well-being and mental health problems (absence and/or presence of internalizing and/or externalizing problems) were hypothesized to emerge as more frequent than expected by chance in the general sample: (1) girls with high well-being and no internalizing or externalizing problems; (2) boys with high well-being and no internalizing or externalizing problems; (3) girls with low well-being and internalizing (emotional), but no externalizing (behavioral), problems; and (4) boys with high well-being and externalizing, but no internalizing, problems.

We hypothesized that girls and boys with low mental well-being and internalizing or externalizing problems would be more common in the subgroup of young adolescents with an early alcohol debut.

Method

General description of the longitudinal research program

This study investigates baseline data from the first wave of the longitudinal program *Longitudinal Research on Development in Adolescence* (LoRDIA). The program’s overall aim is to study transitions from childhood to adolescence in relation to peers and family, mental health, and personality factors and to follow the intertwined processes of risk behavior and resilience in connection to substance abuse. Data were collected from the general population (adolescents, their parents, and their teachers) through repeated surveys.

The program aims to follow adolescents from the age of 12 to 17 years from four municipalities with 9,000 to 36,000 residents in the south-west and south-central regions of Sweden. Data collection began in 2013 with two cohorts in the 6th and 7th grades and will continue with annual surveys to the 8th and 9th grade. The final data collection will end with a diagnostic interview to discover psychiatric disorders and/or substance use disorders when the participating adolescents are 17. A total of 2021 adolescents were invited to participate in the program, and 1520 (75%) submitted responses on questionnaires. Reasons for exclusion were absence from school (9%) or lack of consent from parents (10%) or the child (6%). General exclusion analyses have shown that the study sample in LoRDIA is representative of the entire group of invited participants in terms of demography (gender and ethnicity) and school performance (grades and attendance).

The surveys were (and continue to be) administrated in classroom settings for students in the first three collection waves. In addition, caregivers received a survey by regular mail during waves 1 and 2 and teachers participated by sharing short reports on the pupils’ school performance in each wave. The research program was approved by the regional Research Ethics Board in Gothenburg, Sweden (No. 362-13).

Participants

For the present study, children aged 12 to 13 were identified from the first data collection wave (Figure 1) and recruited to participate. Children following a school plan for the intellectually disabled were excluded from the study, as were those who filled out the simplified version of the questionnaire because of their limited abilities in reading and/or concentration. Specific exclusion analyses showed no substantial differences in selected variables between the included and excluded groups. Due to internal drop out, the effective sample in the main analyses comprised 1278 individuals, evenly distributed between the genders (girls: $n=658$ [51.5 %]; boys: $n=620$ [48.5 %]) and across the grades (6th-graders: $n = 642$ [50.2 %]; 7th-graders: 636 [49.8 %]). Mean ages (standard deviations) were 12.6 years (0.64), equal for both sexes, and mean age was 12.1 years (0.4) for 6th graders and 13.1 (0.4) for 7th graders.

