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Authors

Jozefiak, Thomas
Kayed, Nanna S
Ranøyen, Ingunn
[et al.](#)

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Quality of life among adolescents living in residential youth care: do domain-specific self-esteem and psychopathology contribute?

Thomas Jozefiak^{1,2}  · Nanna S. Kayed¹ · Ingunn Ranøyen¹ · Hanne K. Greger^{1,2} · Jan L. Wallander³ · Lars Wichstrøm⁴

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Abstract

Purpose Many adolescents living in residential youth care (RYC) institutions perceive their quality of life (QoL) to be low. Enhancing QoL is thus important, but little is known about the potential contributors to their QoL. Early interpersonal trauma and subsequent removal from home and repeated relocations to new placements are expected to affect mental health and self-esteem. We therefore investigated if domain-specific self-esteem contributed to QoL among adolescents living in RYC institutions over and beyond their levels of psychopathology.

Methods All youth in Norwegian RYC institutions between the ages 12–23 years were invited to participate. Of a total of 98 RYC institutions, 86 participated, and 400 of 601 eligible youths were examined. The participants' primary contact completed the Child Behavior Checklist to assess psychopathology. The adolescents completed a revised version of the Self-Perception Profile for Adolescents and the

questionnaire for measuring health-related quality of life in children and adolescents (KINDL-R).

Results After adjusting for psychopathology, age, and gender, self-esteem domains uniquely explained 42% of the variance in QoL, where *social acceptance* ($\beta = 0.57$) and *physical appearance* ($\beta = 0.25$) domains significantly predicted concurrent QoL.

Conclusions The self-esteem domains, social acceptance and physical appearance, add substantially to the explained variance in QoL among adolescents living in RYC institutions, over and beyond the levels of psychopathology. These self-esteem domains may be targets of intervention to improve QoL, in addition to treating their psychopathology.

Keywords Self-esteem · Adolescents · Quality of life · Psychopathology

Introduction

Most adolescents are placed in residential youth care institutions (RYC) by child welfare authorities because of severe psychological strains and maltreatment. In Norway, foster care is the preferred form of placement and RYC institutions are a last resort [1, 2]. Adolescents in RYC therefore represent a high-risk population for serious psychopathology, having a very high prevalence of mental disorders and a poorer quality of life (QoL) in most life domains compared to their peers in the general population [3, 4]. Hence, child welfare services should foster well-being and QoL and ensure that residents in institutions gain access to evidence-based psychiatric treatment for their psychopathology. Although negatively related to psychopathology [5–7], QoL appears to be distinct from it [8–11]. The quality of children's lives is important as an

✉ Thomas Jozefiak
thomas.jozefiak@ntnu.no

¹ Regional Center for Child and Youth Mental Health and Child Welfare, Department of Mental Health, Faculty of Medicine and Health Sciences, Norwegian University of Science and Technology, MTF5, N-7491, Pb. 8905, Trondheim, Norway

² Department of Child and Adolescent Psychiatry, St. Olavs Hospital, Elgeseter, Postboks 6810, 7433 Trondheim, Norway

³ Psychological Sciences and Health Sciences Research Institute, University of California, Merced, 5200, North Lake Rd, Merced, CA 95343, USA

⁴ Department of Psychology, Norwegian University of Science and Technology, Trondheim, Norway

investment in the future of a society, both because high QoL is associated with lower social charges and costs and because high QoL among all children is a goal in itself [12]. QoL is also a useful universal indicator of success whenever we intend to advance the well-being of children through intervention, programs, and policy [12]. Here, we define QoL as the subjectively perceived well-being and satisfaction with life according to one's own experience in different life domains [13].

QoL can potentially be improved by elevating self-esteem, which is conceptualized as the evaluation of oneself as a person [14]. It seems almost self-evident that those holding positive views of themselves also are more satisfied with the quality of their lives and have higher subjective well-being than those with more negative views of themselves. Indeed, previous empirical research conducted on child and adolescent community samples among Asian Americans [15], Croatians [16], Turks [17], and Chinese [18] support a link between global self-esteem and QoL. A modern developmental psychological approach represented by Harter and others [19] argues for the centrality of the development of a self-concept in childhood. In this perspective, the developmental self is conceptualized as both a cognitive and a social construct [19]. “The self serves many positive functions, as organizational functions, giving meaning to life experience and to maintain a coherent picture of oneself in relation to one's world (p. 13) [19]. Furthermore, self-processes also perform motivational and protective functions. In contrast, a child who perceives attachment figures as rejecting or emotional unavailable and non-supportive will construct a working model of the self as unlovable, incompetent and generally unworthy” (p. 12) [19]. Thus, *self-esteem*, being the valuation of the self, colors how the child views his/her life, the quality of which of course is QoL. To explore this connection between self-esteem and QoL, beyond the well-known link between psychopathology and QoL, was the theoretical starting point for the present study. Further, self-esteem is also constituted by multiple sub-domains [19], and it is entirely possible to have a positive view of oneself in one area, for example, physical appearance, but a negative view of oneself in another domain, for example, academics. Although the influence of different domains on one's global self-esteem may vary among adolescents (e.g., one adolescent emphasizes being good in sports while another regards close friendships as most important), research suggests that, among typically developing adolescents, some domains contribute more to overall self-esteem than others [20–23]. This raises the question whether some self-esteem domains are more important, if any, to adolescents' QoL. Initial support for the differential importance of self-esteem domains on QoL stems from research on adolescents in the general community [24] and with mobility impairment [25].

