



Perceived competences in everyday activities: Children's self-report and parents' and teachers' report using the first Austrian-German Perceived Efficacy and Goal Setting System (AG-PEGS) version

Einschätzungen kindlicher Kompetenzen in Alltagstätigkeiten durch Kinder, deren Eltern und Pädagogen/-innen, basierend auf der ersten deutschsprachigen PEGS (Perceived Efficacy and Goal Setting System)-Version

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Abstract

Introduction: A systems-oriented approach in contemporary health-care requires health professionals to include clients' and their proxies' perceptions to design specific, efficient, and cost-effective interventions. This influences the choice of appropriate methods and means for assessment and intervention. To learn more about the benefits of a systems-approach in assessment and intervention planning, there is a need to study how children and their proxies describe children's abilities. **Aims:** This study aimed to explore, describe, and compare perceived competences in everyday activities as reported by children with difficulties in their occupational performance, their parents and teachers, using the first Austrian-German version of the Perceived Efficacy and Goal Setting System (AG-PEGS). **Method:** Forty-two children, their parents and teachers completed the AG-PEGS. Data analysis included descriptive statistics, calculation of inter-rater agreement, differences between groups, and correlations between categories. **Results:** Overall, adults scored children's competences lower than the children themselves. Statistically significant differences of the perception of children, parents and teachers were found in single items, total scores and life areas (productivity, self-care, leisure), respectively. Differences in perceived competence were also found related to gender and schooling. Agreement in children's and adults' scorings varied depending on shared life areas (children and parents showing most agreement in self-care). **Conclusion:** Agreement and differences in perceived competences support the importance of children's and proxies' participation in assessment in order to gain a comprehensive picture and a better understanding of a child's situation and conditions, address a child's and his/her proxies' concerns, and provide individualized and context-relevant intervention.

Abstract

Einleitung: Ein systemischer Ansatz in der Gesundheitsversorgung erfordert das Einbeziehen der Perspektive von KlientInnen und deren Angehörigen, um spezifische und effektive Interventionen planen zu können. Dies beeinflusst die Auswahl geeigneter Vorgehensweisen und Mittel für Befunderhebung und Intervention. Aktuell gibt es Forschungsbedarf, wie Kinder und deren Bezugspersonen Fähigkeiten der Kinder beschreiben, um Vorteile eines systemischen Ansatzes in Befunderhebung und Behandlungsplanung zu untersuchen. Ziel dieser Studie war es, die Selbst- und Fremdwahrnehmung der Handlungskompetenzen von Kindern mit Schwierigkeiten in der Handlungsperformanz mithilfe der ersten deutschsprachigen Version des Perceived Efficacy and Goal Setting Systems (PEGS) zu untersuchen. **Methode:** 42 Kinder, deren Eltern und PädagogInnen beantworteten die deutschsprachige Version des PEGS. Die Daten wurden mittels deskriptiver Statistik ausgewertet. Zusätzlich wurden Interrater-Reliabilität, Unterschiede zwischen TeilnehmerInnengruppen und Korrelationen zwischen Kategorien berechnet. **Ergebnisse:** Die Erwachsenen schätzten die Kompetenzen der Kinder insgesamt niedriger ein als die Kinder selbst. Statistisch signifikante Unterschiede im Scoring von Kindern, Eltern und PädagogInnen wurden in Bezug auf einzelne PEGS-Items, Gesamtscores und Lebensbereiche (Produktivität, Selbstversorgung, Freizeit) deutlich. Weitere Unterschiede gab es in Bezug auf Genderspektre und Schule/Kindergarten der Kinder. Hinsichtlich der Kompetenzen in Aktivitäten zur Selbstversorgung zeigten die Einschätzungen von Kindern und Eltern die größte Übereinstimmung. **Diskussion:** Übereinstimmungen und Unterschiede in der Wahrnehmung der Kompetenzen der Kinder unterstützen die Bedeutung partizipativer Befunderhebung mit Kindern und deren Bezugspersonen: für ein zusammenhängendes, besseres Verständnis des Kindes, seiner Situation und Bedingungen, um auf die Anliegen des Kindes und seiner Bezugspersonen spezifisch eingehen zu können und um damit individuelle und für den Kontext relevante therapeutische Intervention anzubieten.

Keywords

Children – assessment – self-efficacy – perceived competence – parents – teachers – participation

Keywords

Kinder – Assessment – Selbstwirksamkeit – Kompetenzeinschätzung – Eltern – Pädagogen/-innen – Partizipation



INTRODUCTION

Current therapeutic practice is characterised by a *systems-oriented, client-centred approach* when working with children and their families (Hanna & Rodger, 2002). The ‘client’ includes not only the child who comes for treatment, but can also include the child’s parents or teachers who are involved in everyday care (Costa, 2011; Costa, 2014a). Children’s, parents’ and teachers’ perceptions of a child’s competences in everyday life tasks are most valuable in the assessment of a child’s occupational performance and participation (Missiuna, Rivard, & Bartlett, 2006b). Involving children and their caregivers in assessment and treatment planning processes is essential for effective therapeutic intervention outcomes (Cohn, Miller, & Tickle-Degnen, 2000; Costa, Brauchle, & Kennedy-Behr, under review). This is not only true for occupational therapy intervention, but also for most professionals working with children and their families (Rosenberg, Bart, Ratson, & Jarus, 2013).

Perceived difficulties in a child’s occupational performance are the most common reason for seeking support through occupational therapists. This ‘lack of competence’ to do certain tasks in everyday life and the need for support may be perceived by both the social environment and by the child who experiences him-/herself as being less competent compared to others (Gage, Noh, Polatajko, & Kaspar, 1994). Occupational performance is known to be dependent not only on a child’s abilities and skills, but also on the specific situation and environment. It is influenced by many environmental factors, including physical, social, cultural and institutional (Law, Cooper, Strong, Stewart, Rigby, & Letts, 1996).

The *perspectives of the social environment* and the *self-report from the child* may be similar or different. How a child feels and reasons about his/her competences is related to lived experiences in interaction with the physical and social environment and refers to the concept of *perceived self-efficacy* (Bandura, 1997; Gage & Polatajko, 1994). Self-efficacy is based on the experience of oneself in interaction with the environment. In occupational therapy, self-efficacy is linked to a person’s perceived competence related to a certain occupation (Costa, 2014a; Gage et al., 1994; Missiuna, Pollock, & Law, 2004). The meaning and purpose of the task, whether or not it is interesting and understandable, how it has been experienced in the past, whether the child believes in his or her potential to master it (‘self-efficacy expectation’) and also the current health condition, all influence a child’s occupational performance (Engel-Yeger & Hanna Kasis, 2010; Gage et al., 1994; Costa, 2014a). How children judge their competence is assumed to influence their performance as well as their motivation to engage in a certain activity (Gage & Polatajko, 1994; Kielhofner, 2002).

