Evaluation of the Lamer Social Competence in Preschool Scale

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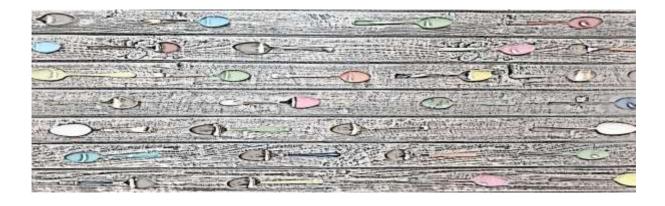
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Abstract: The Lamer Social Competence in Preschool Scale (LSCIP) has been widely used in Norway to assess children's social competence; however, the six-factor structure has not been validated since the scale was developed. The aim of this study is to evaluate the structure of the LSCIP using confirmatory and exploratory factor analyses. The results show that the original model has a nearly adequate fit according to model fit criteria, but also suggest the need for revisions to achieve a better model. The study contributes to the further development of the LSCIP as a measurement tool that can be used to measure children's social competence in both research and practice.

Keywords: assessment; evaluation; Lamer Social Competence in Preschool Scale; social competence.

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Introduction

One of the most important tasks for Norwegian Early Childhood Education and Care (ECEC) is to encourage children to engage in social relationships with their peers and adults, as such relationships are fundamental prerequisites for social learning and development. This study empirically evaluates a scale developed by Kari Lamer to measure children's social competence. The Lamer Social Competence in Preschool Scale (LSCIP) was inspired by Gresham and Elliot's (1990) Social Skills Rating System (SSRS) and Lamer's (1997) programme Du og jeg og vi to [You and Me and the Two of Us]. Lamer's (1997) programme has been widely employed in Norwegian ECEC (Gulbrandsen & Eliassen, 2013; Østrem et al., 2009). It is also used for research purposes in two ongoing longitudinal Norwegian studies: *The Behavior Outlook Norwegian Developmental Study* (BONDS) (Nærde, Janson, & Ogden, 2014) and Better Provision for Norway's Children (BePro) (Bjørnestad, Gulbrandsen, Johansson, & Os, 2013; Bjørnestad & Os, 2018). The present study evaluates the LSCIP's factor structure in a sample of 890 children aged 2.8 to 3.2 years participating in the BePro project.

Social competence

Researchers from several disciplines agree on the importance of social competence development (Jones, Greenberg, & Crowley, 2015; VanderVen, 2008). Social competence can be understood as learned skills that enable human beings to interact with one another, and it is used as a collective term for the sum of social skills (Gresham & Elliott, 1990). Social skills are behaviours employed to complete and master social tasks, such as communication and friendship. Social experiences normally have immediate emotional consequences; therefore, several studies evaluate social and emotional competence together (Barnes et al., 2010; Broekhuizen, Van Aken, Dubas, Mulder, & Leseman, 2015). The current study includes emotional competence as part of children's social competence.

The development of social competence is important throughout a child's life span, as it supports both current and future well-being. Children's current well-being (Bagdi & Vacca, 2005; Kamerman, Phipps, & Ben-Arieh, 2010; McAuley, Rose, Dolan, Morgan, & Aldgate, 2011) includes the management of the progression of life in children's direct environments, such as their family and ECEC environments. Children in ECEC must also be able to play and cooperate with other children and the staff in their groups. Children's well-being requires an ability to establish and maintain close relationships with other people. High social competence has been linked to, for example, long-term academic achievement (Malecki, Elliott, & Gutkin, 2002), higher education levels, better-paying jobs, and fewer mental health problems (Payton et al., 2000). By contrast, children with lower social competence are more likely to drop out, need government support, and abuse alcohol or drugs (Jones et al., 2015).

Due to the fundamental importance of social competence for children's actual and future well-being and development, several programmes and interventions designed to stimulate and increase the development of young children include social competence as a main focus area. These programmes include HighScope Infant-toddler curriculum (HighScope, 2017), Incredible beginnings teacher/child care provider program (The Incredible Years, 2013), and the Dina Dinosaur School (Webster-Stratton, Hammond, & Kendall, 1997). In Norway, several educational programmes, such as Steg for Steg [Step by Step] (Norwegian Health Association, 2002), Åtte temaer for godt samspill [Eight themes for good interactions] (Hundeide, 1996), Være sammen [Being Together] (Roland, Omdal, Midthassel & Størksen, 2014) and Lamer's (1997) programme Du og jeg og vi to [You and Me and the Two of Us], have a particular focus on children's social competence.

Lamer's (1997) programme You and Me and the Two of Us was developed to enhance children's social competence in Norwegian ECEC. The programme targets teachers, students, and other staff working in ECEC, and it consists of a theory book, a handbook, and a picture book for

children. The programme was designed to be applied in structured and unstructured situations in Norwegian ECEC.

The LSCIP is a well-known and widely used measure for social competence in Norwegian ECEC. In 2004, 57% of Norwegian ECEC settings reported using Lamer's (1997) program to develop children's social competence. In 2012, according to Gulbrandsen and Eliassen (2013), the scale was still used in 41% of institutions. The LSCIP was developed in conjunction with Lamer's (1997) programme as an instrument to 1) describe the strengths of young children's social competence and 2) evaluate the programme's effectiveness in terms of children's improved social competence.