However, such findings do not necessarily generalize to the RYC population. First, *all* adolescents living in RYC have been removed from their primary caregivers and a considerable portion has also experienced many out-of-home placements by child welfare services [26]. Having experienced substantial and significant childhood adversities, their relationships to significant others have likely been affected, resulting in increased attachment problems compared to other populations [3, 27, 28]. Early interpersonal trauma and subsequent removal from home and repeated relocations to new placements are expected to affect the overall *level* of self-perceptions. Moreover, it can be hypothesized that these life experiences, in addition to living in RYC institutions, coupled with finding themselves institutionalized in RYC may impact their self-esteem in specific domains. Yet, we do not know how specific self-esteem domains are associated with subjective QoL, or to what degree these domains are important for the adolescents' QoL. There is a lack of research on domain-specific self-esteem related to QoL among adolescents living in RYC institutions. Therefore, one cannot assume that physical appearance is important for the QoL for youth in RYC just because that has been shown for adolescents with mobility impairment [25]. In a similar vein, school self-esteem predicted physical well-being in community adolescents [24], but we do not know if this self-esteem domain is also important for the QoL of adolescents living in RYC institutions. Understanding the role of specific self-esteem domains for QoL may provide directions for targets in both prevention and treatment as an important supplement to known treatment strategies for mental health issues. If we can do so, we may increase QoL and well-being in this high-risk adolescent population.

Aims of the study

The aim of this inquiry is to explore whether self-esteem in specific domains substantially adds to the explained variance in QoL among adolescents living in RYC institutions over and beyond their psychopathology. Further, we will explore which domains of self-esteem (i.e., *scholastic competence*, *social acceptance*, *athletic competence*, *physical appearance*, and *romantic appeal*) contribute with significant unique variance to QoL. In these analyses, we adjust for gender and age because QoL has shown to be gender and age dependent in earlier studies [29], and pronounced gender and age differences have been detected in psychopathology [30, 31] and self-esteem [20, 32]. Figure 1 depicts the associations to be investigated in our structural equation model.