Self-report assessment instruments have been discussed related to their applicability for younger children. Tam, Teachman and Wright (2008) concluded in their systematic review that listening to children’s voices in the therapeutic assessment and intervention planning is a valuable and valid approach in paediatric settings. This is congruent with the United Nations Convention on the Rights of the Child (UN, 1998), which states that children have the right to receive opportunities to express themselves and to be listened to. Research has shown that children with a cognitive developmental age of four years onwards are able to reflect on their own competences and express their perceptions accordingly (Sturges, Rodger, & Ozanne, 2002).

The Perceived Efficacy and Goal Setting System (PEGS)

The PEGS (Missiuna et al., 2004) is a client-centred instrument for assessing a child’s competence in everyday activities as perceived by him- or herself, his or her parents and teachers and for setting goals in a collaborative process. In order to use it as a self-report instrument for children from five to ten years of age, the authors of the PEGS have considered different aspects, which are important for self-report instruments in use with younger children: child-appropriate language; a responsive, appreciating dialogue with the child during the administration; a clear procedure, especially in regard to response options; verbal exploration, supported through pictorial cards; child-appropriate, culturally meaningful activities of everyday life (Missiuna et al., 2004; Missiuna et al., 2006a).

The administration of the PEGS has been described in detail by Missiuna et al. (2004). In a two-step decision-making process, all respondents are asked to indicate their perception of the child’s performance in 27 items. Pictorial cards are used for exploring the children’s perceived self-efficacy through a semi-structured interview. Parents and teachers are asked to complete the respective Parent or Teacher Questionnaire of the PEGS with the corresponding items. All respondents — children, parents and teachers — are then invited to choose a maximum of four occupations among the ones the child experiences difficulties in or wants to improve. Subsequently, they are asked to indicate their reasons why these might be important to address in the following occupational therapy intervention.

The PEGS aims to provide an overall picture of the child’s competences related to everyday tasks. It does not provide any standard score of a child’s competences, but allows screening for competences of a child in day-to-day life as perceived by him- or herself and his or her caregivers (Missiuna et al., 2004).



Relevance and Aim of the Study

Health service provision is expected to be efficient and cost-effective. This also matters when choosing appropriate methods and means for assessment and intervention planning. Involving clients' and their proxies' perspectives is recommended in family-oriented service provision. So far, there have not been any instruments available that assess and explore a child's occupational performance in everyday activities as perceived by him- or herself, his or her parents and teachers in German language.

As other studies have shown, there can be agreement as well as discrepancy between children's and adults' views on children's occupational performance, which has an impact on understanding children's situations and on planning client-centred, occupation-based intervention in an interdisciplinary context (Costa, 2014a; Dunford, Missiuna, Street, & Sibert, 2005; Engel-Yeger & Hanna Kasis, 2010; Missiuna et al., 2006a; Sturgess et al., 2002; Vroland-Nordstrand & Krumlinde-Sundholm, 2012). Such knowledge is important for interdisciplinary approaches to assessment and intervention planning (Rosenberg et al., 2013).

This study aimed to explore, describe and compare perceived competences in everyday activities as reported by children with difficulties in their occupational performance, their parents and teachers using the first Austrian-German PEGS version (AG-PEGS).

RESEARCH QUESTIONS

1. How do children with difficulties in their occupational performance, their parents and teachers describe children's competences in everyday activities, using the first AG-PEGS?
2. Are there differences and agreement in perceived competences in everyday activities as reported by children with difficulties in their occupational performance, their parents and teachers, using the first AG-PEGS?

METHOD

The AG-PEGS was used as an assessment and goal setting tool within a study exploring the effects of self-efficacy experiences through meaningful occupation on children's health according to International Classification of Functioning, Disability, and Health – Child/Youth Version (ICF-CY) (WHO, 2007), applying a mixed-method and pre-post design (Costa, 2014a). This explorative field study was conducted in Austria and South Tyrol (Italy).

Instrument

The PEGS was translated, culturally adapted and tested for use in German speaking countries, following the guidelines from Beaton, Bombardier, Guillemin and Ferraz (2000) to create the AG-PEGS (Costa, 2014b). For the comparison (described herein) of a child's competences perceived by him- or herself, his or her parents and teachers, 27 items of the PEGS, which refer to everyday life activities, were included. Item 28 is an open item and provides an opportunity for the child to talk about other occupations that are important to him/her. This has been reported elsewhere (Costa, 2014b).

Participants

The participating occupational therapists had all attended a workshop on the administration of the first AG-PEGS version offered by the first author prior to the field testing. They were practicing in various settings in three Austrian provinces and in Northern Italy (South Tyrol), and recruited children, their parents and teachers by convenience sampling. Inclusion criteria were: a referral to one of the participating occupational therapists; children experiencing difficulties in occupational performance (irrespective of medical diagnosis, which allowed to include children with a variety of neurodevelopmental disabilities and other health conditions) (see Table 1), aged from 5 to 10.5 years, with developmental competences in passive and active language above 5 years developmental age, being able to reflect on their abilities and making choices between two options. Children who did not meet these criteria were not included in the study.

Procedure

Parents were asked to respond to the AG-PEGS Parent Questionnaire separately from the child. Children were introduced to the AG-PEGS following the culturally adapted manual administration guideline (Costa, 2014b); all the semi-structured interviews supported by the pictorial cards were conducted by the occupational therapists working with the child. The data on the set goals are described elsewhere (Costa et al., under review). If parents gave their consent to the involvement of their child's teachers, the occupational therapist contacted the child's kindergarten (in Austria/Italy for children from 3 to 6 years of age), elementary school (in Austria/Italy for children from 6 to 10 years of age) or school for children with special needs (in Austria/Italy for children from 6 to maximum 18 years of age) and invited the children's teachers to participate in this study. The AG-PEGS Teacher Questionnaires were sent to the children's teachers by mail or email. Teachers were asked to respond to the questions during the first week of occupational therapy assessment



of the child. Due to practical circumstances, two teachers were interviewed by the child's occupational therapist via telephone, using the Teacher Questionnaire of the AG-PEGS. Informed consent documents and all data on the AG-PEGS were sent to the first author and all identifying data were removed.

Data Analysis

Sociodemographic data analysis included gender of participants, children's age, children's schooling, geographical region and occupational therapy setting, which all potentially have an influence on a child's occupational interests, engagement and performance (see Table 1).

Raw data was gained through the PEGS scores on a 4-point Likert scale, with the possible range from 1 (= not competent) to 4 (= competent). Ratings of children, parents and teachers referred to their perceived competence of the child's performance in everyday activities, explored and operationalised through 27 PEGS items. For some calculations, the generated values were treated as if interval-scaled due to the fact that the process of data acquisition suggests approximation to equidistance between the four possible ratings per item, as calculated in the study published by Missiuna et al. (2006a). Descriptive statistics included calculation of mean scores per PEGS item, per child, per life area and per group of children, parents or teachers.