The LSCIP has two primary advantages. Firstly, the scale focuses on children's play, resources, and competences, not their difficulties. Thus, it is in line with the objectives of the Norwegian regulations for ECEC provisions. Secondly, the six dimensions of the LSCIP shed light on a broad range of aspects relating to young children's social competence. Other measures, such as the Strengths and Difficulties Questionnaire (SDQ; Goodman 1997), are much less detailed in their approach to social competence and mainly assess children's difficulties and behavioral problems. Therefore, from an educational and pedagogical perspective, the LSCIP is preferable for assessing children's social competence in the Norwegian ECEC context.

Lamer Social Competence in Preschool Scale (LSCIP)

Assessments performed with rating scales, such as the widely applied Child Behavior Checklist (CBCL; Achenbach, 1991), the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997), and the Social Skills Rating System (SSRS; Gresham & Elliott, 1990), are based on observations and focus on children's behavioural characteristics (Gresham, 2016). These assessments build on observations of children's behaviours in everyday situations over time; thus, they are both trustworthy and time-efficient. The teacher version of the SSRS was Lamer's (1997) main source of inspiration for the LSCIP because it has a strong theoretical background, is multi-dimensional and user-friendly, and has good psychometric properties.

Lamer (2006) evaluated the factor structure of the SSRS twice in a Norwegian sample, but could not replicate the SSRS' original three-factor model of cooperation, self-control, and assertiveness. Since the SSRS was developed in the US and, therefore, reflects a particular cultural context, Lamer (2006) believed that the scale should be adjusted to the Norwegian context and tradition. Compared to other countries, Norway and the Nordic tradition have a stronger focus on free play and informal gathering in ECEC.

Children's current well-being is highly valued, and it is believed that learning processes should occur during play and daily interactions, rather than school-like situations. Thus, in the Norwegian framework plan, social competence is one of the main pedagogical goals of ECEC (Norwegian Ministry of Education and Research, 2011; Sylva, Ereky-Stevens, & Aricescu, 2015). Lamer (2006) wanted to develop an assessment tool to match her programme, which heavily incorporated the Norwegian tradition of the individual within a group, using items based on SSRS and on the programme You and Me and the Two of Us. As a first step, Lamer (2006) supplemented the SRSS' existing 30 items with an additional 29 items that fit the Norwegian context. She organized the items into six scales: *Assertiveness*; *Self-control*; *Empathy and role-taking*; *Play, joy, and humour*; *Prosocial behaviour*; and *Adjustment* (Lamer, 2006). All of the items for *Empathy and role-taking* and most of the items for *Play, joy and humour* were newly formulated by Lamer (2006). In addition, she formulated several new items for *Prosocial behavior*, *Self-control*, and *Adjustment*. Finally, she transformed the original SSRS three-point scale (never, sometimes, and very often) into a five-point scale. Next, Lamer (2006) used exploratory factor analysis to evaluate the factor structure of the 59 items in two independent samples of Norwegian children. Based on this analysis, Lamer kept the 31

items that best fit her proposed six-factor model to create a questionnaire that was both extensive and manageable. This is the version of the LSCIP applied in the current study.

Of the LSCIP subscales, five coincide with Lamer's dimensions of social competence. *Assertiveness* is related to children's positive self-perception. It includes daring to speak up and daring to stand up for one's own actions. *Self-control* refers to children's ability to control their desires and needs, wait their turn, and handle conflicts. *Empathy and role-taking* reflects the ability to recognize others' feelings, understand others' situations, and take others' perspective. *Play* is about taking initiative to interact and play with others. *Prosocial behaviour* concerns actions intended to benefit others, such as caring, helping, and sharing (Lamer, 1997). Finally, *Adjustment*, which appears only in the LSCIP and is not separately described in You and Me and the Two of Us, is about children adjusting to others, doing what others tell them to do, and living up to expectations.

The LSCIP was used to evaluate the effects of You and Me and the Two of Us (Lamer, 2006). It was applied in a sample of 1426 children aged 1.5 to 5 years old from 14 ECEC settings that participated in at least two of six waves. For theoretical reasons, and due to the high correlations among the scales, the six scales were combined into three: *Empathy and role-taking* and *Prosocial behaviour*; *Self-control* and *Adjustment*; and *Assertiveness* and *Play, joy and humour*. This study found that the programme has positive effects on children's social competence in ECEC.

In recent years, the LSCIP has been used for research purposes in Norway as a measure of children's social competence. Specifically, two large-scale longitudinal research projects have used the LSCIP: the BONDS study (Zachrisson, Backer-Grøndal, Nærde, & Ogden, 2012) and the BePro project (Bjørnestad et al, 2013; Bjørnestad & Os, 2018). However, despite its use in these studies, the LSCIP's original six-factor structure and combined three-factor structure have not yet been empirically investigated. To address this gap, the current study aimed to examine the original six- and combined three-factor structure of the LSCIP among children aged 2.8 to 3.2 years old using data from the BePro project.

> *Given the data, does the original organization of the LSCIP scale represent the best possible factor structure?*

A confirmatory factor analysis (CFA) will be performed to evaluate the original six- and three-factor structures of the LSCIP. Next, an EFA and a follow-up CFA will be conducted to examine whether there is a possible alternative organization of the items. Several researchers have recommended combining the EFA and the CFA when the fit of the model could be improved (Brown, 2015; DeCoster, 1998). The results of this study will contribute to the further development of the LSCIP as a measurement tool for use in both research and practice.