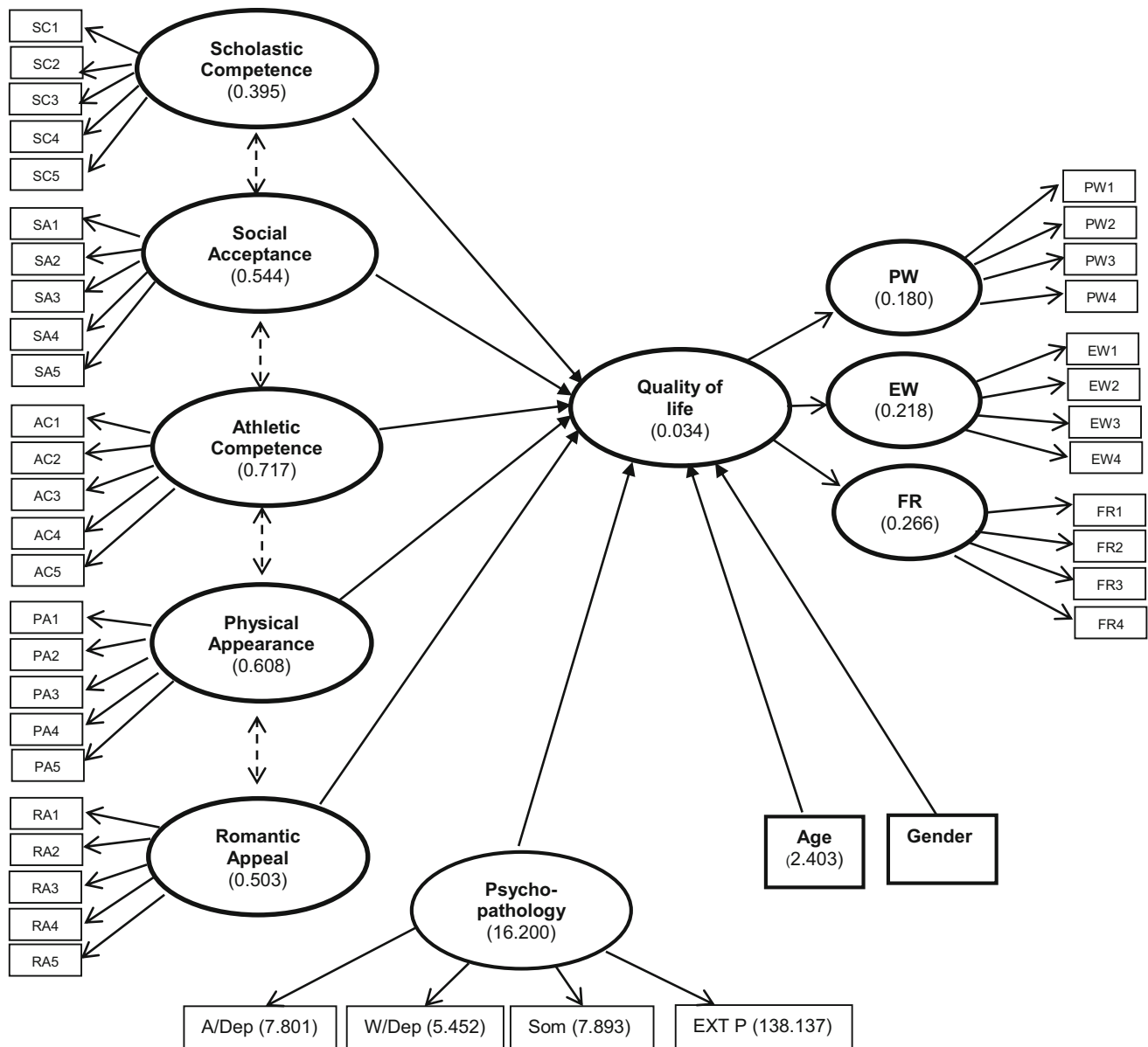


Fig. 1 The structural equation model adjusted for psychopathology, age, and gender. *Note* Variances and residual variances are written in brackets; all indicator variables for self-esteem and QoL domains are defined as “ordered categorical” and have no residual variances but

thresholds. *PW* physical well-being, *EW* emotional well-being, *FR* friends, *A/Dep* anxious depressed, *W/Dep* withdrawn depressed, *Som* somatic complaints, *EXT P* externalizing problems

Methods

Participants and recruitment

The present study is based on data from the project “Mental health in children and adolescents in child welfare institutions” [3]. All Norwegian child welfare institutions hosting youths aged 12–23 years were invited to participate. Unaccompanied minors without asylum in Norway

and youths on acute placement were considered to be in such a high state of crisis that data collection should not be prioritized and were therefore excluded from the study. Youths with insufficient proficiency to complete the questionnaires in Norwegian were also excluded. Of the 98 RYC institutions in Norway, 12 institutions declined participation, leaving 86 that contained 601 eligible youths. Of those, 400 youths (aged 12–20 years) agreed to participate, for a response rate of 67%. For more details about the

recruitment and attrition, see Fig. 2. Further characteristics of the participants are provided in Table 1.

Setting

Adolescents in Norway are placed in RYC institutions according to the Child Welfare Act. A Norwegian RYC institution is typically a small unit with 3–5 residents where the young people are encouraged to live as close to normal as possible, attending school and participating in leisure activities. Each adolescent has a designated member of the institutional staff, considered as a primary contact, who is responsible for him or her on a daily basis.

Procedure

A list of all RYC institutions in Norway was created from a governmental database. The institutions were then contacted in a random order. Data collection was carried out by trained research assistants in the RYC institutions between June 2011 and July 2014. The research assistants visited each RYC institution and had a personal one-on-one contact with each adolescent. They stressed informant confidentiality, responded to questions, and read questions aloud for adolescents with reading problems. The research assistant was present while the adolescent completed the self-esteem and QoL questionnaires (see below). An ID