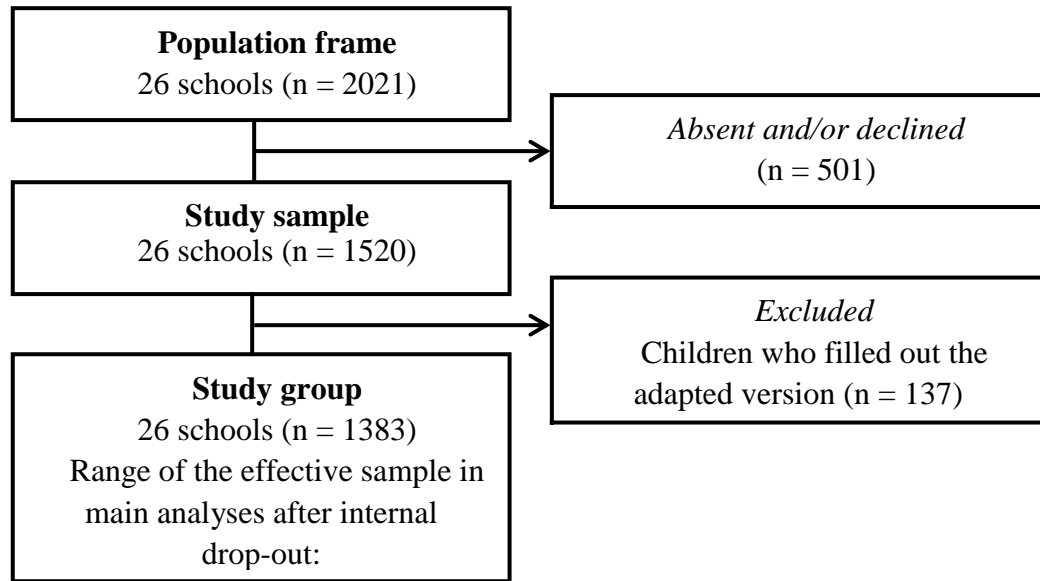


Figure 1. Study recruitment flow chart.

Procedure

Data for the first wave were collected from November 2013 to March 2014). All parents and children received an information letter that briefly explained the purpose of the study. Passive consent was requested from the parents (i.e. not actively responding “no” when asked to let their child participate in the study) and explicit written consent was requested from the child on the day of the survey. We emphasized that participation was voluntary, that collected information would remain confidential, and that participants were free to withdraw from the study at any time. The surveys were administered in the classrooms and absent students were sent their surveys at their home by regular mail. Each questionnaire was introduced by a member of the research team and filled out individually by students using paper and pen. The students answered a structured questionnaire assessing background variables as well as relations with family and peers, adjustment to school and teachers, mental health, and psychological problems. At least one member of the research team monitored the students and was available to answer questions. Approximate time for completing the survey was 1.5 to 2 hours including a short break midway through.

Instruments

For the purpose of this study, the following instruments and questions were included:

Mental health problems. The questionnaires included the Swedish self-report version of Strengths and Difficulties Questionnaire (SDQ-S) (R. Goodman, 1997; R. Goodman, Meltzer, & Bailey, 1998). This questionnaire consists of 25 items and is a broadly used and validated instrument with the aim to detect emotional and behavioral problems (R. Goodman, 1997, 2001; R. Goodman et al., 1998). The SDQ was translated into Swedish by Smedje, Broman, Hetta, and von Knorring (1999), and the psychometric properties of the self-reported version have been validated for use in Sweden (Lundh et al., 2008) as well as other countries (Essau et al., 2012; Koskelainen et al., 2001; Ronning et al., 2004; Van Roy, Veenstra, & Clench-Aas, 2008).

The 25 SDQ items are divided into five subscales of five items each: hyperactivity/inattention (e.g. *I am easily distracted, I find it difficult to concentrate*), emotional symptoms (e.g. *I am often unhappy, down-hearted, or tearful*), conduct problems (e.g. *I fight a lot, I can make other people do what I want*), peer problems (e.g. *Other children or young people pick on me or bully me*), and prosocial behavior (e.g. *I try to be nice to other people*). Answers are given on a 3-point Likert scale of 0 = not true, 1 = somewhat true, or 2 = certainly true, for totals ranging from 0 to 10 for each 5-question scale. All but the prosocial scale can be summed to generate a total difficulties score of 0 to 40, with higher scores indicating more severe general problems.

In this study, the 25 SDQ items were grouped into three subscales used preferably in low-risk community samples (A. Goodman & Goodman, 2009; A. Goodman, Lamping, & Ploubidis, 2010): internalizing problems, externalizing problems, and prosocial behavior. The externalizing score

ranges from 0 to 20 and is the sum of the conduct and hyperactivity/inattention scales. The internalizing score ranges from 0 to 20 and is the sum of emotional symptoms and peer problems scales. Previous studies have used a 90th percentile cut-off point for the 5-factor model to define high risk groups (R. Goodman et al., 1998; Koskelainen et al., 2001; Lundh et al., 2008; Ronning et al., 2004; Van Roy, Grøholt, Heyerdahl, & Clench-Aas, 2006; Van Roy et al., 2008). For this study, the SDQ difficulties subscales was used and cut-offs indicating externalizing and/or internalizing problem styles were set at one standard deviation above mean score (i.e., 9 out of 20 for externalizing problems and 8 out of 20 for internalizing problems).