Cohen's Kappa scores were used in order to calculate the agreement about the child's competence related to individual items as seen by children, parents and teachers. A positive Kappa score (>0) indicates that the agreement between the corresponding pairs is higher than it would be expected by chance; a Kappa score of '1' would be the result of perfect agreement. This data analysis method has also been used in other studies on the PEGS (Missiuna et al., 2006a; Vroland-Nordstrand & Krumlinde-Sundholm, 2012) and is generally a popular method to calculate inter-rater agreement in various settings. In addition, the 4-point scale was dichotomised to get an orientation on the agreement on a more general level, assuming that the first choice between 'competent' and 'not competent' asks for a stronger position compared to 'a lot' versus 'a little'. Differences and correlations were calculated for groups (children, parents, teachers), between groups (children's gender; children's schooling) and for the PEGS items (grouped in subscales according to life areas: self-care, school/productivity, leisure). Non-parametric statistical tests for significant differences between groups were chosen, because the data gathered was not normally distributed. The first choice to calculate correlations between the life areas was Spearman's Rho. To control these results, Kendall's Tau-b was calculated. The level

of significance for all calculations, where relevant, was set to $p \leq 0.5$.

The statistical analysis was performed using SPSS (Version 20.0) and included descriptive statistics, calculating Cohen's Kappa for inter-rater agreement, Kruskal-Wallis H-Test for differences between three groups, Mann-Whitney U-Test for differences between two groups and Kendall's Tau-b and Spearman's Rho for correlations.

Ethical Considerations

All children, parents and teachers participated voluntarily in this study. Parents and children were informed and had no disadvantage when they did not decide to participate. After a child's given assent and his or her parents' written informed consent, they were asked to respond to the AG-PEGS. Protection of sensitive data (identifying information) was ensured. Based on the feedback of the local ethics committee, all ethical standards according to the Helsinki Declaration (WMA, 2008) were followed (communication with the ethics committee of the Medical University of Innsbruck, Austria, May 20th, 2009).

RESULTS

Participants

Forty-two children (9 girls, 33 boys), experiencing difficulties in their occupational performance, participated in this study, with an overall age range from 5.0 to 10.5 years, living in four different geographical regions in Austria and Italy. (For further sociodemographic information, see Table 1.)

Results related to Children's, Parents' and Teachers' Responses to the PEGS

The overall mean scores of competence perception per group are comparatively shown in Figure 1.

The extent of agreement versus difference between the overall ratings of children's competences related to life areas is depicted in Figure 2.

Perceptions of competence related to single PEGS items as seen by children, parents and teachers.

The items of the PEGS, the corresponding life area, the number of participants rating the corresponding item, the range of ratings per group and item, the mean scores of ratings per item and participant group and the standard deviation of ratings are all presented in Table 2.

Neither children, nor parents or teachers scored with a mean score of '1' (*not competent*), but all participant



Table 1: Description of sample

Children's age	Mean: 6.91 yrs	SD: 1.34 yrs	Range: 5.0 to 10.5 yrs	
	≤6y: n = 13	>6 ≤ 7: n = 14	>7: n = 15	Total: n = 42
Children's residence	Urban: n = 12	Rural: n = 20	Unknown: n = 10	
Children's gender	Female: n = 9	Male: n = 33		
Number of children's siblings	0 (single child): n = 8	1: n = 14	2 or more: n = 5	Unknown: n = 15
Children's migration background	Yes: n = 6	No: n = 26	Unknown: n = 10	
Participating parents (responses for 34 children)	Female: n = 33	Male: n = 3	Total: n = 36	
Children's schooling	Kindergarten: n = 19	Elementary school: n = 16	School for children with special needs: n = 7	
Occupational therapy setting	Hospital/Clinic: n = 18	Private practice: n = 8	School or school related: n = 7	Association/NGO: n = 9
Occupational therapists	Age: Mean: 33.5; SD: 7.1; Range: 26 to 42 yrs	Years of experience: Mean: 9.1; SD: 6.1; Range: 2 to 21 yrs	Conducted interviews: Mean: 2.5; SD: 1.6; Range: 1 to 7	Gender: Female: n = 15; Male: n = 2
Health conditions (multiple indications per child)	Developmental delay		n = 10	
	Gross motor issues		n = 10	
	Fine motor issues		n = 9	
	Developmental coordination disorder		n = 9	
	Attention deficit/hyperactivity disorder		n = 8	
	Psychosocial indication		n = 8	
	Cognitive difficulties		n = 7	
	Visual or hearing impairment		n = 7	
	Physical disease (cancer, congenital heart disease, hydronephrosis, cerebral palsy)		n = 7	

Note. NGO — non-governmental organisation; SD — standard deviation; yrs — years

groups showed maximum values in their scoring ranges close to '4' (*very competent*). The tendency of the PEGS total mean scores showed that children (3.08) scored themselves overall better than their parents (2.87). Teachers had the broadest range of PEGS scores (mean scores per item, ranging from 1.71 (*tying shoes*) up to 3.79 (*toileting*), and gave the lowest total mean score (2.75).

Children's self-report on their perceived self-efficacy in everyday activities.

Of the 42 children recruited, 38 responded to the PEGS. Four children's responses were not received by the researchers in a complete format and were therefore

excluded for statistical analysis. All items were scored by the children using the full possible range of competence as described above for their rating from 1 to 4, except for *using scissors* and *toileting* (both ranging from scores 2 to 4). The total mean score of the children's perceived self-efficacy related to the PEGS items (3.08) varied from 2.09 (*child actually skipping*) to 3.75 (*toileting*).

The standard deviation of the children's scorings varied from 0.57 (*toileting*) (many similar self-reported scores) to 1.26 (*tying shoes*) (highest variation of self-reported scores); see Table 2. Items that were scored lower showed a larger variety of self-efficacy perceptions of the responding children.

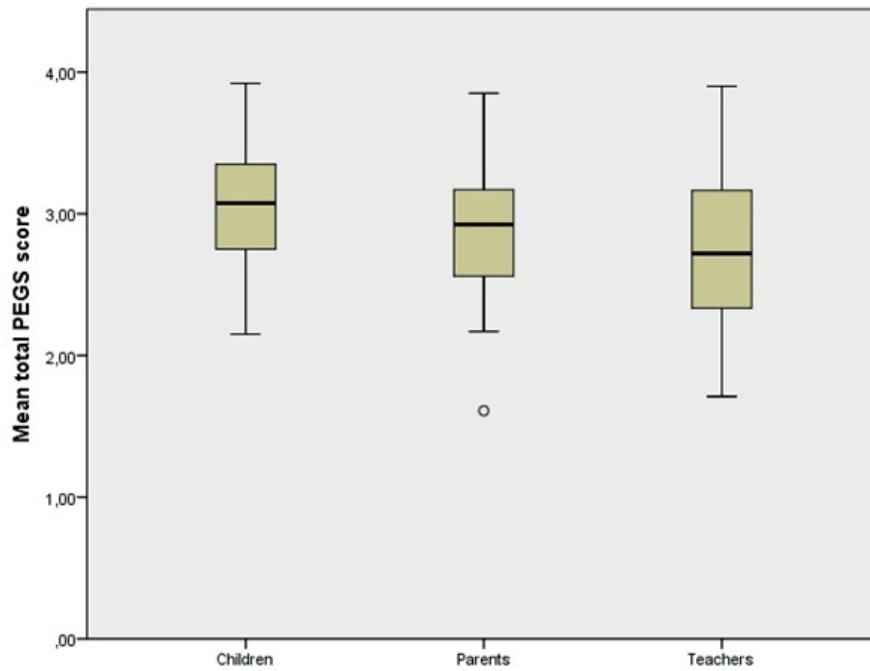


Fig 1. Means of total PEGS scores per group (n = 42 children)