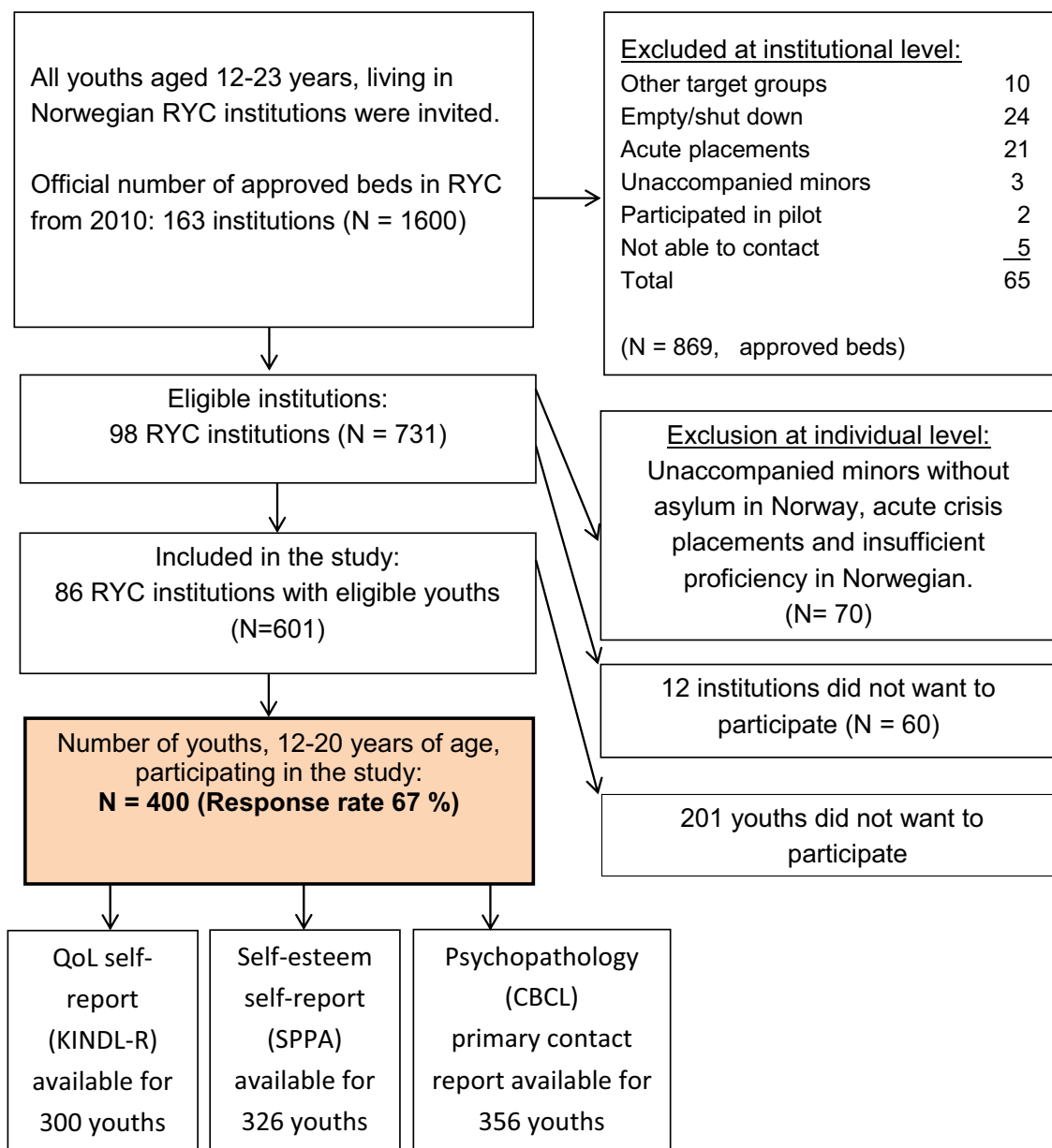


Fig. 2 Flow chart for inclusion in the RYC sample

Table 1 Characteristics of the adolescents in the RYC study sample [3]

Characteristics	<i>N</i>	%	<i>M</i>	SD	Range
Gender					
Male	170				
Female	230				
Age					
Male			16.5 years	1.5 years	12.2–19.3
Female			16.9 years	1.2 years	13.5–20.2
Ethnic origin					
Norwegian	307	78.5			
1st generation immigrant	54	13.8			
2nd generation immigrant	23	5.9			
Unaccompanied minor with asylum in Norway	7	1.8			
Number of placements (by decision of the child welfare system)	364		3.34	2.4	1–25
1	69	19			
2	96	26.4			
3–5	150	41.2			
>5	49	13.4			
Age at first placement (by decision of the child welfare system)	392		12.5 years	3.9 years	0–17
0–2 years	18	4.6			
3–5 years	15	3.9			
6–12 years	98	25			
13–16 years	233	59.4			
16–23 years	28	7.1			
Placement in RYC					
Voluntary	171	43.6			
Involuntary	221	56.4			
Daytime activities					
School	272	69.2			
Work	15	3.8			
Work praxis	30	7.5			
Neither school or work	70	19.5			
Parental problems					
Mother chronic illness	85	22.8			
Mother mental illness	136	36.0			
Mother drug use	36	9.6			
Father chronic illness	64	17.9			
Father mental illness	67	19.0			
Father drug use	43	11.8			

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number only identified all questionnaires. A list combining ID number and personal information was only available to the researchers off-line in an encrypted form. The research assistants collected completed forms. The adolescents' primary contact at the RYC completed the psychopathology questionnaire and delivered it to the research assistants.

Measures

Self-esteem

We assessed domain-specific self-esteem using the revised version [33] of the Self-Perception Profile for Adolescents (SPPA, Harter [34]). The original version is a self-report

scale with nine subscales. Eight subscales measure self-esteem in specific domains and one measures global self-worth. Each domain contains five items, of which approximately half are reversed to avoid acquiescence response bias. The revised version of the scale available in Norwegian [33] was culturally adapted and the response format was simplified, where each statement was followed by four response options (1 = describes me poorly; 4 = describes me very well). The revised scale showed good convergent and factorial validity [33], even better than the original version. The Job Competence subscale was omitted because only about 10% of the participants in RYC had a job or practice placement. The Conduct subscale was also excluded because it has shown low reliability in several studies [34]. Further, the global self-worth subscale was excluded in the present study because our aim was to examine domain-specific self-esteem. We also excluded the Close Friends subscale due to some content overlap with a subscale on the QoL measurement (KINDL-R Friends subscale, see below).

Thus, in the present study, we addressed the following self-esteem domains: (1) *Scholastic Competence*, referring to the adolescent's perceived cognitive competence, as applied to schoolwork, for example, "I have trouble figuring out the answers in school." (2) *Social Acceptance*, referring to the perception of being socially accepted by others, for example, "I am popular among peers." (3) *Athletic Competence*, referring to one's ability to do well at sports, for example, "I am doing very well at all kinds of sports." (4) *Physical Appearance* referring to the extent to which one feels one is good looking, happy with one's looks and body, for example, "I am not happy with the way I look." (5) *Romantic Appeal* referring to perceptions of romantic appeal, for example, "I feel that people of my age will be romantically attracted to me." A longitudinal epidemiological study of Norwegian adolescents and young adults [35] reported satisfactory internal consistency for these five domains (Scholastic Competence $\alpha = .69-.71$; Social Acceptance $\alpha = .77-.83$; Athletic Competence $\alpha = .79-.82$; Physical Appearance $\alpha = .86-.90$; and Romantic Appeal $\alpha = .75$).