Method

Participants and procedure

The BePro project is a representative longitudinal study that explores aspects of quality in Norwegian ECEC provisions and the relations between the quality of these provisions and children's development for children aged 2.8 to 3.2 years old (wave 1) and as near as possible to 5 years (wave 2). The sampling procedure followed a probability proportional to size approach, in which the number of children in an ECEC setting determined each child's probability of being part of the sample selection (Bjørnestad et al, 2013). A total of 158 ECEC settings were invited, and 93 agreed to participate. The children and their parents were recruited by the staff. Information about the study was sent to the

parents of 1780 children born in 2011 and 2012, and 1211 parents actively provided consent for their children's participation (Bjørnestad & Os, 2018).

The participants in the current contribution were drawn from the first measurement wave, and the data were collected when the children were between 2.8 and 3.2 years old. Teachers filled out LSCIPs for sampled children of the targeted age, resulting in data for 890 children (52% boys) across the 191 groups and 87 ECEC settings. In 16.8% of the children's families, both parents had upper secondary school educations or lower; in 39.9%, at least one parent had completed a bachelor's degree; and in the remaining 43.27%, at least one parent had completed a master's degree. This distribution reflects a somewhat higher education level than the national average for 20- to 40-year-olds, of whom 56.4% have completed upper secondary education or lower, 31.1% have completed a bachelor's degree or tertiary vocational education, and 12.5% have completed a master's degree or higher (Statistics Norway, 2018). Thus, the education level in our sample was higher than that of the national population.

With respect to geographic background, 8.99% of the sampled children were born outside of Norway, and 24.04% had at least one parent who was born in another country. Furthermore, 12.70% of the children were bilingual (speaking two languages at home). The most common second languages were English (2.16%), Swedish (1.25%), and French (0.91%).

The ECEC settings were located in both rural and urban areas of Norway: Oslo and Akershus, Vestfold and Telemark, Rogaland, Tromsø, and Nordland. The number of groups in each ECEC settings ranged from one to seven. The sample comprised 12 small ECEC settings (30 to 44 children), 37 medium settings (45 to 79 children), and 32 large settings (80 or more children). As shown in Table 1, the children were distributed over both public and private settings and small-, medium-, and large-sized groups.

Table 1

Distribution of ECEC settings with respect to ownership and group size

	%
Ownership (ECEC settings)	
Municipal	59.8
Private	40.2
Group size (Classroom)	
Small-sized groups (0–9 children)	23.8
Medium-sized groups (10–14 children)	44.9
Large-sized groups (15+ children)	31.4

Note: N = 890

Measures

The 31 items of the LSCIP rate children's social competence in different situations in everyday ECEC settings. Ratings are based on how often teachers have observed a particular behaviour over the past two months. Sample items for *Assertiveness* (6 items) are *Meets new people with openness, Makes eye contact*, and *Initiates contact (in an OK manner). Prosocial behaviour* (5 items) includes *Says something nice, Gives compliments to other children*, and *Helps other children in conflict situations*. Sample items for *Self-control* (5 items) include *Can control anger in conflicts with other children* and *Compromises in conflict situations (e.g., by changing own opinions or adjusting own wishes).*

Empathy and role-taking (5 items) is measured by, for example, *Shows that he/she sees that others are angry* and *Shows that he/she sees that others are happy*. *Play, joy and humour* (5 items) includes the items *Involves him/herself completely in social role play* and *Makes friends easily*. *Adjustment* (5 items) includes *Does as he/she is asked* and *Completes tasks he/she is assigned*. One item from the LSCIP *Assertiveness* scale, *Adjusts (i.e., gives in, adapts him/herself, admits own errors, forgives others),* was replaced with the item *Can share toys with others* in this study. This was based on the assumption that teachers may struggle to measure whether such young children admit their own errors, and forgive others. It was therefore more relevant to measure whether children shared their toys with others. This alternative new item was not included in the analyses evaluating Lamer's (2006) three- and six-factor models, though it was included in the follow-up EFA and CFA testing an alternative organization of LSCIP items. The teachers filled in the LSCIP on children's behaviour using a five-point Likert scale (1. *Very seldom*, 2. *Seldom*, 3. *Occasionally*, 4. *Often* and 5. *Very often*).

Analysis plan

CFA was used to evaluate the proposed six- and three-factor structures of the LSCIP scale using the statistical package Mplus (Muthèn & Muthèn, 2013). The Type = Complex function was used to account for the fact that the children were rated by the teachers (i.e., clustered in groups). This design-based method accommodates violations of the independence assumption (e.g., the nesting of children in groups) by adjusting for the standard errors of the parameters. It has been argued that single-level design-based methods are at least as appropriate as multi-level models when data are nested, though do not investigate cluster-level effects (Stapleton, McNeish & Yang, 2016).

Next, the model's fit was evaluated using the Comparative Fit Index (CFI), the Tucker-Lewis Index (TLI) and the Root Mean Square Error of Approximation (RMSEA) (Geiser, 2013). The model fit was considered adequate if the CFI and TLI were > .90 and good if they were > .95. For the RMSEA, a value of < .08 indicated an adequate fit, and a value of < .05 indicated a good fit (Brown, 2015; Van De Schoot, Lugtig, & Hox, 2012). Based on the model results and modification indices in the CFA's, an EFA was conducted to investigate how the items were naturally distributed in the data. Next, this revised model was re-evaluated using CFA.

In the current study, missing data varied from 0 to 1.9%, with two exceptions: item 2, *Accepts that his/her wishes will not always be fulfilled* (2.7%), and item 25, *Compromises in conflict situations (e.g., by changing own opinions or adjusting own wishes* (6.6%). A plausible explanation for the higher levels of missing data for these two items might be that teachers considered these items unsuitable for the children's ages. Full Information Maximum Likelihood (FIML) model estimation was used to address the missing data (Enders, 2010). According to Graham (2009) and Schafer (1999), missing data of 5% or less does not affect further analysis. Finally, a robust Maximum Likelihood Estimator (MLR) was used to address possible non-normalities in the data.