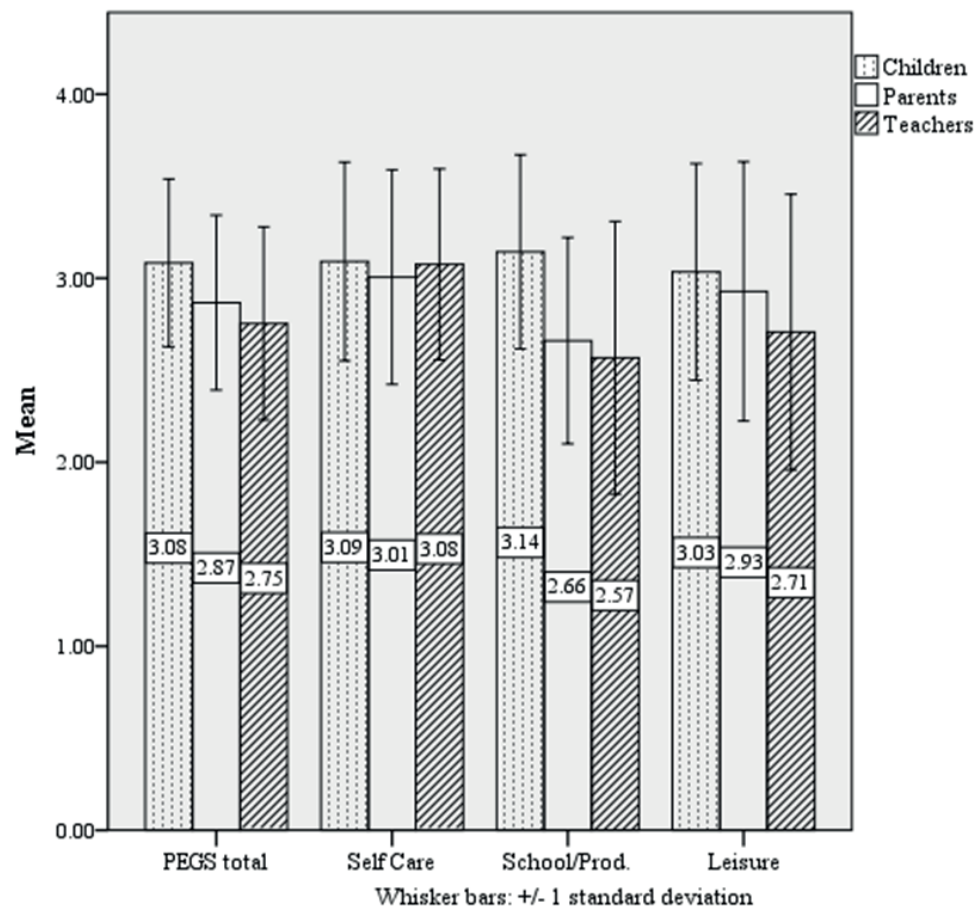


Fig 2. Life areas and total mean PEGS scores per group (n = 42 children)



Table 2: Mean scores per items/groups

			Children				Parents				Teachers			
PEGS item		Life area	N	range	Mean	SD	N	range	Mean	SD	N	range	Mean	SD
1	Catching Balls	L	38	1–4	2.87	0.88	34	1–4	2.85	1.02	27	1–4	2.59	1.01
2	Cutting food	SC	37	1–4	2.76	0.98	34	1–4	2.26	0.96	18	1–4	2.44	0.98
3	Being good at sports	L	36	1–4	3.25	0.91	34	1–4	3.15	0.93	28	1–4	2.96	1.10
4	Playing video games	L	28	1–4	3.39	0.79	26	1–4	2.73	1.00	12	2–4	3.25	0.97
5	Finishing schoolwork	S/P	30	1–4	2.67	0.99	20	1–4	2.35	1.18	23	1–4	2.43	1.08
6	Making things	S/P	38	1–4	3.47	0.76	34	1–4	2.82	1.03	27	1–4	2.44	1.09
7	Playing rather than watching sports	L	38	1–4	3.18	0.90	34	1–4	3.38	0.85	27	1–4	3.37	1.01
8	Tying shoes	SC	38	1–4	2.24	1.26	31	1–4	2.06	1.18	21	1–4	1.71	0.90
9	Using scissors	S/P	36	2–4	2.94	0.86	33	1–4	2.76	1.00	25	1–4	2.32	0.99
10	Trying new playground activities	L	36	1–4	3.44	0.94	34	1–4	3.06	1.01	23	1–4	2.91	1.12
11	Buttoning	SC	36	1–4	3.14	0.87	34	1–4	3.24	0.92	23	1–4	3.26	0.86
12	Working on the computer	S/P	26	1–4	3.23	1.03	21	1–4	2.90	1.09	14	1–4	3.29	1.07
13	Organizing numbers on the page	S/P	28	1–4	2.96	0.92	16	1–4	2.50	1.03	14	1–4	2.36	1.22
14	Riding a bicycle	L	37	1–4	3.32	1.13	33	1–4	3.06	1.32	6	1–4	2.33	1.51
15	Getting dressed	SC	37	1–4	3.16	0.99	33	1–4	3.33	0.89	27	1–4	3.37	1.04
16	Playing ball games	L	34	1–4	2.41	1.21	34	1–4	2.76	0.99	26	1–4	2.31	1.01
17	Printing/writing	S/P	31	1–4	3.10	1.08	19	2–4	3.21	0.85	18	1–4	2.72	1.18
18	Zippering	SC	37	1–4	3.57	0.73	33	2–4	3.55	0.62	24	2–4	3.67	0.64
19	Keeping desk tidy	S/P	36	1–4	3.06	0.89	23	1–4	2.30	1.02	17	1–4	2.41	1.00
20	Painting	S/P	37	1–4	3.41	0.86	32	1–4	2.75	0.95	26	1–4	2.77	0.95
21	Drawing	S/P	36	1–4	3.25	0.91	32	1–4	2.41	0.98	26	1–4	2.65	1.06
22	Skipping — child actually skipping	L	32	1–4	2.09	1.23	28	1–4	2.21	1.10	23	1–4	1.83	0.98
23	Kicking a ball	L	37	1–4	3.22	1.00	32	1–4	2.91	1.00	24	1–4	2.42	1.18
24	Running	L	37	1–4	3.27	0.93	34	1–4	3.38	0.85	27	1–4	3.04	1.19
25	Skipping — child turning the rope	L	27	1–4	2.81	1.11	22	1–4	2.86	1.08	18	1–4	2.61	1.38
26	Toileting	SC	32	2–4	3.75	0.57	34	1–4	3.38	0.85	24	3–4	3.79	0.41
27	Keeping up with other kids	SC	34	1–4	3.35	0.85	31	1–4	3.26	0.89	26	1–4	2.88	1.07
	Means (for orientation)				3.08	0.95			2.87	0.99			2.75	1.04

Note. Life area: SC — Self-care; S/P — School/Productivity; L — Leisure

Parents' perceptions of their child's competences in everyday activities.