Psychopathology

The Problem scales of the 2001 version of the Child Behavior Checklist (CBCL) [36] for children aged 6–18 years were completed by each participant's primary contact at the institution. It consists of 118 Likert-type and two open-ended items rated on a 0–2 scale (0 = not true, 1 = somewhat or sometimes true, or 2 = very true or often true). These items are grouped into syndrome subscales, of which Anxious/Depressed (range 0–26), Withdrawn/Depressed (range 0–16), and Somatic Complaints (range 0–22) subscales measure *internalizing problems*, and Rule-breaking Behavior (range

0–34) and Aggressive Behavior (range 0–36) subscales measure *externalizing problems*. The Norwegian version of the CBCL has shown satisfactory predictive, discriminant, and convergent validity [37]. Reliability was also satisfactory in a previous Norwegian study among the general population for the scales used in the present study [38].

Quality of life

The Kinder Lebensqualität Fragebogen (KINDL-R; questionnaire for measuring health-related quality of life in children and adolescents, revised version) [39] is a well-established instrument used to measure QoL for children aged 8–16 years in numerous clinical and epidemiological studies, including several in Norway [7, 9, 40–44]. It consists of 24 items constituting six subscales, each measured with four items: Physical Well-being, Emotional Well-being, Self-esteem, and Family, Friends, and School. Each item addresses the child's experience over the past week rated on a 5-point scale (1 = never, 5 = always). A high score indicates high QoL. The KINDL-R has shown good scale fit as well as moderate internal consistency [45]. A Norwegian normative study also confirmed satisfactory internal consistency ($\alpha = .69-.81$ across subscales for 10th graders) and satisfactory 2-week test–retest reliability [44]. Because about 30% of the sample did not attend school and none lived together with their families, the School and Family subscales were excluded. Further, the Self-esteem subscale could not be used in the present study due to conceptual overlap with the SPPA.

Statistics

Of 400 included youths, 300 completed the KINDL-R and 326 completed the SPPA. For 356 youths, the primary contact completed the CBCL (see Fig. 2). Missing items were small (KINDL-R: 0.3–5.3%; SPPA: 0.6–8.6%; CBCL: 0%). Applying a full information maximum likelihood (FIML) procedure to handle missingness resulted in path analyses being based on a dataset of $n = 399$. The structural equation model represented in Fig. 1 was estimated with the weighted least square parameter means and variance adjusted (WLSMV) method due to the categorical nature of the SPPA and KINDL-R items. All latent self-esteem domains were correlated with each other, because they represent different facets of the broader construct of self-esteem. In step one of the analysis, QoL was regressed on age and gender only. In step two, QoL was also regressed on psychopathology. In step three, all five latent self-esteem domains were added in the model at the same time. Thus, the final model was adjusted for gender, age, and psychopathology (see Fig. 1). To obtain more reliable standard errors for estimated effects, we used bootstrapping

with 1000 draws [46]. Thus, 95% confidence intervals (CI) were reported for all effects.

Psychopathology, self-esteem domains, and QoL were each treated as latent constructs, thus without measurement error. The five CBCL subscales Anxious/Depressed, Withdrawn/Depressed, Somatic Complaints, Rule-breaking, and Aggressive Behavior were used in a first step as indicators of psychopathology. However, to enable convergence of the *Mplus* program in the analysis of the measurement model, the Externalizing problem sum scale (instead of its two subscales Rule-breaking and Aggressive Behavior) had to be entered as *one* indicator. We also decided to indicate psychopathology as *one* latent variable because of the high comorbidity between internalizing and externalizing problems observed in an earlier study with this sample [3]. The KINDL-R subscales Physical Well-being, Emotional Well-being, and Friends, each consisting of four items, were treated as latent constructs and used as indicators for one latent variable QoL. Domain-specific self-esteem was measured by five items for each of the five scales of the SPPA as indicators for the latent variables scholastic competence, social acceptance, athletic competence, physical appearance, and romantic appeal (see Fig. 1).

Because not all scales of the CBCL, KINDL-R, and SPPA were used in this research, the previous validity estimates pertaining the original scales could not be assumed to apply. Fit indices were therefore reported for the measurement model to validate each latent variable in this study [47]. In a measurement model, items load on their assumed latent variable, and the overall model has to evidence acceptable fit to the data. The literature recommends CFI and TLI values of $>.90$ to indicate good model fit, $.80$ – $.90$ to indicate acceptable fit, and $<.80$ to indicate poor fit; for RMSEA, values of $<.05$ indicate close fit, $.05$ – $.08$ indicate fair fit, and $>.10$ indicate poor fit [48]. The Chi-square test should not be significant. It is recommended to use more than one measure of fit, especially when categorical data are present [49]. We also used composite reliability (CR) to evaluate internal consistency because unlike the coefficient alpha, CR does not assume that all items are equally good indicators of the latent variable measured [50]. An estimated $CR \geq .7$ indicates a good reliability and a CR of $.6$ – $.7$ is considered acceptable.