Mental well-being. A mental well-being measure was created by using two items concerning satisfaction with life and purpose and meaning in life, both previously used in a large population screening among Swedish 6th and 9th graders (Berlin et al., 2012) and similar to items measuring subjective and psychological well-being in the Mental Health Continuum Short Form (MHC-SF) (Keyes, 2009). The following two questions were used:

(1) *In general, how happy are you with life at the moment?* The item is scored 1 for “very happy,” 2 for “quite happy,” 3 for “quite unhappy,” and 4 for “very unhappy.” Earlier qualitative research with youth aged 11 to 15 years has shown that children and adolescents evaluated both their feelings toward life in general and the quality of their social relationships when answering this question (Jensen, 1999).

(2) *I think that my life has purpose and meaning.* The item is scored 1 for “completely agree,” 2 for “partly agree,” 3 for “partly disagree,” and 4 for “completely disagree.” Lower values on both questions indicate a higher level of mental well-being.

For the purpose of the present study, we reverse-coded and summed each participant’s responses. The mental well-being score ranged from 2 to 8 and the consistency of the scale was controlled by a split-half analysis with an alpha value of 0.77 indicating satisfactory internal reliability. The cut-off indicating high mental well-being was set at 6 or more of a maximum 8 points.

Alcohol experiences. Two questions about alcohol experience were asked; (1) “*How old were you when (if ever) you first drank at least one glass of alcohol?*” and (2) “*How old were you when (if ever) you first drank enough alcohol to become inebriated?*” The responses were coded “Yes, have tried alcohol (at least one glass)” and/or “Yes, have been inebriated” for all answers reporting a debut at 14 years or younger. Otherwise, the items were coded “No, never tried alcohol” or “No, never been inebriated.” Both questions were previously used in annual reports from the Swedish Council for Information on Alcohol and Other Drugs (Englund (2014). See Table 1.

Statistical methods

Independent *t*-tests using SPSS (version 22.0, 2013) were conducted to compare the mean scores of girls and boys on the self-rated SDQ–total difficulties score, SDQ–externalizing and internalizing scores, and mental well-being scores. Differences between girls and boys were presented as effect sizes (Cohen’s *d*). A person-oriented approach was applied to the data (Bergman & Lundh, 2015) and a Configural Frequency Analysis (CFA) (von Eye, 2001; von Eye & Wood, 1996) was conducted to find more frequent (“types”) or less frequent (“antitypes”) specific health configurations than expected by chance. In order to link specific configurations of gender, mental well-being, internalizing problems, and externalizing problems to alcohol use, an additional analysis was conducted using a procedure called EXACON, describing types and antitypes in a cross-table. *P*-levels were adjusted using Bonferroni in the CFA to reduce the risk of mass significance. Both CFA and EXACON were performed in SLEIPNER version 1.0 (Bergman & El-Khoury, 1995). Although the children were in two different grades (6th and 7th), the variable “grade” did not contribute substantially to a deeper understanding of the sample configurations and was therefore excluded from the analyses.

Results

The first analysis tested gender differences in responses on the SDQ–total problems scale: externalizing and internalizing problems and self-rated mental well-being. This was done to substantiate the relevance of using externalizing and internalizing problems as separate problem styles in the CFA instead of only the Total Difficulties Scale as a measure of mental health problems.