Thirty-four parents responded to the PEGS items. Questionnaires from the parents of eight children were not received. In the group of responding parents, two children were described by both parents responding to the Parent Questionnaire of the PEGS. The participating parents used an overall scoring range from 1 to 4 for 25 out of 27 PEGS items, with a total mean score of 2.87 (see Table 2). Parents' scores per item ranged from 2.06 (*tying shoes*) to 3.55 (*zipping*). The standard deviations of parents' scorings varied from 0.62 (*zipping*) to 1.32 (*riding a bicycle*).

Teachers' ratings of the child's competences in everyday activities.

Twenty-eight teachers completed the Teacher Questionnaire of the AG-PEGS, scoring on a range from 1 to 4, except for *playing video games* and *zipping* (ranging from 2 to 4) and *toileting* (ranging from 3 to 4). Standard deviations ranged from 0.41 (*toileting*) to 1.51 (*riding a bicycle*); see Table 2.

Comparison of children's, parents' and teachers' perceptions of the child's competences in everyday activities.

Similarities and differences were analysed related to children's and adults' mean scores, related to the PEGS items, related to the child's competences in self-care, productivity and leisure activities and related to children's gender and schooling.

These findings were compared to those of the original Canadian version of the PEGS (Missiuna et al., 2006a). The data provided in that article was transformed to make it comparable with the results presented here. The total mean scores as well as the Kappa coefficients all showed to be of similar dimensions.

The results of this study showed statistically significant differences of total mean scores only in the comparison of children and teachers and were completed by a per-item analysis (see Table 4). While the comparison of the total PEGS mean scores rated by children, parents and teachers indicates that the children perceived their competences overall better than their surrounding adults, this statistical finding needs to be compared to analysis per item: 17 out of 27 compared PEGS mean scores did *not* correspond with the overall result (on average, teachers describing the children's competences lowest, followed by the parents and the children themselves).

Agreement

Comparing the perceptions of the participating children, parents and teachers, there was agreement on the activities in which the children in this sample showed most and least competence: the two highest (*toileting* and *zipping*) and the two lowest scored activities (*skipping* — *child actually skipping* and *tying shoes*) were the same, as described by children, their parents and teachers (see Table 2).

Cohen's Kappa was calculated to express the degree of agreement between the groups (children, parents and teachers) per item; first, based on the 4-scaled raw data, then on a dichotomised basis and finally absolute agreement was calculated in percentage (see Table 3). There was less agreement in the 4-scaled Kappa analysis than in the 2-scaled Kappa scores (distinction between 'rather competent' (scored by 3 or 4) and 'rather less competent' (scored by 1 or 2). Table 3 shows all Kappa coefficients and absolute agreements (3 dyads, all 27 items) calculated on the 4-scale basis.

The agreement was generally low: 17 (of 81) Kappa coefficients had values higher than 0.3 and were significant on at least a 5% level (four in the children–parents dyads, four in the children–teachers dyads and nine in the parents–teachers dyads). The average absolute agreements were 44.4% in the children–parents dyads, 38.6% in the children–teachers dyads and 45% in the parents–teachers dyads (with 25% being the value expected by chance for a 4-point scale). As Table 3 shows, the agreement strongly varied from absolute agreement below 25% up to 80% and Kappa coefficients from -0.262 to 0.667.

The five PEGS items with the highest and lowest agreement in each dyad were identified:

The highest agreement between children and parents was related to *getting dressed*, *organising numbers on the page*, *using scissors*, *printing/writing* and *riding a bicycle*. Children and teachers agreed most related to *buttoning*, *drawing*, *painting*, *organising numbers on the page* and *riding a bicycle*. Most agreement between parents' and teachers' scorings were found related to *drawing*, *painting*, *being good at sports*, *organising numbers on the page* and (also) *riding a bicycle*.

The lowest agreement between the groups of children and parents were found in *playing video games*, *running*, *finishing schoolwork*, *kicking a ball* and *toileting*. Children and teachers had the lowest agreement in describing the children's competences related to *keeping desk tidy*, *making things*, *toileting*, *working on the computer* and *using scissors*. Parents and teachers agreed least in scoring the children's performance in *kicking a ball*, *keeping desk tidy*, *keeping up with other kids*, *using scissors* and *cutting food*.