Two-sided p value $<.05$ was considered statistically significant. We used *Mplus*, version 7.31 [46] for the structural equation analyses, IBM SPSS Statistics 22 was used for other statistics.

Ethics

This study was approved by the Regional Committee for Medical Research Ethics in Central Norway, and written consent was obtained for each participant before the data

collection commenced. If the adolescent was under 16 years old, per Norwegian law, informed consent was also acquired from the significant caregiver. When the research assistant arrived at the institution, information was once again given about the project and voluntary participation was underlined including the possibility to retract an already given consent. In case of emergencies, a team of experienced child and adolescent psychiatrists and psychologists were on call throughout the period of data collection.

Results

Attrition

To test whether our sample of KINDL-R self-reports ($n = 300$) was representative for all 400 included adolescents, a comparison between Internalizing and Externalizing scores on the CBCL between completers and non-completers was performed. No significant differences emerged, and there were no age or gender differences.

Factor analysis

To examine whether our QoL measure did evidence unidimensionality, we conducted a hierarchical confirmatory factor analysis (CFA) letting latent Physical Well-being, Emotional Well-being, and Friends subscales, each consisting of 4 items, load on one common QoL factor. Because the resulting latent covariance matrix was not positive defined due to a correlation greater than one between two latent variables, we excluded one item from the Emotional Well-being subscale (“I laughed much and had fun”; see item EW1 in Fig. 1). After removing the item, the CFA showed a fair to good model fit ($\chi^2(52) = 169$, $p < .0001$, $RMSEA = 0.075$, CI 0.063 – 0.088 ; $CFI = 0.962$; and $TLI = 0.952$) supporting the unidimensionality of the QoL measure. Also indicative of an acceptable model fit, all standardized factor loadings except one (0.371) were higher than 0.500.

Effects of item exclusion on overall structural equation model fit

The latent covariance matrix was correctly defined in the overall structural measurement model with and without the above item. The exclusion of the item (EW1 “I laughed much and had fun”) did not substantially alter the model fit of the total measurement model reported below in this result section ($CFI = 0.919$ vs 0.917 ; TLI 0.911 vs 0.910 , and no change in $RMSEA$ which was 0.059). Beta estimate differences for the path model reported in the results

(Table 4) were minimal (0.014 or less) with or without this item. Considering these evidence, collectively, we decided to keep the item in the further analyses.

Measurement model

Except for a significant χ^2 -statistic ($\chi^2(755) = 1763$, $p < .0001$), other measures of goodness of fit indicated a good measurement model fit (CFI = .917, TLI = .910, RMSEA = .059). The χ^2/df ratio in our model was 2.3 indicating a satisfactory model fit despite a significant χ^2 -statistic [51]. Table 2 displays the results of the measurement model with standardized factor loadings. Also indicative of an acceptable model fit, factor loadings were $>.500$ for all indicators of latent variables except three. Table 3 reports the correlations among the latent variables, which in most cases were moderate. Composite reliability (CR) for the five self-esteem domains in the present study was good (social acceptance .85, athletic competence .87, physical appearance .96, romantic appeal .77, scholastic competence .76). CR was also good for QoL (.81) and for psychopathology (.73).

Domain-specific Self-esteem and QoL

As shown in Table 4, Model 3, when adding the five specific self-esteem domains to Model 2 in addition to psychopathology, age, and gender, an additional 42% of the variance of QoL was explained. The two domains, *social acceptance* and *physical appearance*, contributed significantly to this increased prediction. Lower self-esteem on these two domains was associated with poorer QoL. Psychopathology and sex remained significantly associated with QoL. Thus, the self-esteem domains social acceptance and physical appearance added substantially to the explained variance in QoL in adolescents living in RYC institutions over and beyond psychopathology, age, and gender.

Discussion

In the present study, we asked whether self-esteem could contribute to the QoL in a high-risk sample of youth living in residential care. The results indicated that even though psychopathology is strongly linked to poor QoL, two domains of self-esteem, Social Acceptance and Physical Appearance, substantially added to the explained variance of their QoL over and beyond the effect of psychopathology. More specifically, we found that a lower perception of social acceptance and physical appearance among the adolescents was associated with poorer QoL.

Social acceptance and QoL

Adolescence is a sensitive developmental period when relations with friends become especially important. During this developmental period, adolescents living in RYC institutions have been exposed to a high number of placements by decision of the child welfare authorities (see Table 1). Repeated break-ups of newly formed relationships and being placed in a child welfare institution, which is regarded by Norwegian authorities as a last resort [1], could obviously be associated with a feeling of “not being socially accepted,” which in turn can impact a perception of poor QoL. Given the importance of peer relations in this age period, this could lead to deteriorating QoL. Further, adolescents living in RYC might feel that they fail to attain the social norm of normal family life. Children and adolescents may be stigmatized because they do not live with their parents [52]. Self-conscious emotions including shame and guilt [19] and feeling different than others might be dominating when adolescents in RYC institutions evaluate their QoL. Thus, the self-esteem domain of social acceptance seems to be important for our target group.