As seen in Table 2, there was no statistically significant difference between girls and boys on the SDQ–total problem scale ($t(1,354) = 1.05, p = .294 ns$). Gender differences with small effect sizes were found between girls and boys in externalizing and internalizing problems. Boys reported significantly higher scores on the externalizing problems scale—estimated mean difference = 0.88, 95% CI [0.54, 1.21], $t(1,309) = 5.10, p = .001$. Girls reported significantly higher scores on the internalizing problems scale—estimated mean difference 0.58, 95% CI [0.24, 0.91], $t(1,355) = 3.40, p = .001$. Boys also reported significantly higher levels of mental well-being than girls—mean difference 0.40, 95% CI [0.26, 0.53], $t(1,270) = 5.80, p = .000$.

Table 1. Participant characteristics: alcohol experiences among 12- to 13-year-old girls and boys

Alcohol experiences	Girls		Boys		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Tried alcohol (had one glass or more) <i>n</i> = 1295						
Yes	63	4.9	97	7.5	160	12.4
No	609	47.0	526	40.6	1135	87.6
Been inebriated (one time or more) <i>n</i> = 1289						
Yes	25	1.9	15	1.2	40	3.1
No	645	50.0	604	46.9	1249	96.9

Table 2. Girls' and boys' self-ratings on the Strengths and Difficulties Questionnaire and mental well-being

Measure	Girls		Boys		Total		<i>t</i> -test (2-tailed)	Effect size Cohen's <i>d</i>
	<i>n</i>	M (SD)	<i>n</i>	M (SD)	<i>n</i>	M (SD)	<i>p</i>	
Mental well-being (2-8)	666	6.73 (1.34)	623	7.13 (1.11)	1289	6.92 (1.25)	0.000	0.325
Strengths and Difficulties Questionnaire (SDQ)								
<i>Total difficulties scale (0-40)</i>	702	10.03 (5.13)	654	10.33 (5.30)	1356	10.18 (5.21)	0.294 <i>ns</i>	0.057
<i>Internalizing problems (0-20)</i>	703	4.82 (3.17)	654	4.25 (3.06)	1357	4.54 (3.13)	0.001	0.183
<i>Externalizing problems (0-20)</i>	703	5.20 (2.96)	655	6.08 (3.34)	1358	5.62 (3.18)	0.000	0.278
Dichotomized variables								
<i>Mental well-being</i>								
<i>(cut-off = 6)</i>								
Low	99	15.0	48	7.7	147	11.5		
High	559	85.0	572	92.3	1131	88.5		
<i>Internalizing problems style</i>								
<i>(cut-off = 8)</i>								
Yes	117	17.8	90	14.5	207	16.2		
No	541	82.2	530	85.5	1071	83.8		
<i>Externalizing problem style</i>								
<i>(cut-off = 9)</i>								
Yes	93	14.0	139	22.4	232	18.2		
No	565	86.0	481	77.6	1046	81.8		

Table 3. Prevalence of configurations and relative probability among 12- to 13-year-olds ($n = 1278$)

Sex	Configuration			Observed frequency	Expected frequency	p (adjusted probability)	Significant type/antitype
	Mental well-being	Internalizing problems	Externalizing problems				
Girl	Low	No	No	24	51.91	.000	Antitype
Boy	Low	No	No	11	48.91	.000	Antitype
Girl	Low	Yes	No	41	10.03	.000	Type
Boy	Low	Yes	No	7	9.45	<i>ns</i>	
Girl	Low	No	Yes	11	11.51	<i>ns</i>	
Boy	Low	No	Yes	12	10.85	<i>ns</i>	
Girl	Low	Yes	Yes	23	2.23	.000	Type
Boy	Low	Yes	Yes	18	2.10	.000	Type
Girl	High	No	No	464	399.41	.001	Type
Boy	High	No	No	428	376.34	.015	Type
Girl	High	Yes	No	36	77.20	.000	Antitype
Boy	High	Yes	No	35	72.74	.000	Antitype
Girl	High	No	Yes	42	88.59	.000	Antitype
Boy	High	No	Yes	79	83.47	<i>ns</i>	
Girl	High	Yes	Yes	17	17.12	<i>ns</i>	
Boy	High	Yes	Yes	30	16.13	.019	Type