Table 3: Agreement Kappa and absolute 4-step

		Children–Parents				Children–Teachers				Parents–Teachers			
		4-step				4-step				4-step			
PEGS item		n	Cohen's Kappa	p	Absolute agreement	n	Cohen's Kappa	p	Absolute agreement	n	Cohen's Kappa	p	Absolute agreement
1	Catching Balls	30	0.112	0.297	36.7%	24	-0.005	0.966	25.0%	27	-0.017	0.880	25.9%
2	Cutting food	30	0.243	0.016	46.7%	15	0.234	0.159	53.3%	18	-0.262	0.051	16.7%
3	Being good at sports	30	0.156	0.180	43.3%	24	0.102	0.394	37.5%	28	0.583	0.000	71.4%
4	Playing video games	20	-0.010	0.931	25.0%	10	-0.094	0.606	30.0%	11	0.115	0.474	36.4%
5	Finishing schoolwork	17	0.042	0.754	29.4%	19	-0.134	0.305	15.8%	16	0.319	0.029	50.0%
6	Making things	30	0.077	0.416	33.3%	24	-0.153	0.080	12.5%	27	-0.021	0.851	25.9%
7	Playing rather than watching sports	30	0.278	0.021	53.3%	24	0.248	0.034	50.0%	27	0.267	0.032	59.3%
8	Tying shoes	28	0.141	0.196	39.3%	19	0.146	0.191	36.8%	20	0.333	0.010	55.0%
9	Using scissors	28	0.361	0.001	53.6%	21	-0.216	0.067	9.5%	24	-0.121	0.283	16.7%
10	Trying new playground activities	28	0.255	0.017	50.0%	18	0.211	0.106	44.4%	23	0.348	0.008	56.5%
11	Buttoning	28	0.269	0.020	50.0%	18	0.276	0.098	55.6%	23	0.199	0.214	52.2%
12	Working on the computer	15	0.241	0.096	46.7%	10	-0.167	0.349	30.0%	12	0.010	0.943	33.3%
13	Organizing numbers on the page	14	0.324	0.022	50.0%	13	0.405	0.002	53.8%	12	0.667	0.000	75.0%
14	Riding a bicycle	28	0.564	0.000	75.0%	6	0.500	0.046	66.7%	5	0.667	0.041	80.0%
15	Getting dressed	28	0.288	0.020	57.1%	23	0.145	0.265	52.2%	26	0.099	0.423	50.0%
16	Playing ball games	26	0.089	0.402	30.8%	19	0.026	0.832	26.3%	26	0.082	0.369	26.9%
17	Printing/writing	17	0.427	0.006	76.5%	16	0.186	0.205	43.8%	16	0.312	0.029	50.0%
18	Zippering	28	0.204	0.128	60.7%	20	0.037	0.819	55.0%	23	0.239	0.121	60.9%
19	Keeping desk tidy	20	0.117	0.265	30.0%	15	-0.140	0.297	13.3%	14	-0.077	0.642	28.6%
20	Painting	27	0.224	0.029	44.4%	22	0.357	0.005	54.5%	24	0.469	0.000	62.5%
21	Drawing	27	0.196	0.029	37.0%	22	0.311	0.012	50.0%	24	0.361	0.002	54.2%
22	Skipping — child actually skipping	23	0.120	0.291	34.8%	20	0.085	0.469	35.0%	19	0.035	0.798	31.6%
23	Kicking a ball	27	-0.050	0.595	22.2%	20	0.020	0.867	25.0%	22	-0.048	0.691	22.7%
24	Running	29	-0.024	0.851	37.9%	23	-0.019	0.872	30.4%	27	0.194	0.094	48.1%
25	Skipping — child turning the rope	16	0.177	0.213	43.8%	15	0.107	0.381	33.3%	13	0.322	0.058	53.8%
26	Toileting	27	-0.066	0.601	44.4%	19	-0.157	0.361	63.2%	24	0.080	0.545	50.0%
27	Keeping up with other kids	24	0.166	0.227	45.8%	21	0.128	0.288	38.1%	24	-0.112	0.347	20.8%
	Means (for orientation)		0.182	0.245	44.4%		0.090	0.336	38.6%		0.187	0.294	45.0%



Riding a bicycle showed the highest agreement in all dyads, and *organizing numbers on the page* is also present in all top-5 rankings. No same item was present in all three rankings with the lowest agreement.

When shifting the perspective from the dyads to the single PEGS items, different possibilities to calculate agreement had to be taken into consideration (see Table 3). Therefore, four possible calculations for agreement were included: Cohen's Kappa and absolute agreement expressed in percentage for 2- and 4-step coding each. Each combined with the three group comparisons made a total of 12 rankings of the 27 PEGS items. The average rank per item from these 12 ranking possibilities was calculated to identify items with high and low overall agreement. The five highest overall agreements (*here: average agreement per PEGS item in every combination — children–parents, children–teachers, parents–teachers*) of Kappa coefficients in all calculated by Cohen's Kappa were found for the items *riding a bicycle*, *organizing numbers on the page*, *printing/writing*, *playing rather than watching sports* and *buttoning*. The five lowest overall agreements were found for the items *finishing schoolwork*, *using scissors*, *kicking a ball*, *making things* and *keeping desk tidy*.

Differences

Table 4 shows statistically significant differences between groups per PEGS items, calculated with Mann–Whitney U-Test (with children having higher mean scores in all dyad comparisons, with $p \leq 0.05$). Only the difference between the children's and teachers' total mean scores was statistically significant.

Perceptions of competence related to the life areas, self-care, productivity and leisure.

Each of the 27 PEGS items is assigned to one of three life areas, *self-care*, *school/productivity* and *leisure*, which can be seen and calculated as subscales. Figure 2 shows the means and standard deviations for all three groups (children, parents, teachers) per life area and total PEGS score. Children, on average, gave themselves similar ratings in all life areas. On average, items related to *self-care* were rated similarly by all three groups. Concerning *school/productivity*, parents and teachers rated the child's competences on average significantly lower than children ($p \leq 0.001$ with Mann–Whitney U-Test).

The correlations of subscales with the total PEGS scores were moderate to high. The matrix of correlations, expressed by Spearman's Rho (r_s), is presented in Table 5. All identified correlations were highly significant ($p \leq 0.001$). To reappraise these results, Kendall's Tau-b was also calculated, resulting in slightly lower coefficients

Table 4: Statistically significant differences between groups per PEGS items

		Children– Parents		Children– Teachers		Parents– Teachers	
PEGS item		<i>n</i>	<i>p</i> -value	<i>n</i>	<i>p</i> -value	<i>n</i>	<i>p</i> -value
2	Cutting food	30	0.049	n.s.		No statistically significant differences	
4	Playing video games	20	0.011				
6	Making things	30	0.004	24	0.000		
9	Using scissors	n.s.		21	0.014		
19	Keeping desk tidy	20	0.005	15	0.026		
20	Painting	27	0.003	22	0.006		
21	Drawing	27	0.001	22	0.023		
23	Kicking a ball	n.s.		20	0.009		
26	Toileting	27	0.044	n.s.			
Total	PEGS mean score	30	0.081	24	0.013	28	0.369

Note: n.s. — no statistically significant differences

Table 5: Correlations between total PEGS scores and life areas

Correlation of Means (Spearman's Rho)	Total score	Self-care	School–Productivity	Leisure
Total score	1 000	.723**	.720**	.868**
Self-care	.723**	1 000	.481**	.505**
School–Productivity	.720**	.481**	1 000	.391**
Leisure	.868**	.505**	.391**	1 000

** Significant on 0.01 level (2-tailed).

but the same order of correlations. The highest correlation was found between the life area *leisure* and the total PEGS score. Comparing life areas, the lowest correlation was found between *leisure* and *school/productivity*.