Physical appearance and QoL

Physical appearance has been shown to be important for the general well-being of adolescents [53] as well as the QoL of adolescents with mobility impairment [25]. Our findings show that this self-esteem domain is significantly associated with QoL also in the population of adolescents living in RYC institutions. Even when the same specific self-esteem domain is evaluated as important for QoL in different populations, the reasons for this could be different. A large portion of the adolescents had experienced sexual abuse as we have shown in previous reports on this sample [28, 54]. Patients with a history of child sexual abuse and post-traumatic stress disorder report aversive emotional responses, negative cognitions, and dissociative states triggered by viewing their own body in a mirror [55]. Harter [19] found that physical appearance self-esteem, representing an “outer self,” had the highest correlation with global self-esteem, which represents “inner self-worth.” Significant others are the social mirrors into which we gaze for feedback about the self, and peers represent an important class of others for adolescents. However, peers can be relentless and sometimes cruel in their evaluation of attractiveness [19]. It is also possible that adolescents with low self-esteem living in RYC institutions compare themselves frequently with idealized appearance in the media. Such frequent comparisons could reinforce their negative view about their own appearance. However, further research is needed to examine different influences on perceived physical appearance.

Table 2 Descriptive statistics (mean and SD) for items and scales used as indicators in the measurement model and their standardized factor loadings (β)

	Item	Range ^a	Mean ^b	SD	β^c	
Quality of life						
	KINDL physical well-being (latent scale)	PW1-4			0.760	
	KINDL emotional well-being (latent scale)	EW1-4			0.815	
	KINDL friends (latent scale)	FR1-4			0.716	
Self-esteem						
Scholastic competence (SC)	SC1	1–4	2.95	0.94	0.634	
	SC2	1–4	2.25	1.06	0.466	
	SC3	1–4	2.39	1.03	0.643	
	SC4	1–4	2.63	0.95	0.561	
	SC5	1–4	2.80	0.91	0.792	
Social acceptance (SA)	SA1	1–4	3.19	0.99	0.721	
	SA2	1–4	3.26	0.88	0.803	
	SA3	1–4	3.14	0.87	0.596	
	SA4	1–4	2.66	0.92	0.727	
	SA5	1–4	3.15	0.85	0.796	
Athletic competence (AC)	AC1	1–4	2.25	0.98	0.863	
	AC2	1–4	2.34	1.05	0.854	
	AC3	1–4	1.77	0.92	0.834	
	AC4	1–4	2.68	1.06	0.675	
	AC5	1–4	2.74	1.01	0.552	
Physical appearance (PA)	PA1	1–4	2.60	1.11	0.801	
	PA2	1–4	2.41	1.14	0.871	
	PA3	1–4	2.67	1.16	0.935	
	PA4	1–4	2.64	0.99	0.952	
	PA5	1–4	2.48	1.03	0.937	
Romantic appeal (RA)	RA1	1–4	2.67	0.95	0.733	
	RA2	1–4	2.82	1.00	0.589	
	RA3	1–4	2.66	0.93	0.647	
	RA4	1–4	2.66	0.89	0.833	
	RA5	1–4	2.59	1.00	0.301	
Psychopathology						
	Anxious/Depressed	Scale	0–26	6.65	4.99	0.838
	Withdrawn/Depressed	Scale	0–16	4.69	3.26	0.606
	Somatic Complain	Scale	0–22	4.20	3.97	0.764
	Externalizing problems	Scale	0–70	19.70	12.55	0.304

^a Possible range of measured subscale or ordinal item scale

^b n for descriptive statistics varied from 284 to 347

^c All beta values were based on a dataset calculated by FIML ($N = 387$ of 400 included adolescents) and were all significant at $p < 0.001$

Self-esteem domains not associated with QoL

Even though academic self-esteem has predicted physical well-being in community samples [24], scholastic competence was not significantly associated with QoL in our study. It is known that adolescents in contact with the child welfare services show poor educational outcome [1, 56, 57]. Therefore, many adolescents living in RYC institutions could just have “given up” on school and consequently do not put much emphasis on it. This

interpretation is supported by the fact that 30% of the adolescents in our sample were not attending school, unlike the vast majority of 12–20 year olds in Norway. Athletic competence and romantic appeal were neither significantly associated with QoL in the present study.