The variables gender, mental well-being, and internalizing and externalizing problems were included into a CFA to explore health profiles among the general group of young adolescents (Table 3). The expected configurations of 1 to 3 were found to be significant as proposed “types”. Girls ($p = 0.001$) and boys ($p = 0.015$) with high levels of well-being and no internalizing or externalizing problems were predominant in the group of 12- to 13-year-olds. Somewhat surprisingly, girls and boys reporting low mental well-being and both internalizing and externalizing problems were also found to be more frequent types than expected by chance ($p < .001$). The third expected configuration was also significant in the sample ($p < .001$); girls with low mental well-being and internalizing problems were four times more frequent than expected by chance. The last expected configuration of boys with high mental well-being and ex-

ternalizing problems was not a statistically significant “type”. An unexpected group, however, did emerge as a “type”: boys reporting high mental well-being and both externalizing and internalizing problems ($p = .019$). It should be noted that several “antitypes” also emerged in the group. Girls reporting high mental well-being, externalizing problems, but no internalizing problems were less frequent than expected by chance ($p < .001$). The same configuration was not an “antitype” among boys. The combination of high mental well-being, internalizing problems, but no externalizing problems was found as a significant “antitype” among both genders ($p < .001$). Low well-being and absence of internalizing and externalizing problems was also an antitype for both girls and boys ($p < .001$). The two last configurations were both infrequent patterns among the 12- to 13-year-olds.

Table 4. Alcohol experience contingent on health configurations among 12- to 13-year-olds ($n = 1215$)

Sex	Configuration			Tried alcohol			p	Significant type/antitype
	Mental well-being	Internalizing problems	Externalizing problems	Yes	No	Total		
Girl	Low	No	No	4	20	24	<i>ns</i>	
Boy	Low	No	No	3	7	10	<i>ns</i>	
Girl	Low	Yes	No	8	30	38	<i>ns</i>	
Boy	Low	Yes	No	0	5	5	<i>ns</i>	
Girl	Low	No	Yes	3	7	10	<i>ns</i>	
Boy	Low	No	Yes	4	7	11	<i>ns</i>	
Girl	Low	Yes	Yes	8	15	23	0.043	Type
Boy	Low	Yes	Yes	6	12	18	<i>ns</i>	
Girl	High	No	No	17	421	438	0.000	Antitype
Boy	High	No	No	51	355	406	<i>ns</i>	
Girl	High	Yes	No	3	32	35	<i>ns</i>	
Boy	High	Yes	No	3	32	35	<i>ns</i>	
Girl	High	No	Yes	11	30	41	0.008	Type
Boy	High	No	Yes	22	54	76	0.000	Type
Girl	High	Yes	Yes	1	15	16	<i>ns</i>	
Boy	High	Yes	Yes	6	22	28	<i>ns</i>	

The majority of children who had ever tried alcohol reported high mental well-being (114 out of 150 = 76%; see Table 4). The proportion of high well-being differed between the sexes: 58% among girls and 86% among boys. Three health configurations were more frequent than expected by chance (i.e. “types”) in the EXACON analysis: girls with low mental well-being and co-occurring internalizing and externalizing problems and both girls and boys with high mental well-being and no internalizing problems, but with an externalizing problem style. The results showed that these groups had earlier alcohol experiences than other health configurations. However, one group, that of girls with high mental well-being and no self-reported mental health problems, emerged less frequently than expected by chance, and was considered an antitype.

Discussion

This study aimed to examine patterns of self-reported mental health problems (i.e. internalizing and externalizing problems) and mental well-being in relation to alcohol experience among a representative sample of Swedish girls and boys aged 12 to 13 years. Our findings suggest that mental well-being, mental health problems, and gender perspectives all need to be taken into account when describing and explaining adolescents with early alcohol debut.