Schooling

Comparing the total mean scores, children going to a school for children with special needs scored highest based on their own, their parents' and their teachers' ratings. They were followed by children going to elementary school. The group of children going to kindergarten rated themselves lowest (see Figure 3). The difference of ratings between parents whose children are in schools for children with special needs respectively kindergarten was significant ($p = 0.04$, Mann–Whitney U-Test). All other

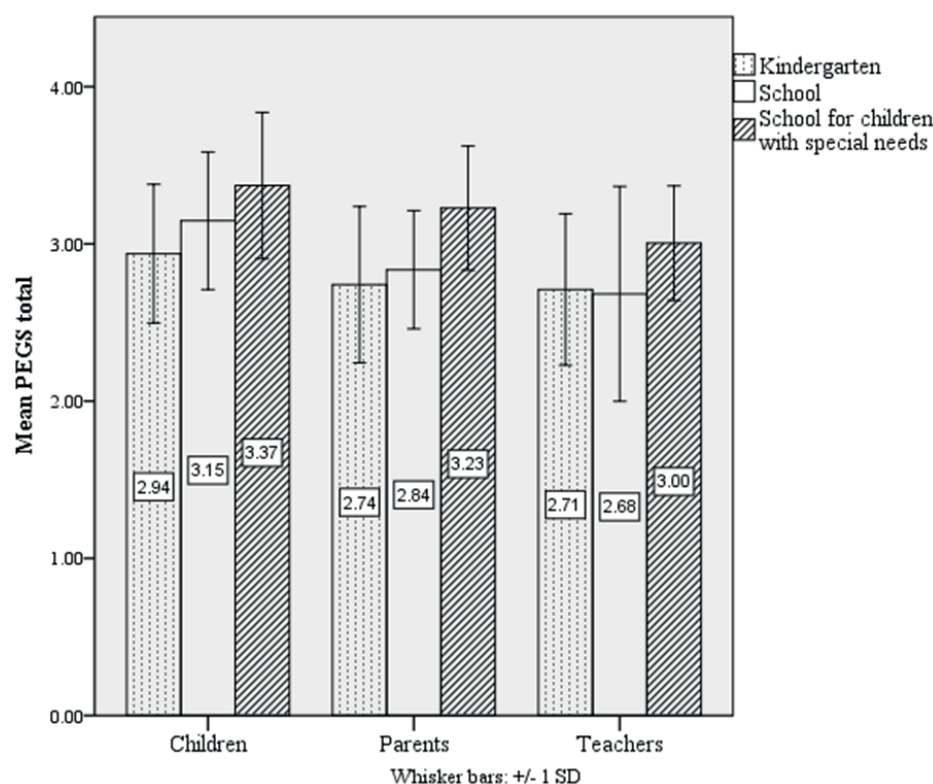


Fig 3. Total PEGS mean scores related to schooling and groups
Note. $n = 38$ children; 36 parents for 34 children; 28 teachers

differences concerning schooling were not statistically significant in this sample. On average, teachers scored the children in kindergarten, elementary school and school for children with special needs more homogeneously than the other two groups, but also had the highest total mean score for children in schools for children with special needs. The interval between children's and adults' scorings remained relatively stable when comparing children going to kindergarten, elementary school or a school for children with special needs.

Gender

Based on the comparison of their total mean scores, girls (mean score = 2.84, SD = 0.50) reported to having a lower level of competence compared to the self-reported mean scores of the boys (mean score = 3.16, SD = 0.43) participating in this study. This difference was also seen in adults' ratings of the girls' versus the boys' competences in everyday activities. Parents' mean score of boys' competences was 2.95 (SD = 0.41), while they rated the girls' competences with a mean of 2.62 (SD = 0.57). Teachers in this study also generally perceived boys' competences better than the girls' (teachers' mean scores for boys = 2.84; SD = 0.52; for girls = 2.49, SD = 0.47). However, these differences did not show statistical significance.

Summary of Results

In general, children in this sample rated themselves better than their parents and teachers when using the AG-PEGS. Most correspondence in perceived competence was found in parents–children dyads (*self-care*) and teachers–children dyads (*productivity*). Children going to a school for children with special needs were, on average, scored best by themselves, their parents and teachers. Teachers were more consistent in their ratings of their students' competences. Girls in this sample scored less compared to boys. There was no statistically significant difference between parents' and teachers' ratings of children's competences.

DISCUSSION

Comparing perceived competence

The tendency of children to perceive themselves being more competent than their surrounding adults is consistent with other research on self-report measures for children and on the PEGS (Sturges et al., 2002; Missiuna et al., 2006a, 2006b). These findings may support the idea of searching for competence perception of the client *and* his or her social context, also in detecting needs to be addressed in therapeutic intervention. However, like in



other studies of self-report measures for children, there was a high level of agreement in defining tasks that are more difficult to the child as seen by the child and his or her parent (Engel-Yeger & Hanna Kasis, 2010).

Possible influences on children, parents and teachers, reporting children's competences

The convenience sample recruited for this study reflects the typical clientele in paediatric occupational therapy in Austria from a gender and medical perspective: about 75 % of the referred children with developmental problems are boys, 25% are girls; they typically show various developmental issues and multiple medical conditions and are offered therapeutic services in different settings (Costa & Schönthaler, 2011).

Children's self-report

In this sample, children showed a range from score 1 to score 4 in their self-report. This can be interpreted as an expression of differentiation when they reflect on their competences in everyday activities. Without doubt, there is high value in asking for children's self-perceptions as part of an assessment and goal setting process in order to make it most relevant for a certain child.

When children self-report on their competence related to a specific task, children with difficulties in their occupational performance might also perceive and include their efforts in managing this occupational challenge. This may result in them choosing slightly better scores than their caregivers who might be referring more to result rather than effort. Including and referring to effort, values, importance and meaning in the assessment of competences could be explained by a reference to self-concept rather than solely to self-efficacy (Bong & Skaalvik, 2003). By exploring perceived self-efficacy, learning about a child's self-concept may enrich and support a more comprehensive understanding of this young client.

Interviewing children based on the PEGS allows learning about coping strategies of the children — avoiding certain tasks, asking for help, trying hard to manage, or also switching activities when they do not believe in their capacities to perform a certain occupation.

The here described higher mean scores in self-rating their competences within a semi-structured interview with an occupational therapist could also be based on a child's coping strategy in handling challenges in life, and show an attempt for maintaining homeostasis of self-esteem as part of resilience (Fröhlich-Gildhoff & Rönna-Böse, 2014).

The observers: parents and teachers

Perceiving or not perceiving somebody's competences is not only depending on the actual performance, but also on the observer and his or her frames of reference

(Bong & Skaalvik, 2003). Perceptions and descriptions of a child's competences are therefore multifold and subjective. Parents' and teachers' perceptions of a child's competences can be based on experiences, observations and reflections on his or her engagement in occupations. How adults perceive, view and report a child's competences is influenced by their sociocultural environment, by values, comparisons with other children, expectations on an actual task performance and by the relationship and connection they have with the child (Christiansen, 2004).

The teachers in this study rated the children's competences in this sample, on average, lower than the child him- or herself, and most consistently, no matter whether they perceived them in kindergarten, at elementary school or at a school for children with special needs. They might refer directly to the result and have the most direct opportunity to compare the individual child's occupational performance with his or her peers. This is different from the parents' scorings, which in all likelihood refer to their daily family life.

Perceptions of a child's competences and descriptions are furthermore influenced by occupational identities, such as being a parent, being a client or being a teacher — and by the experiences and attributions related to social and occupational roles (Christiansen, 2004).

Exploring perception of competence from different perspectives related to a specific context

Some PEGS items refer to a range of possible activities that might be associated with the specific item. This allows various interpretations from the respondents. As there is often no specific situation being addressed, the respondents may possibly refer to different occupational forms; this could lead to a difference in rating the specific items, as reflected by high versus low Kappa scores in this study. Most agreement in scoring children's performance in specific activities was found when the raters were referring to the same experienced life area, for example, children and teachers to school/productivity, and children and parents scoring self-care activities.