Strengths and limitations of the study

Examining a sizable, nationwide, and representative sample is a strength of the study. One important limitation is

Table 3 Correlations among latent variables

	QoL	PP	SC	SA	AC	PA	RA
Quality of life (QoL)	–						
Psychopathology (PP)	–.54	–					
Scholastic competence (SC)	.46	–.22**	–				
Social acceptance (SA)	.74	–.31	.44	–			
Athletic competence (AC)	.31	–.20**	.31	.44	–		
Physical appearance (PA)	.56	–.31	.35	.42	.39	–	
Romantic appeal (RA)	.49	–.20**	.34	.57	.48	.60	–

** $p < 0.01$; all other correlations $p < 0.001$

Table 4 Unstandardized and standardized model estimates for regression on QoL

	Unstandardized β	95% CI (bootstrapped)	Standardized β	R^2 QoL
Model 1				
Age	0.015	(–0.043, 0.096)	0.046	0.118
Sex	–0.363	(–0.537, –0.215)	–0.340	0.402
Model 2				
Psychopathology	–0.078	(–0.109, –0.051)	–0.531	
Age	–0.005	(–0.056, 0.065)	–0.013	
Sex	–0.396	(–0.581, –0.248)	–0.348	
Model 3				
Scholastic competence	0.067	(–0.051, 0.184)	0.096	0.821
Social acceptance	0.334	(0.215, 0.487)	0.566	
Athletic competence	–0.060	(–0.141, 0.023)	–0.116	
Physical appearance	0.142	(0.044, 0.263)	0.254	
Romantic appeal	–0.016	(–0.165, 0.115)	–0.026	
Psychopathology	–0.032	(–0.054, –0.014)	–0.294	
Age	–0.002	(–0.029, 0.037)	–0.007	
Sex	–0.291	(–0.442, –0.173)	–0.330	

Bold values indicate that estimates are significant (CI does not contain zero)

CI confidence interval

the cross-sectional design, which prohibits examination of the direction of effects. Further, because of the nature of placement in RYC, which is often indicated because of parental abuse or neglect, it was not possible to include the adolescents' parents as informants. Rather, we had to rely on the primary contact at the institutions as informants for the CBCL. Adults at the RYC institutions may have known the adolescents for a limited time, and parents' reports could therefore have added valuable information in the assessment of the adolescents' psychopathology. A possible limitation of the study is that we used the KINDL-R with adolescents older than the 16 years, for which it was originally validated. The instrument has, however, been used for older adolescents in two earlier Norwegian studies for up to 17 year [7] and up to 20 year olds [43], yielding meaningful results unbiased by age, thereby supporting validity for youths older than 16 years. Convergent validity for the KINDL-R with another QoL instrument designed for adolescents up to 18 years, the Inventory of Life

Quality in Children and Adolescents, was also satisfactory [10]. Further, in the present study, Composite Reliability was good for our latent QoL measure including youths up to 20 years, as was a confirmatory factor analysis regarding the unidimensionality of this measure. Obviously, national laws and practices concerning placements in RYC differ between countries, and the findings therefore do not automatically generalize to other societies. Even if differences exist, this population bears some resemblance across nations, for example, prevalence rate in Great Britain for at least one psychiatric disorder among youths living in RYC was 71% [58], which is close to the 76% we previously reported for the present sample [3]. However, the British study reported mostly externalizing psychopathology, while we found internalizing disorders to be dominating [3]. Finally, we adjusted our analysis for psychopathology, age, and gender, but not for socio-economic status (SES). However, SES data from the adolescents' families were not available. On the other hand, in a former study, QoL self-

reports in Norwegian students from the general population were not significantly influenced by SES as measured by parent education [8]. Finally, in another high-risk sample of child and adolescent psychiatric patients, SES was not correlated with QoL [59]. Hence, although adjusting for SES would have been preferable, these results indicated that doing so might not have altered the rather robust associations reported herein.

Implications of the study

Our results provide the first indication that the self-esteem sub-domains social acceptance and physical appearance among adolescents in RYC institutions might be targets of interventions to improve QoL, even though prospective observational studies and controlled interventions are obviously needed. Unfortunately, no previous research is available addressing such possible intervention methods in this high-risk population. The research is also limited on interventions aimed at increasing self-esteem in other adolescent populations. Existing endeavors include universal prevention approaches with entire school staff and students [60], or social skills training intervention designed to improve adolescents' social, emotional, and behavioral adjustment [61]. However, in these studies, the focus was on enhancing *global* and not *domain-specific* self-esteem.

Concerning *physical appearance*, a systematic review concluded that there were many different psychological and social health benefits from children and adolescents participating in sports, including improved self-esteem and social interaction and fewer depressive symptoms [62]. Girls participating in “BodyThink,” an Australian body image and self-esteem program, reported higher media literacy and lower internalization of “the thin ideal,” whereas boys reported higher media literacy as well as body satisfaction [63]. However, we do not know if adolescents living in RYC institutions will profit from programs enhancing self-esteem developed for other target populations. More research is needed to investigate if and how RYC institutions can adopt, modify, and implement such strategies.

Conclusion

Adolescents in RYC with high level of psychopathology suffer from diminished QoL. Even in the face of mental health problems, increased self-esteem, specifically perceived social acceptance by peers and favorable perceptions of one's own physical appearance, may boost QoL. Low self-esteem in these two domains, however, may diminish the adolescents' QoL even further. If replicated longitudinally, these findings are important considerations

when attempting to create interventions for youth living in RYC institutions to improve the quality of their life, in addition to offer established psychotherapy for their mental health problems.

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Compliance with ethical standards

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

Informed consent All adolescents and parents who participated gave their written informed consent. The study was approved by the Regional Committee for Medical Research Ethics in Central Norway. The procedures in this study were in accordance with the 1964 Helsinki declaration and its later amendments.

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