Our results revealed no gender difference in total self-reported mental health problems (internalizing and externalizing problems), and this finding is in line with

previous research (Berlin et al., 2012; Koskelainen et al., 2001; Lundh et al., 2008; Ronning et al., 2004). On the other hand, significant gender differences were found on the externalizing and internalizing sub-dimensions, with girls reporting more internalizing problems and boys reporting more externalizing problems. The effect sizes can be interpreted as small, implying a careful interpretation of gender differences on the group level. However, these findings are also supported by previous research (Berlin et al., 2012; Currie et al., 2012; Koskelainen et al., 2001; Lundh et al., 2008; Ronning et al., 2004), supporting the use of separate SDQ subscales in further analyses. Different coping strategies and problem styles might be adapted by girls and boys because of gender expectations perceived before and during adolescence. Larger differences in problem styles might therefore emerge in later adolescence.

Notably, gender differences in the positive aspects of mental health (well-being) were already visible in our study in early adolescence. The effect was moderate and similar to that found by Moksnes and Espnes (2013). Boys, more often and more strongly than girls, reported feeling happy about life in general and having a sense of purpose and meaning in their lives. There are several potential interpretations to these findings. Boys and girls might experience life and challenges in life differently, or expectations about life satisfaction and purpose in life might differ between genders. It is also possible that capabilities to reflect upon life differ between boys and girls due to emotional and/or cognitive maturity. Our results are in line with previous research on adolescents' life satisfaction, which report declining satisfaction between the ages of 11 and 15, and a more rapid decline among girls (Currie et al., 2012; Moksnes & Espnes, 2013). Declining mental health through adolescence (increased mental illness and decreased well-being) have also been reported by Keyes (2006). It is therefore reasonable to expect increased gender differences in this sample later in the LoRDIA-research program.

While the gender differences had only a small to medium effect, the CFA shifted focus from group level statistics toward combinations of variables *within* the individual. Our results showed, as predicted, that a majority of young adolescents reported a high degree of mental well-being and no internalizing or externalizing problem styles. These results are in line with other studies on adolescents' mental health (Currie et al., 2012; Keyes, 2006) where *flourishing* (high well-being and low mental illness) was the most prevalent "diagnosis" among youth ages 12 to 14 (Keyes, 2006). As predicted, girls with low well-being and internalizing problems were significantly more frequent than expected by chance even in a sample so young as 12- to 13-year-olds. Notably, this configuration was four times larger than what we would expect from the prevalence numbers in the sample; the same pattern was less frequent among boys. These results support previous findings on mental illness among

girls, showing that adolescent girls report a higher degree of internalizing problems as well as lower life satisfaction than boys of the same age (Moksnes & Espnes, 2013). The results also support the prediction that more boys than girls were expected to report a pattern of externalizing problems combined with high well-being. Girls with high well-being and externalizing problems were only half as common as expected by chance in the material. Both girls and boys reporting high well-being combined with internalizing problems were antitypes in the general sample, i.e. less frequent than expected by chance. These results suggest that having only an externalizing problem style (more common among boys) might be more robust against the risk of low well-being than an internalizing problem style (more common among girls).

The majority of adolescents in our sample were alcohol naïve (had neither tried alcohol nor been inebriated). Our prevalence numbers of alcohol use (tried alcohol or been inebriated) are less than previously reported epidemiological numbers (Young et al., 2002). Few 12- to 13-year-olds reported having been inebriated or even tried alcohol in our sample population. Moreover, and in line with the study by Young et al. (2002), more boys than girls reported early alcohol experiences. Early alcohol experiences can potentially be understood as part of an externalizing problem style, more common among boys than girls at this age (Berlin et al., 2012; Currie et al., 2012; Koskelainen et al., 2001; Lundh et al., 2008; Ronning et al., 2004).