Results

Confirmatory factor analysis of the LSCIP

The CFA results for both the six-factor and the three-factor LSCIP scales are presented in Table 2. Based on the modification indices, we estimated the residual covariances between items 19 and 29, items 12 and 18, and items 14 and 30 in the six-factor model. This was deemed appropriate because of the similarities in the words *unfair*, *tasks*, and *control*. For comparability reasons, the same residual covariances were estimated in the three-factor model. The model fit statistics in Table 2 show that the original six-factor model had a nearly adequate model fit, with a CFI and TLI just below .90 and an RMSEA just above 0.05. The three-factor model showed a poorer model fit. The factor loadings of the

six-factor model and three-factor model are reported in Tables A2 and A3, respectively. Because the six-factor model outperformed the three-factor model in terms of model fit, we consider only the six-factor model for further analysis.

Table 2
Model fit statistics for the six- and three-factor LSCIPs

	Six-factor	Three-factor
χ^2 (df)	1441.974	1965.021
p (χ^2)	0.000	0.000
CFI/TLI	0.896/0.883	0.846/0.832
RMSEA (90% confidence interval)	0.055 (0.052–0.058)	0.066 (0.063–0.069)
p (RMSEA ≤ 0.05)	0.002	0.000

The factor loadings of the six-factor model ranged from adequate to high (.44 - .83) (Field, 2013), except for two items on the *Assertiveness* scale: item 19, *Reacts critically to rules that are perceived as unfair,* which had a loading of .28, and item 24, *Can resist group pressure,* which had a loading of .33. This indicates that these items were not very strong indicators of the latent construct. For the *Self-control*; *Empathy and role-taking*; *Play, joy, and humour*; and *Prosocial behaviour* scales, all item loadings ranged from .63 to .73, indicating good loadings. The *Adjustment* scale also had good loadings, ranging from .54 to .74. The correlations between the six factors of the LSCIP are shown in Table 3.

Table 3
Correlations between latent variables of the original six-factor LSCIP

	AS	EM	AD	PL	SC	PS
AS	-					
EM	.63*	-				
AD	.42*	.63*	-			
PL	.86*	.57*	.49*	-		
SC	.31*	.53*	.81*	.40*	-	
PS	.74*	.77*	.67*	.72*	.51*	-

Note. AS = Assertiveness; EM = Empathy and role-taking; AD = Adjustment; PL = Play, joy and humour; SC = Self-control; PS = Prosocial behaviour; * $p < .001$

Exploratory factor analysis

The CFAs of the LSCIP were followed by an EFA to investigate whether the original factor structure was the best model or whether another item distribution would yield a better fit to the data. A Principal Axis Factor analysis was conducted on the 31 items with oblique rotation (direct oblimin). The Kaiser-Meyer-Olkin (KMO) measure verified the sampling adequacy (KMO = .94, or *marvellous*; Hutcheson & Sofroniou, 1999). An initial analysis was run to obtain eigenvalues for every factor in the data. Six factors had eigenvalues over Kaiser's criterion of 1. Together, these explained 63.96% of the variance. Table 4 shows the factor loadings after the rotation.

The results of the EFA (Table 4) revealed a six-factor model. The items that loaded on two factors were placed in the factor that was the most theoretically meaningful. Four of the scales that also appeared in the original six-factor LSCIP remained exactly the same in terms of incorporated items. These were *Prosocial behaviour, Empathy and role-taking, Self-control*, and *Adjustment.* All five items from the construct *Play, joy, and humour*, however, went into the *Assertiveness* scale. Three of the original items from the *Assertiveness* scale (item 1, 7 and 13) were kept in the same scale. In addition, three of the items that had previously fallen under *Assertiveness*—item 19, *Reacts critically to rules that are perceived as unfair*; item 24, *Can resist group pressure*; and item 29, *Speaks out clearly when he/she conceives something as unfair*—were found to belong to a separate, new factor. This new factor was labelled *Fairness* (see Table 4). Fairness (Rawls 2001) reflects social justice, including equality and solidarity. Since these three items involved reacting critically to rules that are perceived as unfair, *Fairness* was considered an appropriate name.

Three items loaded on more than one factor. These items were item 5, *Helps other children without being asked*; item 8, *Waits for his/her turn in games and other activities*; and item 11, *Helps you without being asked*. Theoretically, items 5 and 11 fit better with the *Prosocial behaviour* scale, while item 8 fits better with *Self-control*. Therefore, these items were incorporated into these scales for further analyses.