Parents reporting their child's competences at school and teachers rating the child's competence in leisure activities might do this more based on their ideas about those situations than on actual observation of them. Adults' descriptions of a child's competences might therefore be based on observation as well as on self-experience, which might influence ideas, thoughts, beliefs and imaginations of situations in life areas in which they cannot usually observe the child.

Competence perception appears to be dependent not only on objective skills and abilities of a person (a child), but also on the context of the person describing the competences. As stated earlier, it further might make a difference whether the process of engagement



in an activity is judged, or whether the scoring refers to the *outcome*, whether it describes the engagement, the efficiency or efficacy of a child's performance.

Agreement and differences

Even if agreement in the participants' ratings was not very high for most items, there were not many statistically significant differences when comparing children's, parents' and teachers' perceptions related to the same activity or life area. This supports the idea that there are slightly different perceptions and descriptions of a child's competences, but they are not opposing and still contain some agreement, which is an important base for assessment as well as for goal setting.

Exploring perception of competence using different means

When parents or teachers complete the PEGS questionnaires, it is not usual practice to conduct an in-depth interview related to their responses. Unlike the PEGS exploration with the child, there might be fewer opportunities for asking probing questions or providing explanations between the occupational therapist and the caregivers. A different approach in gathering information within an assessment procedure (questionnaire versus semi-structured interview) could also influence scorings and thus results.

Children's schooling

Children going to a school for children with special needs self-reported and were reported by their parents and teachers with higher mean scores compared to children who went to elementary school. Kindergarten children scored and also were scored by their parents with the lowest mean scores within this sample. For children going to a school for children with special needs, the child's efforts could possibly be given more credit, while children going to a regular school might be measured based on their actual occupational performance. It could also express a way of children's and parents' coping when noticing, weighing and valuing the child's abilities higher (Bong & Skaalvik, 2003).

Gender

Comparing PEGS total mean scores between gender, girls' competence ratings were lower (scored by themselves and by their parents and teachers) compared to the mean score of the boys participating in this study. Due to the small sample size and to the lack of statistical significance, this finding cannot be generalised. However, the question whether girls are expected to show more competences or rated in a more strict way compared to

their male peers could have sociocultural roots and would be interesting to explore and consider further in research and practice.

Implications for practice

Importance for participatory assessment and treatment planning

Asking children, parents and teachers for their opinion related to the children's competences in everyday activities can be considered as an essential part of an effective intervention that intends to be client-centred, occupation-based, and relevant to clients' daily lives (Costa, 2014a; Humphry & Corcoran, 2004). As perceptions of competences and priorities for intervention are differing, there should be time invested for the process of setting goals for the intervention (Brewer, Pollock & Wright, 2014; Costa et al., 2014). Valuing and considering all involved people's perceptions in the focus of a specific treatment may raise children's, parents' and teachers' identification with the intervention and positively influence their readiness to contribute (Costa, 2011).

Asking for the perspective and priorities of parents in addition to their child's perceived self-efficacy fosters a family-centred approach, which has shown to bring best intervention outcomes (Cohn et al., 2000; Humphry & Corcoran, 2004; Rosenbaum, King, Law, King, & Evans, 1998). As teachers are also involved in the assessment and treatment planning process, the focus on daily life and an intervention which is directed to support quality of life in a daily context is strengthened.

The AG-PEGS appears to be valuable in occupational therapy and research for learning about the different perceptions of the child's competences, of the priorities the child and his or her caregivers may have related to everyday activities and for engaging in a client-centred, resource-, day-to-day-life-relevant and occupation-oriented therapeutic process (Costa, 2014a; Costa et al., 2014c). The AG-PEGS has shown content validity for use in German speaking countries as a client-centred, occupation-oriented, participatory assessment instrument (Costa, 2014b). The PEGS is not only a screening tool related to a child's competences, but also supports the establishment of a trustful therapeutic relationship: it allows to get to know the individual child better — in regard to his or her perception of him- or herself, in regard to his or her concerns related to occupations and the meaning they might have to him or her. Listening carefully to what children have to say about their own life experience related to everyday occupations is core to occupational therapy and reveals relevant information also to occupational science and any health profession.



As the PEGS is an occupation- and participation-oriented instrument, it might be necessary in some settings and for some clients to combine it with assessment tools that focus on body functions or that are norm-referenced. Depending on the referral and indication, a combination of observation, interview and additional tests might be required.

Importance of the view on the child

Furthermore, the view and attitude when observing a child have an influence on his or her performance. Believing in someone's potential and bringing that into the actual situation of task demand, may have an impact on the actual occupational performance. However, these important aspects could only be touched in this study and need further exploration.

Empathy might be required not to discourage a child who possibly experiences deficiency and occupational challenge on a daily basis, but who is still able to perceive his or her competences. Such self-perception could be seen as an important resource: an expression of positive self-efficacy expectation, which can be part of coping with challenges and, furthermore, enhance engagement in occupations that has impact on a child's occupational performance skills (Gage & Polatajko, 1994).

Limitations of the study and implications for further research

Kappa scores were also calculated with similar sample numbers of participants in other studies on the PEGS. However, the sample size in this study and the varying number of raters per group and per PEGS item requires careful interpretation of the results derived from statistical data analysis. Comparing children's perceived self-efficacy and their parents' and teachers' perceptions of their competences should further be explored through qualitative case study comparison and quantitative study of a larger sample. The results presented here provide a solid base to formulate and test several specific hypotheses for this purpose.

The different methodological approaches in this exploratory study were based on the caution that has to be given when calculating and comparing total mean scores, especially of a smaller sample. In future research of the PEGS, the comparison of perceived competence related to children with and without known medical conditions should be considered, as their occupational engagement

and performance as well as their perceived self-efficacy might differ. Part of future research with a larger sample size could also address the question whether the data collection (questionnaires for parents and teachers, semi-structured interview with pictorial cards for children) has an impact on the scoring of children's competences. Furthermore, the assumption that parents might generally perceive their child being more competent than teachers is another important research topic with implications for therapists related to assessment and treatment planning. Noting that children going to a school for children with special needs and boys in general were scored better in this sample, may lead to the assumption that they might feel more encouraged to engage in occupations and to try out; this might have an impact on their self-efficacy expectations and positively influence their volition. Knowing this, a subject for further exploration could be to investigate the consequences of an encouraging, loving, well-meaning, resource-oriented environment on health. The impact of perceived competence on the joy and motivation to engage in occupations, and the influence of adults' and children's perceptions of a child's competences needs further exploration for the sake of a holistically healthy growth of children in a society that is focused on performance and efficiency. This is equally important for creating learning environments at school as in the family.

DECLARATION OF INTERESTS AND ETHICAL CONSIDERATIONS

There was no conflict of interest from the side of the independent researchers.

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