We explored how early alcohol experiences (i.e. tried alcohol once or more) related to health configurations and tested whether individuals with early alcohol experiences were more or less frequent in each health profile than expected by chance. The independent variable "Yes, I have tried alcohol (one glass or more)" can seem harmless compared to "Yes, I have been inebriated (one time or more)." but we still expected that young adolescents with a low degree of mental well-being and internalizing and/or externalizing problems would be overrepresented in this subgroup. Interestingly, the predicted configuration was not dominant among young adolescents with early alcohol experiences.

The alcohol subgroup, contrary to our prediction, consisted mainly of boys reporting high mental well-being and no co-occurring internalizing or externalizing problem styles. However, girls with a similar mental health profile were less frequent than expected by chance (i.e. an antitype); implying that this health profile is more associated with alcohol abstention in early adolescence for girls than for boys. Another overrepresented configuration which differed between the genders was that of girls with low mental well-being, internalizing problems, and co-occurring externalizing problems. These girls represent a vulnerable group with multi-health problems who may use alcohol for other reasons than boys and might profit from early intervention.

However, both girls and boys with high mental well-being and solely an externalizing, but no internalizing, problem styles were overrepresented in the alcohol subgroup. This might imply that an externalizing problem style in combination with high mental well-being could be key features among 12- to 13-year-olds with early alcohol experiences. Alcohol use at early age seems to be both related to an externalizing problem style and part of young boys' experimentation with their masculinities, and/or a part of a norm-breaking/delinquent behavior setting more easily accessible to boys than to girls.

Limitations

When interpreting our findings, some limitations need to be considered. Although validated measures were used, the data for this study were drawn from self-reports, which should be interpreted with caution. On the other hand, the SDQ self-report version has shown good ability to detect and discriminate between different psychiatric problems and to map internal and external problems among children and adolescents (A. Goodman *et al.*, 2010; R. Goodman *et al.*, 1998). It is also notable that no volume or frequency measure, except a lifetime minimum of at least one glass of alcohol, was included in the analyses. How much alcohol and how often they drank could therefore vary extensively within the group. Still, one glass of alcohol or more can effectively differentiate the alcohol naïve children from those who have crossed society's clear boundaries about no alcohol usage in early ages. It is important, though, to recognize that results from this study cannot be taken to imply causality. At this time in children's lives, developmental trajectories are not yet detectable. Alcohol experiences at young age might precede internalizing and/or externalizing problems and vice versa.

An additional limitation of the present study is the small number of participants in some health profiles in the EX-ACON-analysis and further health profiles might have come out as "types" or "antitypes" with a larger sample. Missing data is always a limitation and might skew the results, although general exclusion analyses showed that the study sample in LoRDIA was representative of the entire group of invited participants in terms of demography (gender and ethnicity) and school performance (grades and attendance). However, information about the excluded group's alcohol experiences was not available. Finally, we wanted to test *a priori* defined hypotheses and found it convenient and relevant to do that using CFA rather than cluster analysis or other methods. The decision to dichotomize the variables was practical rather than theoretical and we are aware of the loss of information that this decision creates.

Conclusions

This is the first published study of data from the premiere data collection wave in the prospective LoRDIA-project. We found that young adolescents are generally "doing just fine". Externalizing problems are, however, more common than internalizing problems among adolescents reporting high mental well-being. Girls with both mental health problems and low well-being are a vulnerable risk group in general and overrepresented among those with alcohol experiences. We believe that this study is relevant and provides a novel approach for understanding mental health among young adolescents. These results can contribute to knowledge about mental health in the youngest adolescents. We suggest that further research and practice should take both gender perspectives and positive psychology perspectives into account when describing and explaining mental health among adolescents, especially adolescents with an early alcohol debut.

Authors' contributions

Karin Boson designed the study, organized the data collection, and drafted the first version of the manuscript. Karin Boson, Kristina Berglund, and Claudia Fahlke participated in the data collection and were actively involved in revising the manuscript. Peter Wennberg and Karin Boson carried out the statistical analyses. All authors have read and approved the final manuscript.

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