Table 4

Factor loadings: Exploratory Factor Analysis of LSCIP

Item Scale	PS	SC	AS	AD	EM	FA
28. Says something nice, gives compliments to other children	.61					
22. Helps other children in conflict situations	.49					
17. Supports and encourages other children	.49					
5. Helps other children without being asked	.44			.30		
30. Can control his/her anger in conflict with adults		.73				
14. Can control anger in conflicts with other children		.70				
25. Compromises in conflict situations (e.g., by changing own opinions or adjusting own wishes)		.62				
2. Accepts that his/her wishes will not always be fulfilled		.62				
31. Can share toys and stuff with others		.59				
8. Waits for his/her turn in games and other activities		.38		.33		
10. On his/her own initiative joins in other children's play or activities			-.81			
16. Initiates play			-.78			
4. Wants to participate in play or other group activities			-.77			
27. Makes friends easily			-.59			
1. Initiates contact (in an OK manner)			-.57			
7. Speaks when several others are present (in an OK manner)			-.50			
21. Involves him/herself completely in social role play			-.49			
13. Meets new people with openness, makes eye contact			-.41			
12. Completes tasks he/she is assigned				.72		
18. Completes tasks he/she is given within the designated time				.70		
6. Does as he/she is asked				.47		
23. Cleans up after him/herself when play/activities are terminated				.45		

11. Helps you without being asked	.35	.43
9. Shows that he/she sees that others are sad		.87
15. Shows that he/she sees that others are angry		.86
3. Shows that he/she sees that others are happy		.70
20. Shows that he/she sees others are afraid		.53
26. Recognizes, and can express in words, others' feelings		.47
29. Speaks out clearly when he/she conceives something as unfair		.66
19. Reacts critically to rules that are perceived as unfair		.60
24. Can resist group pressure		.38

Note. *We display only factor loadings above .30 (Field, 2013). EFA with principal axis factoring, oblimin with Kaiser normalization rotation method. Rotated in 13 iterations. PS = Prosocial behaviour; SC = Self-control; AS = Assertiveness; AD = Adjustment; EM = Empathy and role-taking; SC = Self-control; FA = Fairness.

Confirmatory factor analysis of the revised LSCIP

Based on the EFA, a CFA was conducted for the new six-factor model. The fit of this model was better than the fit of the original scale, with higher values for both the CFI and the TLI and lower values for the RMSEA (cf. Table 2 and Table 5). Table 6 displays the factor loadings for the new six-factor model.

Based on the modification indices, residual covariances were estimated between items 11 and 5, items 18 and 12, and items 14 and 30, as well as among items 4, 10, and 16. This was deemed appropriate based on the items' similarities in the words *help*, *tasks*, *control*, and *play*. The factor loadings of all items included in the revised LSCIP were over .55 (indicating a good fit), except for item 24, *Can resist group pressure*, which had a factor loading of .30 and. Therefore, an additional model without item 24 was also estimated. Model fit statistics for the six-factor revised LSCIP without item 24 are displayed in Table 5.

Table 5
Model fit statistics for the revised LSCIP with and without item 24

	With item 24	Without item 24
χ^2 (df)	1307.534	1195.301
p (χ^2)	0.000	0.000
CFI/TLI	0.916/0.905	0.923/0.913
RMSEA (90% confidence interval)	0.049 (0.046–0.052)	0.049 (0.046–0.052)
p (RMSEA $\leq$ 0.05)	0.637	0.745

Table 6
Factor loadings from the confirmatory factor analysis of the revised LSCIP

		λ
Prosocial behaviour	5. Helps other children without being asked	.75
	11. Helps you without being asked	.64
	17. Supports and encourages other children	.84

	22. Helps other children in conflict situations	.75
	28. Says something nice, gives compliments to other children	.72
Self-control	2. Accepts that his/her wishes will not always be fulfilled	.74
	8. Waits for his/her turn in games and other activities	.71
	14. Can control anger in conflicts with other children	.71
	25. Compromises in conflict situations (e.g., by changing own opinions or adjusting own wishes)	.66
	30. Can control his/her anger in conflict with adults	.66
	31. Can share toys and stuff with others	.75
Assertiveness	1. Initiates contact (in an OK manner)	.69
	4. Wants to participate in play or other group activities	.67
	7. Speaks when several others are present (in an OK manner)	.63
	10. On his/her own initiative joins other children's play or activities	.75
	13. Meets new people with openness, makes eye contact	.53
	16. Initiates play	.73
	21. Involves him/herself completely in social role play	.74
	27. Makes friends easily	.77
Adjustment	6. Does as he/she is asked	.74
	12. Completes tasks he/she is assigned	.70
	18. Completes tasks he/she is given within the designated time	.71
	23. Cleans up after him/herself when play/activities are terminated	.55
Empathy and role-taking	3. Shows that he/she sees that others are happy	.75
	9. Shows that he/she sees that others are sad	.80
	15. Shows that he/she sees that others are angry	.82
	20. Shows that he/she sees others are afraid	.70
	26. Recognizes, and can express in words, others' feelings	.73
Fairness	19. Reacts critically to rules that are perceived as unfair	.64
	24. Can resist group pressure	.30
	29. Speaks out clearly when he/she conceives something as unfair	.80

Note. AS = Assertiveness; SC = Self-control; EM = Empathy and role-taking; PS = Prosocial behaviour; AD = Adjustment; FA = Fairness

The correlations between the six latent factors of the revised LSCIP are shown in Table 7. The strongest correlations (between .78 and .81) were found between *Prosocial behaviour* and *Empathy and role-taking*, between *Assertiveness* and *Prosocial behaviour*, and between *Adjustment* and *Self-control*. These correlations were similar in size to the correlations between the six latent scales in the original LSCIP, as shown in Table 3. The weakest correlations (below .40) were found between *Fairness* and all other scales (below .45). There was even a small negative correlation between *Fairness* and *Self-control*. The descriptive statistics of all 31 items are reported in Table A1.

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Table 7

Correlations between latent variables of the revised six-factor LSCIP

	FA	EM	AD	AS	SC	PS
FA	-					
EM	.39*	-				
AD	.07	.63*	-			
AS	.45*	.63*	.52*	-		
SC	-.16*	.53*	.81*	.44*	-	
PS	.39*	.78*	.65*	.80*	.51*	-

Note. MB = Fairness; EM = Empathy and role-taking; AD = Adjustment; AS = Assertiveness; SC = Self-control; PS = Prosocial behaviour; * p < .001

Discussion

The aim of this study was to investigate the original six- and combined three-factor structure of the LSCIP in a sample of children between 2.8 and 3.2 years of age. The results showed that the original six-factor LSCIP, with the scales *Prosocial behaviour; Empathy and role-taking; Self-control; Assertiveness; Adjustment;* and *Play, joy, and humour,* had a nearly adequate model fit according to model fit criteria and could represent a suitable multi-dimensional measure of children's social competence. On the other hand, the fit of the three-factor model, which was used as a measure of social competence in the evaluation of Lamer's (2006) programme, was not good. The findings in the current study indicate that the three-factor model might not be an adequate representation of specific dimensions of children's social competence.

Revised version of the LSCIP

Although the original six-factor structure of the LSCIP demonstrated a nearly adequate model fit, this suggest the possibility for revisions to achieve a better model. The results of this study suggest that one can develop an alternative model with a better model fit and a more intuitive distribution of items. In this model, four factors remained exactly the same: *Prosocial behaviour, Adjustment, Self-control,* and *Empathy and role-taking*. Two factors were, however, considerably revised.

First, we identified one possible new scale which we labelled as *Fairness.* The factor solution indicated that three items fit this new scale; however, the applicability of item 24 must be seriously considered because of its low factor loading of .30. Since the other two items focus very narrowly on fairness, future studies should try to include more items that could measure *Fairness* as a dimension of children's social competence. Fairness as an aspect of social competence is an important factor in stimulating children to act when and if something feels unfair. Fairness is necessary for children's competence in today's complex society, which demands solidarity, equality, and a preparedness to raise one's voice. Children in general are concerned about fairness in daily events in ECEC. For example, the phrases "that is not fair" and "that is unfair" are used frequently. Griffin and Care (2014) highlight ethics and social responsibility as important competences for today's children. Furthermore, ethics, and social impact are considered two necessary 21st century skills and competences (Ananiadou & Claro 2009).

The second change in the revised LSCIP model was the collapse of the *Play, joy, and humour* scale. The items in this scale were consumed by the *Assertiveness* scale. This finding suggests that the items originally belonging to *Play, joy, and humour* could be seen as integrated abilities in the

Assertiveness scale. It also supports the argument that children's play and activities are strongly linked to skills found in other dimensions of social competence.

There were several correlations among the six dimensions in the revised LSCIP, which indicates that the different skills are interrelated. However, the correlations ranged from -.16 to .81, showing sufficiently significant differences that warrant individual investigation. Even the minor negative correlation between *Fairness* and *Self-control* likely indicates that children with high levels of control (e.g., children who are good at waiting for their turn and proposing compromises during conflict situations) have somewhat more difficulty speaking out, such as when something is conceived as unfair. This is worth investigating in future studies, especially due to the importance of self-regulation, which is highly emphasized in the current Norwegian context and is linked to children's future well-becoming (Størksen, 2014).

The factor loadings for all factors included in the revised LSCIP, except item 24, *Can resist group pressure* (.30), were .54 or higher, indicating that all items fit well to the respective latent constructs. In the original LSCIP, the *Assertiveness* scale contained three items with a factor loading of .44 or lower. This difference further illustrates the superiority of the revised model.

Limitations and strengths

The current study has some limitations. First, one item from the LSCIP was replaced by another item with different content that was considered more suitable for children aged two to three. As such, we tested slightly different models than Lamer's original models. The fact that the teachers assessed the children's social competence could also be considered a limitation. For example, Elliot and Busse (2004) use the concept of imperfect mirrors how behaviours are reflected through the eyes of an observer. In our study, the descriptions of the children's social competence were based on their teachers' subjective points of view; thus, observations might have reflected teachers' understandings of and attitudes towards particular children. Arguing for teacher-rated measures, however, is that teachers get to know the children over a long period of time. They see them every day and in different activities in the groups, and they have typically established good relationships with them.

An important strength of the LSCIP is its comprehensiveness; it covers different aspects of young children's social competence. It has also been validated in the Norwegian context and consists of items and aspects that are relevant for the Norwegian ECEC tradition. The construction and evaluation of the LSCIP could be highly important for both research and practice relating to classifying and measuring the different dimensions of social competence. The dimensions of Lamer's (1997) model of social competence were developed primarily for the field of practice, where the model can be applied by preschool teachers. Now, these dimensions have also been evaluated for use in research, for which we conclude that the scale is of sufficient quality.

Assessing children's social competence

Our findings contribute to a better understanding of how children's social competence might be assessed in a Norwegian context, but it also contributes to the international research on tools to assess children's social competence. By evaluating the structure of the LSCIP scale, this study contributes to efforts to properly evaluate and stimulate children's social competence. In doing so, it helps teachers develop a better knowledge base for identifying and recognizing children's social competence and determining which areas of social competence should receive special attention in daily pedagogical work, with both individual children and classes as a whole. Children need social competence here and now to express both their current well-being (Bagdi & Vacca, 2005; Kamerman et al., 2010; McAuley et al., 2011) and their future well-becoming (Jones et al., 2015; Malecki et al., 2002; Payton et al., 2000). It is therefore valuable for the field of practice to have a measurement tool adjusted to the Norwegian context with a focus on play and informal gatherings (Sylva et al., 2015), in which well-

being is highly valued (Bagdi & Vacca, 2005; Kamerman et al., 2010; McAuley et al., 2011). It is also valuable to have a valid measurement tool that has been improved with model fit indices (Brown, 2015; DeCoster, 1998).

To measure quality in ECEC and its associations with children's social competence, we need instruments to assess children's social competence in an ecologically valid way. The findings of this study show that the LSCIP is a promising measure for investigating how ECEC contributes to the development of children's social competence. Of particular interest are the possibility for the LSCIP to be applied by staff, its time efficiency, and the possibility for staff to judge children's social competence longer periods of time than, for example, independent observers. Furthermore, the LSCIP improves staff's awareness of the diversity and dimensionality of the concept of social competence, which can guide practice.

Conclusion and future directions

This study's findings illustrate the importance of separating social competence across different dimensions. Furthermore, this study reveals that *Play, joy and humour* is not a dimension in itself. Instead, play activities require literally all dimensions of social competence. This study also identifies *Fairness* as a dimension of social competence. We assume that staff experiences fairness mainly as a phenomenon characterizing the relationship(s) between children in ECEC institutions everyday life. However, to our understanding, fairness is only rarely discussed explicitly as related to children's social competence.

When it comes to young children's social competence, measurement scales should correspond to the values, educational intentions, and practices of the given cultural context. In the Nordic system, these particulars include child-centeredness and a resource orientation, among others (OECD, 2015). The "Nordic system" realizes many of the aspects of a European Quality Framework for ECEC (European Commition, 2014). Thus, instruments like the LSCIP may also be relevant for other countries. A next step would be to evaluate the structure of the LSCIP in other countries with different ECEC contexts.

The current study also extends the LSCIP scale as a measure of children's social competence by proposing an alternative distribution. This is the first study to examine the six- and three- factor structures of the LSCIP using both CFA and EFA (Brown, 2015; DeCoster, 1998). Zachrisson, Jansson, and Lamer (2018) also recently examined the structural validity of the LSCIP using data from the BONDS study by applying a bifactorial approach. Different from our study, in which we explicitly sought to test Lamer's original three- and six-factor models, their model tested whether there was a general social competence factor that influenced each item, while modeling the variance at the item level not accounted for by this general social competence factor in additional factors. In this bi-factor model they found, in general, evidence for one main factor for social competence, and three bi-factors. These three bi-factors were, however, not reliable, and could therefore not be used and interpreted independently. Moreover, it is less clear what these three bi-factors represents, as part of the variance of the individual items goes to the general social competence factor, and part to the bi-factors. The current study showed that it is possible to model six different domains of social competence, in which (the variance of) each item just belongs to one factor. As such, it is much clearer what each factor represents. Interestingly also, Zachrisson et al. (2018) had to delete the three items related to *Fairness* in our model, while we were able to retain them and model them as a separate factor. It should be noted that some of our factors were highly correlated though, with the strongest correlations found between *Prosocial behaviour* and *Empathy and role-taking*, between *Assertiveness* and *Prosocial behaviour*, and between *Adjustment* and *Self-control* (between .78 and .81). Despite these three strong correlations, the other correlations do not argue for a uni-dimensional construct of social-competence,

which argues for a multi-dimensional approach to social competences as modelled in the six-factor models in the current study.

A strong point of the LSCIP is that it comprehensively covers different aspects of young children's social competence. It has also been validated in the Norwegian context and consists of items and aspects relevant for the Norwegian ECEC tradition. There are several directions for future research. First, more research and development is needed regarding the possible new *Fairness* scale and its negative correlation with the *Self-control* scale. In addition, future work should evaluate whether the revised six-factor LSCIP model also fits other samples and other age ranges. Further studies should look at the concurrent and divergent validity. They should also investigate if the LSCIP have predictive validity.

We conclude that the revised versions of the six-factor LSCIP model work as research tools for producing reliable and valid knowledge on children's social competence and can be used in both the BePro project and other research projects, as well as in practice.

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Appendix

Table A1

Descriptors of social competence items from the LSCIP and the revised LSCIP scale

Item	LSCIP	R-LSCIP	M	SD	N	Skew	Kurt
1. Initiates contact (in an OK manner)	AS	AS	4.2	.75	887	-.87	1.20
7. Speaks when several others are present (in an OK manner)	AS	AS	3.67	1.08	889	-.64	-.16
13. Meets new people with openness, makes eye contact	AS	AS	3.63	.97	889	-.44	-.32
19. Reacts critically to rules that are perceived as unfair	AS	FA	3.37	.92	881	-.20	-.14
24. Can resist group pressure	AS	FA	3.23	.80	873	-.38	.37
29. Speaks out clearly when he/she conceives something as unfair	AS	FA	3.66	.91	885	-.52	.12
2. Accept that his/her wishes will not always be fulfilled	SC	SC	3.40	.80	866	-.37	.21
8. Waits for his/her turn in games and other activities	SC	SC	3.64	.82	885	-.52	.46
14. Can control anger in conflict with other children	SC	SC	3.40	.89	889	-.45	.20
25. Compromises in conflict situations (e.g., by changing own opinions or adjusting own wishes)	SC	SC	2.93	.86	831	-.26	.03
30. Can control his/her anger in conflict with adults	SC	SC	3.49	.93	883	-.52	.06
3. Shows that she/he sees that others are happy	EM	EM	3.85	.81	874	-.43	.10
9. Shows that he/she sees that others are sad	EM	EM	3.80	.80	889	-.44	.38
15. Shows that he/she sees that others are angry	EM	EM	3.53	.85	889	-.28	.02
20. Shows that he/she sees others are afraid	EM	EM	3.06	.92	882	-.12	-.20
26. Recognizes, and can express in words, others' feelings	EM	EM	3.57	.93	884	-.53	.16
4. Wants to participate in play or other group activities	PL	AS	4.33	.70	887	-.87	.73
10. On his/her own initiative joins other children's play or activities	PL	AS	4.06	.83	890	-.72	.36
16. Initiates play	PL	AS	4.16	.80	886	-.96	1.25
21. Involves him/herself completely in social role play	PL	AS	3.89	1.02	884	-.78	.12
27. Makes friends easily	PL	AS	3.89	.82	880	-.56	.20
5. Helps the other children without being asked	PS	PS	3.32	.93	887	-.87	.73
11. Helps you without being asked	PS	PS	3.14	.92	886	-.00	-.14
17. Supports and encourages other children	PS	PS	3.26	.93	884	-.17	-.12
22. Helps other children in conflict situations	PS	PS	2.82	.91	876	-.03	-.07
28. Say something nice, gives compliments to other children	PS	PS	3.22	.97	879	-.22	-.28

6. Does as he/she is asked	AD	AD	3.75	.73	889	-.35	.41|
12. Completes tasks he/she is assigned	AD	AD	3.55	.78	887	-.26	-.35
18. Complete task he/she is given within the designated time	AD	AD	3.36	.79	882	-.27	.27
23. Cleans up after him/herself when play/activities are terminated	AD	AD	3.01	.89	887	-.07	.03
31. Can share toys and stuff with others		SC	3.57	.80	884	-.53	.69

Note. Descriptors; Scale range = 1-5; Skew = skewness; Kurt = kurtosis; AS = assertiveness; SC = self-control; EM = empathy and role-taking; PS = prosocial behaviour; AD = adjustment; FA = fairness

6. Does as he/she is asked	AD	AD	3.75	.73	889	-.35	.41|
12. Completes tasks he/she is assigned	AD	AD	3.55	.78	887	-.26	-.35

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Table A2

Confirmatory factor analysis of the original six-factor LSCIP

		λ
Assertiveness	1. Initiates contact (in an OK manner)	.69
	7. Speaks when several others are present (in an OK manner)	.69
	13. Meets new people with openness, makes eye contact	.57
	19. Reacts critically to rules that are perceived as unfair	.28
	24. Can resist group pressure	.33
	29. Speaks out clearly when he/she conceives something as unfair	.44
Self-control	2. Accepts that his/her wishes will not always be fulfilled	.73
	8. Waits for his/her turn in games and other activities	.72
	14. Can control anger in conflicts with other children	.69
	25. Compromises in conflict situations (e.g., by changing own opinions or adjusting own wishes	.67
	30. Can control his/her anger in conflict with adults	.63
Empathy and role-taking	3. Shows that he/she sees that others are happy	.75
	9. Shows that he/she sees that others are sad	.80
	15. Shows that he/she sees that others are angry	.82
	20. Shows that he/she sees others are afraid	.70
	26. Recognizes, and can express in words, others' feelings	.73
Play, joy and humour	4. Wants to participate in play or other group activities	.76
	10. On his/her own initiative joins other children's play or activities	.83
	16. Initiates play	.81
	21. Involves him/herself completely in social role play	.73
	27. Makes friends easily	.74
Prosocial behaviour	5. Helps the other children without being asked	.78
	11. Helps you without being asked	.68
	17. Supports and encourages other children	.83
	22. Helps other children in conflict situations	.74
	28. Say something nice, give compliments to other children	.71
Adjustment	6. Does as he/she is asked	.74
	12. Completes tasks he/she is assigned	.71
	18. Completes tasks he/she is given within the designated time	.71
	23. Cleans up after him/herself when play/activities are terminated	.54

Table A3

Confirmatory factor analysis of the three-factor LSCIP

		λ
Prosocial behaviour and Empathy and role-taking	3. Shows that he/she sees that others are happy	.69
	5. Helps the other children without being asked	.73
	9. Shows that he/she sees that others are sad	.72
	11. Helps you without being asked	.64
	15. Shows that he/she sees that others are angry	.72
	17. Supports and encourages other children	.79
	20. Shows that he/she sees others are afraid	.67
	22. Helps other children in conflict situations	.71
	26. Recognizes, and can express in words, others' feelings	.73
	28. Says something nice, give compliments to other children	.69
Self-control and adaption/ adjustment	2. Accept that his/her wishes will not always be fulfilled	.68
	6. Does as he/she is asked	.72
	8. Wait for his/her turn in games and other activities	.72
	12. Completes tasks he/she is assigned	.66
	14. Can control anger in conflicts with other children	.63
	18. Completes tasks he/she is given within the designated time	.66
	23. Cleans up after him/herself when play/activities are terminated	.52
	25. Compromises in conflict situations (e.g., by changing own opinions or adjusting own wishes)	.65
	30. Can control his/her anger in conflict with adults	.56
Assertiveness and Play, joy and humour	1. Initiates contact (in an OK manner)	.67
	4. Wants to participate in play or other group activities	.75
	7. Speaks when several others are present (in an OK manner)	.62
	10. On his/her own initiative, joins other children's play or activities	.82
	13. Meets new people with openness, makes eye contact	.50
	16. Initiates play	.80
	19. Reacts critically to rules that are perceived as unfair	.24
	21. Involves him/herself completely in social role play	.73
	24. Can resist group pressure	.29
	27. Makes friends easily	.75
	29. Speaks out clearly when he/she conceives something as unfair	.39